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THE STONE LAB:
DECODING SHIKAHOGH KHACHKARS

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A thesis submitted in partial fulfilment of the
requirements of the University of Westminster
for the degree of Master of Philosophy

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Author Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified.

THE STONE LAB

Decoding Shikahogh Khachkars
Westminster University 2017
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Abstract

"The Stone lab: Decoding Shikahogh Khachkars" is an MPhil by design, seeking to describe the role of Khachkar in formation of Armenian national identity through studies of the stone masonry and the notion of a territory, which in this case is represented with the Shikahogh village (Figs. 1 and 2). Although much study has been done on Khachkars in general, no prior research has been conducted on the historic cradle of Khachkars that is Shikahogh. The Stone lab aims to discover and interpret the stories of Shikahogh unknown Khachkars. Therefore the hybrid approach of experimental archaeology and digital reconstruction have been employed at the Shikahogh lab to unveil the hidden inscriptions of these Khachkars as well as to narrate the functions and technological processes behind their creation. This research portrays the driving factors of belonging and identify preservation underneath the context of Khachkar and Petroglyphic heritage of Armenia.



1 - Map of Armenia (Image source Google, edited by L.M.)



2 - Shikahogh map (Image source Google, edited by L.M.)

Introduction

Armenia is a small landlocked country of stones and mountains where for centuries people have trusted their most sacred secrets and confessions to the stones, the manmade cross stones- Armenian Khachkars. These stones can be found everywhere in Armenia, I grew up with an instilled love and reverence towards these monuments, occasionally questioning and re-evaluating their meaning and placement in the society. The original aim of the thesis was to shed some light on Khachkars of Shikahogh village, which have not been researched in the past as well as use the site as a proxy in posing a wider question of Khachkars role in nation's identity. Armenia is also a land of scarcity, accustomed to treat the land and natural resources sparingly and with utmost respect. Most precious of it all is the land itself, hence the selection of the village was no coincidence; it is of strategic importance, as demonstrated in later chapters. Shikahogh Khachkars depict stories of the past; some with anagram inscriptions, some with more weathered surfaces all from different centuries, with one thing in common – there is nothing known about these stones. My intention for the project was to discover and preserve the Shikahogh Khachkar stories, to raise awareness about this piece of land and its heritage, to become a medium in channelling the Khachkar stories to unveil and be exposed, their stories to be told at last.

Khachkar (Armenian Khach- Cross and Kar - stone) is the nations' stone of identity; from 5 century BC, Khachkar served as a book, a priest, a church and a saint. In this research, the silent monument of Khachkar is analysed through 3 distinct periods- the ancient (pre USSR), the Soviet and the post-modern. The cross stone has undergone stylistic and conceptual metamorphosis and assimilations; where the development of tools and techniques, as well as countries socio political concurrent found their expressions on Khachkars. Nevertheless, throughout the centuries, the tradition and the aims of erecting these stones have remained intact to a large extend. The chapters explore the relationships of Khachkar and that of its surroundings, of the stones influence and co-dependency on religious and spiritual aspects of ancient and modern society.

Chapter 1 Historic Narrative of Khachkar

This chapter presents a brief historic overview of Armenia over three timeframes. The role of Khachkar is analysed across these timeframes, revealing the evolution of Cross Stone (Khachkar, Cross Stone, Stone are used interchangeably in this research to describe the Armenian cross shaped stone monuments). During the medieval period, Khachkar has emerged from the pagan practices of stone stele and rock carvings dating back thousands of years BC. Later it became the symbol of newly accepted Christian religion. In this chapter, the predicament of the depiction of the Cross on Khachkar is also examined. During USSR, the connotations of religion have been abandoned as part of adaptation of non-religious Soviet state, however Khachkar is resurrected once more as a token of national identity after the collapse of the Iron Curtains. Notions of belonging, identity, territory are examined for a diaspora driven nation of Armenia, as well as the role of Khachkar in these relationships.

Chapter 2 Geology and Physicality of the Cross-Stone

The bond of Armenians with the mountains of the lands goes back to Biblical story of Noah's Ark, which is said to have landed on Mount Ararat. This chapter looks into the legends and myths surrounding the snowy peaks of Armenia and how these stories have been carved into stone inscriptions, to be passed through generations. Ancient Aramaic tribes resided in the manmade caves of the mountains of the highland. The

first cave wall Khachkars started appearing in these ancient chambers. The importance of the selection of the right stone is also examined here; the land is abundant of volcanic stone called Tuff, which is the sole material for Cross Stone. Nevertheless the commissioner of Khachkar would depart to lengthy journeys into different Tuff quarries, in search for a particular size and shape stone. Volcanic tuff is also considered to be the nation's symbol so that the capital city Yerevan is known as "Pink City" named after the pink variety of Tuff stone.

Chapter 3 Semantics of Khachkar

For a nation that has been caught between competing empires, the identity preservation was an issue of highest priority. It was the "indestructible" nature of stone that was relied upon throughout centuries of wars and fires, which have stripped the country off its' historic cultural heritage. This chapter explores the birth of Khachkar, which was preceded by centuries of rock carvings called petroglyphs. It is argued that the invention of Armenian alphabet was what prevented the country from assimilation. Here the petroglyphs were the carriers of the hieroglyphs and later Khachkar facilitated dissemination of the Armenian language. In the same time, the tools and carving methods had gradually evolved into more complex and sophisticated sets, representing the transformation of the language on the stone. The chapter also expands into the multifaceted phenomena of Khachkar. How does an earth-bound frozen lava turn into an immortal mediator between humans and God? There are numerous purposes for Khachkar initiation, and in this chapter an attempt was made to create broader classifications of the Stone Cross themes. Though each monument is unique and there are no two of them alike, yet all Khachkars are universally considered a temple that gives holiness to an open air. There is ceremonial religious proceedings that transform this stone into a powerful relic, to which people assigned all kinds of miraculous qualities. It is a book, a gravestone, a priest; people confess in front of Khachkar and believe that during the last days of Judgement, their names inscribed on Khachkar will provide their resurrection and fair trial. Khachkar was used in practical circumstances also; it kept records of historic battles and invasions, as well as testified to building of important structures, economic reforms etc.

Chapter 4 Khachkar Digital Archive

Stone monuments are exposed to corroding effects of temperature fluctuations as well as anthropomorphic impact. The focus of this research is a rural development of Shikahogh, where numerous Khachkars are scattered around, unresearched and unknown. This chapter looks into a relatively novel discipline of Experimental Archaeology (EA) as a methodology to study Khachkars. EA follows an established scientific procedure of recreating and re-enacting ancient objects and creative techniques. Particular aspects of Digital archaeology (DA), which is a branch of EA, were followed in this research, in collection of Khachkar data and this chapter gives a thorough introduction of the methods. Within DA framework, a digital archive of Shikahogh Khachkars is initiated, and the specific tools employed for 3D representation and its advantage over other means of visualisation are elaborated upon here. The idea of Digital Archive was a multi-stage process, and during the fieldworks conducted in 2013 and 2015, the initial concepts were designed and tested, eventually evolving into an open source KhachkarLAB. There are various Studios in the country that continue the Cross Stone making tradition, employing a combination of old and new crafting techniques. During the fieldwork, a two week workshop in one of the studios was attended. In 2015 DA

methodologies were applied within 3D scanning of Khachkars, to obtain the three dimensional mesh models of Shikahogh Cross Stones. The scanning process was conducted in the village and most Khachkar data was in need for further re-work, such as reducing the size of massive data collected, fixing the 3d surfaces and producing 2 different types of models of the same Khachkars: 1. a high resolution 3d mesh, located on a different server that can be downloaded and 3D printed, 2. A lower resolution model that can be studied as a real time moving object within the KhachkarLAB website. The website/Digital Archive reiterates the notion of identity and belonging, whilst creating a source that is accessible to diaspora Armenians worldwide as well as enabling the study of relatively little known culture and its stone masonry heritage for international audiences.

Upon completion of my master's thesis where I have obtained a wide spectrum of analogue digital manufacturing skills, and in depth knowledge of hybrid analytical tools and methodologies, I was determined to utilise the multi angular array of carefully formulated frameworks, in constructing this PhD by Design (as it initially stood). The project was a socio- technical study, with the anticipated original contribution in form of a methodology, an inscription of a stone, a combination of application and an intangible values ascribed to the stone, in a potential transformation into a unique work or discovery. What I have tried to avoid in the project is a detailed excursion of Armenian history; in particular the Armenian Genocide, which was profoundly influential in the timeline of Khachkar development in its dark and tragic imprint it had on the whole nation and its art, yet a topic that was incomprehensible to uncover within the scope of this research.

This undertaking was not going to be a solo project; being an architectural researcher, I sought after aid from an organisation to provide me with resources for site survey, collection and archiving of data, providing access to team of specialists, as the theme was to attract a cross of wider professions, from archaeologists to programmers. A collaboration with Luys, a government charity organisation was established and was utilised for the first few years, but following an unstable political environment of the country after the presidential elections, the help from organisation was halted unexpectedly, leaving me with a massive commitment but not enough tools and funding to follow through with the process that was set in motion. After much deliberation, I took a decision therefore to revert from pursuing a PhD into MPhil, acknowledging it will be impossible to complete the project in due time and manner by myself. The initial design outcome was therefore readjusted to reflect the new constraints; instead of attempting to establish a stone workshop in the village, a virtual archive was created (the StoneLAB) and what small data was captured by myself with handheld 3D scanners and other mobile equipment, was turned into a digital archive.

Aims and objectives

The aim of the thesis was to explain the role of Khachkar in formation of the national identity.

In order to do so, the research has brought together the Armenian stone masonry heritage and the Shikahogh village, as a material representation of the territory. It was shown that the discussion of Armenian identity subsequently and inevitably leads to the dialogue between the territory and the stone. In this research stone is used in reference to describing the spoken stone; Khachkar.

While much has been accomplished in the area of understanding material culture and national identity worldwide, there is a lot of uncertainty in these definitions when it comes to Armenia. The notion of identity representation in particular, becomes an ambiguous concept in light of a diaspora driven nation, where the identity is not necessarily embedded in the locality or within territorial boundaries. Hence Khachkar will be hypothesized as the ubiquitous representative of Armenian consciousness.

The practical “Stone lab” component explores the methodological approach of experimental archaeology and digital reconstruction, providing tools that have dissected the layers of Khachkar in order to discover and re-discover the notions of identity and belonging.

The modern interpretations of traditional Khachkar making are still practiced in the country, as well as the physical manifestations of these techniques in forms of the manmade caves and Khachkars, thus these have provided basis for the studies. The development site Shikahogh is vastly under-researched; therefore all information is built upon the fieldworks.

Research questions

-What is the role of Khachkar in formation of Armenian national identity?

In the Armenian world, most judgement of the culture has been based on religious stone architecture and stone craft of Khachkars, therefore it is said that Khachkar distils the national identity¹. However Khachkar is rooted in the land, it is a localised symbol, does it still represent a nation where more than 72% of population is scattered around the world?

-What are the stories behind the Shikahogh unknown Khachkars and how can we discover and interpret them?

While pursuing these questions, the practical outcomes of Khachkar making re-enactment have been analysed in conjunction with the historic context of the village.

-What is the evolutionary path that the Khachkar making has undergone? What are the elements that have been lost in translation or have been added as a result of technological advancements?

Experimental archaeology, explored within the stone lab, aided in re-discovering the ancient Khachkar making process and contrasting it with the modern techniques.

-Can digital mediums assist in collecting, restoring and conserving Khachkar heritage?

Exposed to the weathering, Shikahogh Khachkars inscriptions are slowly disappearing. This research looks into routes and methods of digital archaeology that provide means to decode and preserve Khachkars and Khachkar inscriptions.

¹ Levon Abrahamyan and Nancy Sweezy, *Armenian Folk Arts, Culture and Identity* (USA: Indiana University Press, 2001), 38.

Chapter 1 Historic Narrative of Khachkar

THREE TIMEFRAMES

It is said that Khachkar (fig. 3) is one of the five fundamental elements (the world as a garden, the sacred mountain, the temple, the book and Khachkar) upon which Armenian identity is distilled.² It can be suggested that the understanding of the culture of any nation, requires the knowledge about the remains and signs of their everyday life. In the Armenian world, these minor signs have been vastly annihilated with the passage of time. Therefore in practice, all judgement of Armenian culture has so far conventionally been based exclusively on religious architecture and stone craft of Khachkars.³

The rural dwelling of Shikahogh is the focus of this research, as a symbolic representation of Armenian territory. The local narrative of place identity is depicted through this small ex-Soviet village, and is constructed through direct action and participation. The past is a key chronicle here and the rural development such as one in Shikahogh village can be seen as a discourse through which struggles can be fought for that identity against the territory and exogenous change.⁴



Figure 3 Khachkars of Medieval cemetery of Noratus, near Lake Sevan, Gegharkunik, Armenia. It is said that invading Persian troops fled when legendary King Gegham dressed these Khachkars as warriors. Photo by Lilit Mnatsakanyan. 2013.

² Levon Abrahamyan and Nancy Sweezy, *Armenian Folk Arts, Culture and Identity* (USA: Indiana University Press, 2001), 38.

³ Adriano A. Novello, *Armenians: 2000 years of art and architecture* (France, 1995), 265.

⁴ Cliff Hague and Paul Jenkins, *Place identity, participation and planning* (London: Routledge, 2005), 152.

In this chapter, I will analyse these changes through three time scapes; the antiquity, the soviet and the modern since the assertion of national identities seems to be historically specific, as nations seek to reassert lost identities from the past.⁵ The village and Khachkars examined through a much wider “ancient” timeframe will assume that technological advancements have seen a slower, homogeneous and systematic flow of development. Here the evolution of the stone tools and methodologies will be studied from petroglyphs to Khachkars and how the identity is shaped as a dynamic concept that changes with these changing contexts.⁶ This period is also marked with extreme scarcity of Shikahogh genealogy, thus amplifying the potential importance of stone inscriptions deciphering. Khachkar inscriptions are representations that produce meanings through which one can presumably make sense of Shikahogh ancestors’ experiences and of who they were.⁷ The archaeological record of these Khachkars is constituted of the fossilized results of the Armenian prehistoric human’s behaviour and to decipher those inscriptions would mean to recapture the thoughts that behaviour expressed. There is a clear hierarchy: thought is primary, behaviour is secondary and the material expression is at the bottom of the chain.⁸ To reconstruct and re-enact this chain, it must be worked back and up from the material remains of the cave wall petroglyphs and the Shikahogh Khachkars. In this chapter, I will present the historic stages of Khachkar evolution, referring to the cross stones from the various centuries. To expand material culture theory of the antiquity timeframe, I will review the relationship between mind and matter, between agent and artefact, which in the case of this research will be between the prehistoric cave dweller and the petroglyphs.⁹

1. THE SACRED GARDEN

Being at the crossroad of the trade routes of East with Europe, Armenia continued to carry lively trades with both parties; Mediterranean port and Black Sea on one hand and China, India and Persia on the other. Under the Artacesid and later on Arsacids dynasties, economic life in Armenia continued to thrive over 63 to 428 years BC. It was during this period that famous cities of Dvin, Vagharshapat, Armavir, Artashat and many others were built and prospered on the main trade routes. Armenian towns exported to distant markets their produce in cloth, pottery, wool, wine, cereals, and fine horses as well as precious stones and metals, copper, iron, timber and much more. The country also famed for their merchants and craftsmen, who acquainted themselves with Eastern and Western culture as a result of the trade. By becoming familiar with Byzantine, Greek, Roman, Arab, Indian, Chinese and Persian art and economic achievements, Armenians turn the knowledge to use in their own country.

Within the framework of a slave-owning society, the feudal system came into existence during the period of Arsacids. By the fourth century, the whole of Ararat valley, one of most fertile areas in Armenia, was owned by the king, since the peasants who had held land, were reduced to a dependent status like the slaves settled on the land and an imposition and establishment of serfdom took place, accompanied by violence and unrest. Too little remains of civil urban settlements, which were quite extensive, such as the cosmopolitan city of Ani (fig. 4) – preserved to a degree to construct urbanistic or architectural hypotheses. And help is not supplied in this endeavour by the large Armenian district in Iran and Syria (New Julfa of Isfahan, Damascus, Aleppo) or extensively transformed areas, such as Maku – considerable in size, but all too often tied to specific local, chronological recent traditions. More meaningful are the few abandoned

⁵ Woodward Kathryn, *Identity and difference* (London: Sage Publications, 1997), 10.

⁶ Cliff Hague and Paul Jenkins, *Place identity, participation and planning* (London: Routledge, 2005), 12.

⁷ Kathryn Woodward, *Identity and difference* (London: Sage Publications, 1997), 14.

⁸ Carl Knappett, *Thinking through material culture: an interdisciplinary perspective* (USA: University of Pennsylvania Press, 2005), 4.

country villages and small residential centres that still exist in remote areas (the ruins of Van, and settlements in the valley of the Tghmut). The houses of these are generally closely packed together, stepped on the slopes so that the flat roofs of the houses lower levels could be exploited as farmyards and terraces by the inhabitants of the houses above. They are one-floor buildings, often part-interred (due to the continental climate of the plateau) and had one or more rooms leading off an ample main room, often four central wooden supports and roofing in beams laid one over the other to form a kind of pseudo-vault, or a sort of polygonal, intertwined scaffolding that gradually rose and closed in at the centre to serve the only source of light and air and to let the smoke out from the fireplace, which was dug into the beaten earth floor (tonir). This structure, called *Hazarashen* meaning 'with the thousand beams' in Armenian, is very common in the whole sub-Caucasian area and is found as far away as Yemen (the Sana mosque), Afghanistan and India. There are significant similarities to be found between Hazarashen structures and stone roofs made in the same way over tombs from the Hellenistic period in Anatolia. Xenophon and Vitruvius mention this system that was used until very recently (even the Seljuk world occasionally adopted this kind of roofing, for instance in the prayer room of the Ulu Cami of Erzurum).



Figure 4 Man-made cave dwellings in Ancient city of Ani. Photo by Argg Yann.
<http://www.panoramio.com/photo/109569133>. 1999.

⁹ Knappett, *Ibid*, 3.

The Hazarashen type of roofing was used sporadically in certain monumental buildings and also in certain number of village churches in rural areas. Inside the houses one often finds decorative themes engraved on carved wood, beams of structural portions and on everyday articles. Even though Armenia was subject to a series of foreign rulers, Armenian national thought and consciousness developed almost without interruption between the 5th and 13th centuries. This period is now considered to be the classical period of Armenian culture. During this time, Armenians created fine towns and gardens, bridges, churches, thousands of books, miniature paintings, rugs, and cross-stone monuments. Such a flowering in the midst of the unsteady conditions of the East shaped their view of themselves and the world and defined many elements of Armenian culture.

Nevertheless, the country was once more defeated in 387 AD, where the western part passed into possession of the Eastern Roman Empire, while the eastern section came under Persian rule. As a result, Armenian trade fell away under foreign domination and the economic life of the country suffered greatly. The powers of the castles and great landed estates were extended and the role of the towns diminished. During this period, Armenians succeeded in resisting the assimilation policies of both Byzantine and Persian empires, despite their effort to turn Armenia into mere province, by increasing the powers of Nakhharar (magnates) both economically and politically.¹⁰

Overall political control of Armenia continued to be shared between Persia and Byzantium until the middle of the 7th century. For the next two centuries, Arab rule largely disrupted the economic and cultural development of the whole region, and Arab settlements ended the ethnic homogeneity of Armenia. When the Arabian caliphate weakened in the 9th century, the Armenian kingdom of the Bagratuni (AD 884-1045) was formed in Greater Armenia, with a capital at Ani, surrounded by several outlying independent principalities.

This kingdom and its principalities ultimately fell victim to the Byzantine policy of scattering its enemies, as Armenians were removed from whole regions and resettled in Syria and Asia Minor, especially in Cilicia (fig. 5). This left the Bagratuni kingdom powerless to resist the subsequent invasions of the Seljuk Turks, who moved across their lands from the east toward Byzantium. At the battle of Manazkert in 1071, the Turks not only defeated the Byzantine forces but also took the Emperor Romanos IV a prisoner. Great number of Armenians oppressed by the Seljuks moved south to join those who had been moved earlier to Cilicia, and together they created the Armenian State of Cilicia (AD 1080-1375). Over the course of these three hundred years, Armenians in Cilicia established close connections with the Crusaders, thus forming the first direct contact with Europe.

While Armenian Cilicia was flourishing on the Mediterranean Sea, another change was taking place to the north, in Greater Armenia. In the late 12th and early 13th centuries, the Bagratuni kings of Georgia, together with their military leaders, the Armenian Zakarian brothers, managed to liberate northeastern Armenia from the Seljuk Turks, and the resulting semi-autonomous principalities enjoyed a small renaissance under Georgian sovereignty. Despite the flourishing of these two areas, the region as a whole was open and vulnerable to invasion. Nomads from the Mongolian steppes or the swampy banks of the Yenisey River in Siberia, who were forever seeking new pastures for their sheep and horses, could at any time, and often did, sweep through ancient, well-tended towns of the Near East, inevitably trampling them to dust. While urban centers and trade were developing and maturing in Europe during this period, similar development in the Near East was limited by its proximity to the steppes and grazing lands to its east.

¹⁰ Gink Karoly, Gombos Karoly. *Armenia: Landscape and Architecture*. (Hungary: Corvina Press, 1974) 159.



Figure 5 Historic Cilicia on Mount Nemrut. Here lies the tomb of King Antiochus I Theos of Kommagene who called himself a descendant of Alexander the Great and Darius I, whose family roots come from Armenian Yervanduni/Orontes dynasty Source: <http://nvtour.am/?op=tours/3&l=en>.

Beginning in the 13th century and continuing until early in the 16th century, first the Mongols, then a steady stream of Turkic tribes swept across the Near East, changing the political, cultural, and ethnic character of Armenia completely. All settled people yielded before this wave of humanity and animals; some were forced to migrate elsewhere, others were simply annihilated. Armenian and neighboring lands were alternately battlefields or sheep pastures. In 1453, what remained of Byzantium yielded to the Ottoman Turks, who were pressing toward Europe, and this Eastern outpost of Christianity disappeared from history. In 1502, the Sephevia State was established in Persia. The whole Near East was now under the control of these two regional powers: Turkish and Persian. Armenia stagnated in subordination to them both for another three centuries, barely sustained by the aging relics of its previous enlightened culture.

2. STORY OF THE CROSS

In the middle of the 5th century AD, a major popular revolt broke out, led by Vardan Mamikonian, who perished in the great battle of Avarayr in 451 (fig. 6) and later his successor, his nephew Vagan Mamikonian took his place. Nevertheless, this heroic struggle for independence, although joined by all those living in the Caucasus region, has failed dramatically; giving rise to one of the most powerful myths of defeat, that has manifested in figure of the Armenian tragic hero Vardan Mamikonian, who fell at the hands of Sasanid's. One of the most popular vehicles for the expression of the ambivalence towards the institutions that characterized the Golden Age is the figure of the Traitor. Curiously, this is one of the most common characters in the national defeat myth; The Armenian tragic hero Vardan Mamikonian has his Vasag Sewny. The traitor serves to personify, by means of a straightforward narrative, the flaws in the social structure of the heroic age that prevented it from being a true and lasting vehicle for national mobilization.¹¹



Figure 6 Grigor Khanjyan, *Vardanaq* (depicting the Battle of Avarayr), Oil on Canvas 1983 The text on top is a famous quote by Saint Vardapet Eghishē; "Death, unanticipated, is death; death, anticipated, is immortality.".. St. Echmiacin Church of Armenia.

¹¹ Steven Mock. *Symbols of defeat in the construction of national identity* (Cambridge: Cambridge University press, 2012), 215.

The Avarayr battle defeat provided a model of a hero who has made such sacrifices, while the fact that the nation continued to live on in spite of the defeat to commemorate the heroic act serves as concrete proof that those who altruistically choose suffering or death on behalf of the nation do not do so in vain. Because a common willingness on the part of individuals to sacrifice for the national society is precisely what makes the imagined community real, the willingness of those mythical heroes to sacrifice even in the face of hopelessness is depicted as precisely what enabled the community to persevere in the face of defeat, just as continued such commitment by the nation will enable it to survive adversity today. The individual, even when not called on to make personal sacrifices, must therefore identify on an ongoing basis with the sacrifices of those who came before – much as the Christian identifies with the suffering of Christ,¹² formally acknowledging those sufferings as having been undertaken on his or her behalf – symbolically indicating that his or her own sense of ultimate meaning derives from the same source from which the heroes, willingly sacrificed, thus binding the community across space and time through a common signifier collectively acknowledged through a system of public patriotic ritual, symbol, and myth.

These are the allegories found on Khachkars from 4th-5th century, however at that time the question still remained of how to comprehensibly present to followers the idea of salvation through the Lord's Crucifixion. The depiction of the crucifixion of Christ, presented evident problems. The crucified God was a complex - yet powerful - subject to show a new convert iconographically. Understanding the psychology of their people, the priests realized that new believers would not be inspired by the image of a god being tortured on a cross and, wisely, did not depict the Crucifixion on Khachkars, or anywhere else, until many centuries later.

The simple, unadorned cross, made of various materials, had arrived in the region early in the spread of the new faith as the fundamental symbol of Christianity, and it continued to be used. However, it was too abstract to convey the salvation meaning of His death and resurrection to a people new to the faith. Neophyte Christians were indifferent to the cross at first, as can be gathered from their reaction when Nune (a companion of St. Hripsime) erected one in Georgia: "When people climbed the hill and saw that the cross was made of hewn wood by unskilled hands, many of them disdained it, saying that their forests are full of such wood, and went away".

In fact, the image of Christ on the cross seems to have appeared for the first time in Armenian art in 11th century miniature paintings and 13th century cross-stone carvings. In the early Christian period in Armenia, Syria, and Byzantium, instead of the Crucifixion, the scene of Abraham sacrificing the lamb appeared most commonly on the stele. Thus early Christian iconography avoided depicting the crucifixion, replacing it either with Old Testament allegories of salvation (the sacrifice of Abraham, Daniel in the lions' den, the Men in the furnace, etc.) or with the cross showing the face of Christ or his face with a cross-shaped halo. Slowly, the Church found a way to draw people to the cross; that way, quite simply, involved incorporating familiar symbols of Armenian culture into the new world-view. Priests began to speak of the cross as an all-bearing tree sheltering the whole earth or as a wine-press on which divine grapes were pressed. Craftsmen carved those images in stone, and illustrators painted them to illustrate books. Similar to the old legends in which relics had performed heroic deeds and then found refuge inside a rock, tales were now told in which the cross acted heroically before merging into the stone crosses – a story that may provide clues to the origin of the Khachkars.

To make the fundamental idea of the crucifixion usable among the population, the Armenian Church did not choose the figure (of Christ) but the sign (of the cross). For an accessible explanation of the eschatological significance of the crucifixion, following the example of the Church Fathers the doctors of the Armenian Church made ample use of allegories known to the peasant/rural class. Thus, for example just

¹² Mock, *ibid*, 277.

as the grapes pressed in autumn are transformed into immortal juice so too Christ on the cross shed his blood for the salvation of sinning mankind. Just as the birds and animals enjoy the grapes, so to the rightful faithful benefit from following the example of the crucifixion of Christ in expectation of celestial paradise. Or, again, the teaching of Christ is itself the vine, where Christ is similar to the bunch of grapes, and the more the worshipper learns this lesson, the straighter his path to paradise.

Most of the architraves of churches, the friezes of portals and windows the bas-reliefs on ossuaries and the compositional elements of the open-air obelisks present the theme of the paradisiacal vine. The sculptural group of Zvartnots, for example, radically follows these theological concepts and presents the church as a celestial vine/paradise. Under the influence of this mentality, the compositions of the first crosses acquired a clear iconography inspired by the motif of the vine and grape; the cross is shown as new tree of life, which has either grown within the vine or gives rise to the vine, or even bears Christ on it, where the branches symbolize his teachings and followers. This iconography of the vine found a perfect manifestation in the church of Aghtamar. In this church dedicated to the Holy Cross, the attempt to unify the national element and the universal nature of Christianity becomes the founding characteristic, represented by the example of Artzruni dynasty, the church's patron. The patriarchs and martyrs of this family, their acts of courage and Christian example are depicted in order alongside biblical figures and motifs. Moreover, in this case, in the frieze of sinuous vine tendrils the Armenian world is shown as a garden or vineyard, and the Armenian vine as invigorating the spread of this vineyard. Thus the cross is arguably the most familiar symbol of Christianity, and its iconography is crucial and culture-entrenched in medieval Armenia. Thousands of Khachkars, pervade the mountainous conscience of the world's oldest Christian nation, providing a rare glimpse into the art of spiritual expression. The medieval monk Thomas à Kempis, on the subject of the Cross, once remarked, 'In the Cross is salvation; in the Cross is life; in the Cross is protection against our enemies; in the Cross is infusion of heavenly sweetness; in the Cross is strength of mind; in the Cross is joy of spirit; in the Cross is excellence of virtue; in the Cross is perfection of holiness...'

With all these attributions, it is little wonder then that the cross could serve as an upholder of Armenian national identity and union. As stated, starting from the 4th century, the conversion of Armenians, and the instatement of Christianity (and by extension, the Armenian Apostolic Church) as a state religion in AD 301 issued a new era of national consciousness. This burgeoning perception of Armenia as an entity distinct from the surrounding Zoroastrians was consolidated by several factors of the time: the invention of the Armenian alphabet, the effacement of the former pagan temples, and Gregory the Illuminator's evangelical reign as the first head of the Armenian Church. The latter (now Armenia's patron saint) particularly catalysed the movement, and in an effort to distinguish and preserve the Armenian identity, ordered the creation of the first Khachkar.

2.1 FAITH: THE ILLUMINATORS LANTERN

In 301 AD Armenia adopted Christianity as the state religion; St Gregory the Illuminator and king Tiridates the 3rd advocated the new faith to counteract the neighbouring Persian Sassanid empire's doctrines of fire worship. This was when the church took into its hands the reinforcement of the ideological and economic bases of the medieval state, having developed into the most powerful organisation in the country. It was in this century, too, that the nascent Armenian Church separated from its parent Byzantine Church over a fundamental difference concerning the nature of Christ. (The 4th Ecumenical Council of Chalcedon in AD

451 had adopted dyophysitism, a creed teaching that two perfectly distinct natures, divine and human, existed together in the person of Christ; the Armenian Church maintained its monophysitic belief that the two natures of Christ were indistinguishably one.) Now a national institution, the Armenian Church increasingly absorbed elements of traditional pagan and folk beliefs of the local population into its dogma and ritual. From this time on, the Church spoke for the Armenian community and accepted responsibility for preserving its identity.

When Gregory the Illuminator envisioned the Khachkar, he believed it had the power to impart holiness into the air by sanctifying the immediate vicinity. Because religious and secular agendas were intrinsically at odds, the Cross, by virtue of the Khachkar, was seen as a mediator between the Christian and the pagan. In turn, it began to assume various ecclesial functions— as gravestone, hallowed effigy, intervening spirit, talisman, and commemorative shrine of events, among others. Thus it was only fitting that the Khachkar turned into a uniquely Armenian fixture in graveyards, monasteries, cathedrals, residences, roadsides, and eventually, everywhere. During Tigranes 2, Armenian cities were built on the Hellenistic model (fig. 7); Greek craftsmen and merchants were encouraged to settle in them and the royal court was the centre of Hellenism. Afterwards, during the sanguinary wars with Rome, the state under the Tigranes 2 suffered considerable losses, but the order was restored during Tigranes 3, who managed to retain under his control significant portion of the country. The country flourished as one of the greatest Hellenistic states of ancient times and the golden age of Armenia lasted to the end of the 4th century AD.

In this struggle of independence and defence of the national culture, a significant role was played by the invention of the Armenian script by Mesrop Mashtoc in 396 AD. Bishop of Syria, Daniel, had previously been attempting to devise an Armenian scripts but his experiments were futile. It was the 36 letter alphabet devised by the scholarly monk Mashtoc that finally met the linguistic needs of the people. The previously used Greek and Aramaic alphabets were replaced by the distinctive script that Armenian people use today, with only minor modifications. Afterwards, to encourage the spread of literacy, Armenian language schools were founded, where distinguished translators were trained to work on large number of Syrian, Greek, Persian and other translations. A series of eminent translators, historians, writers, philosophers, mathematicians, artists and geographers were followed after Mashtoc, such as Koryun, Lazar of Pharp, Elisaeus, Agathangelus and Faustus of Byzantium. Perhaps the most famous of all was the so called ‘Herodotus of the Middle East’, fifth century historian Moses of Chorene, since his major work “*History of Armenia*” provided significant evidence about his own homeland as well as neighbouring countries. A contemporary of Moses was the Invincible David, an outstanding philosopher, who has translated and discussed many theories of knowledge and concepts of the Greek philosophers in his colossal piece called “*Philosophical determinations*”.

Thus, religion formed an essential, decisive feature in the Armenian lifestyle and, consequently, in the modes of expression of Armenians. And the invention of the Armenian script, enabling the replacement of Aramaic and Greek alphabets used prior, played a crucial role in defence and preservation of the national culture¹³. The obelisks of Khachkars, incorporating these new scripts, with plant reliefs, geometrical patterns and religious figures had monumental impact with the end of Arab domination and the reaffirmation of national identity, via diffusion of true Khachkar as a symbol of national perseverance. Khachkars, being perceived as ‘multifunctional monuments’,¹⁴ not only represent the traditional stone masonry heritage, but also narrate the story of a nation ‘that constantly reaffirmed and defended their identity through their faith’.¹⁵

¹³ Gink Karoly, Gombos Karoly. *Armenia: Landscape and Architecture*. (Hungary: Corvina Press, 1974), 11.

¹⁴ Levon Abrahamyan. *Armenian identity in a changing world* (California: Mazda Publishers, 2006), 299.

¹⁵ Adriano A. Novello, *Armenians: 2000 years of art and architecture* (France, 1995), 272.



Figure 7 the Temple of Garni, is a classical Hellenistic temple in Garni, Armenia. It was built around 77 AD, collapsed in a 1679 earthquake and later was reconstructed in the 1970s. Garni is the only known Greco-Roman colonnaded temple in Armenia.

On most Khachkars, the cross is balanced triumphantly above a triangle (often stepped), representing the hill of Calvary, or above a pagan winged rosette in the lower profane space, the presence of which may be an affirmation of the victory of Christianity over paganism.¹⁶ Identity may be defined as the collective aspect of the set of characteristics by which something or someone is recognizable or known,¹⁷ thus with Armenians those characteristics were the newly discovered alphabet and the newly embraced religion of Christianity. However, the cross was not always a well esteemed symbol; it once represented the basest form of execution, reserved for the disgraceful. The resurrection of Jesus however, and the persecution of the early Armenian Christians, transformed the cross into an image of soteriological victory: an emblem of triumph over the mortal vale.

3. IRON CURTAINS COLLAPSE

While Medieval Armenian culture was vastly influenced by Christianity, with the church as the dominant authority, a dramatic shift is seen after 1922, when the country joined the USSR. In Armenian Soviet Socialist Republic a community centre becomes the cornerstone, through which the communist ideology was disseminated. The era signifies 70 years of Communist regime, during which both urban and rural planning projects have seen radical changes in both stylistic and in functional solutions (fig. 8). The utilisation of the stone masonry techniques were modified to abandon the ornamental connotations of individuality, which was the core philosophy of Khachkar- the idiosyncratic mediator between an individual human being and God. The establishment of the Soviet realm and the cooperative economy, have drastically changed the very foundations of the rural planning, architecture and craftsmanship, including Khachkar making.

With a prevailing migrational drift coming from the east through their lands, Armenians had begun early to set their minds and dreams toward Catholic Europe and the West. By the 12th century, a legend had grown up around the 4th-century prediction of the Catholicos (the head of the Armenian Church) Nerses the Great, which said that Armenians would lose their kingdom and undergo severe torture by infidels but would find salvation from the West. Over the centuries, the infidels in this legend would change from Persians to Arabs to Mongols to Turks to suit the changing situation. Likewise, the rescuers would change from Lacins (meaning Europeans, generally) to Franks (meaning Catholics, and later the French) to Russians. The faith in the idea that salvation would come from the Christian West remained constant, and beginning in the 16th century, Armenia began to send delegates and applications for succor to Europe and Russia.

During USSR, the old crafting techniques still applied but in a purely technical manner, with no regards towards the meaningful aspect of the ornaments, which is the essence of Khachkar.¹⁸ The soviet period is marked by the emergence of a new mutated culture, one that terminated the process of encompassing the social production and reproduction of meaning in terms of religion and religious architecture. The previously established religious culture, that represents a coherent system of values, norms, and habits that through repetition engendered a sense of unified belonging, individually and collectively, over time, was

¹⁶ Abrahamyan Levon, Nancy Sweezy. *Armenian Folk Arts, Culture and Identity*. (USA: Indiana University Press, 2001), 64.

¹⁷ Shelley Hales and Tamar Hodos, *Material culture and social identities in the ancient world*. (NY: Cambridge University Press, 2010), 3.

¹⁸ Sargis Mnatsakanyan, *Armenian Rural Architecture* (Yerevan: Arm SSR publishers, 1956), 227.

abandoned.¹⁹ During the USSR realm, the church as an essential component of Armenian identity assumed a secondary role while the community centre became the cornerstone for Soviet propaganda.²⁰

Under the soviet command system, each republic's planning unit had set import needs and export capabilities which were sent on to Gosplan USSR, the central planning authority. Gosplan then helped determine the volume of production and trade between republics. No Soviet republic was self-sufficient, and this was quite deliberate. The Soviet Union expressly developed in such a way that the component republics would be dependent on each other and on Russia in particular. The non-Slavic republics had only a narrow range of industry, or were mainly agricultural. The artificial nature of trade relations extended to prices. No actual funds were exchanged between republics, and prices were set purely for accounting purposes. Gosplan, which had a monopoly on trading information, worked for a balance of imports and exports in every republic.



Figure 8 *Dvin Hotel*, Yerevan, Armenia, built in 1979, Architects: F.S. Akopyan, A.S. Alexanyan, E.A. Safaryan. This building is a classic example of modern Soviet architecture that favoured minimalist pure forms over ornamental facades.

¹⁹ Shelley Hales and Tamar Hodos, *Material culture and social identities in the ancient world*. (NY: Cambridge University Press, 2010), 3.

²⁰ Sargis Mnatsakanyan, *Armenian Rural Architecture* (Yerevan: Arm SSR publishers, 1956), 225.

Lenin's dialectical formula for taming nationalism in post-revolutionary situation was a reflection of his perception of nationalism as the outgrowth of past discrimination. He was well aware of the strong nationalist sentiments in Armenian and other minority peoples, but he felt that this was due to their historic second-class treatment within Tsarist Russia, an empire to which he referred as 'the prison of nations'. Lenin was convinced that this legacy of hostility and distrust must be expurgated by a period of strictest national equality. And thus the dialectic: permitting, indeed encouraging for a time the national language and other overt characteristics of the various national groups would lead the groups toward fusion. The most prominent national phenomenon of the 1920s was the movement of 'korenizatsiia',²¹ the rooting of society in national forms. This involved the encouragement of the use of national languages in newspapers, literature and schools, as well as in courts, soviets, and in the entire gamut of the citizen's intercourse with the regime. The aim of this promotion of language was to bring the regime closer to those masses of people who had been subjected to the revolution, but are not active in it, remaining cocooned in their traditional social environment, alien and often hostile to the values of secular, revolutionary socialism.

In 1930, Stalin would acknowledge that to the unenlightened it might appear self-contradictory the "we who are in favour of the fusion of national cultures in future into one common culture (both in form and content), with a single, common language, are at the same time in favour of the blossoming of national culture at the present time;" but he added, "Whoever has failed to understand this dialectical character of historical processes is lost to Marxism".²²

There was a wide discrepancy between official declarations concerning the attainment of national equality within the Soviet Union and the degree to which economic, cultural and political equality were in fact achieved, or even pursued. Under hierarchical ethno-administrative structure that was practised in USSR, the cultural status of any particular ethnic group was connected with its political status, resulting in unequal prospects for any further development.²³ Historians from peoples blessed with high administrative status have concentrated on mythical justification for maintaining that position; historians from peoples lower down the hierarchy tried to provide arguments to advance their status. At the end of Brezhnev period there were already numerous warning signs of national tensions in the USSR. A number of patterns may be discerned. The first is the pressure for emigration. This affected not only Jews and the Germans, two non-territorial minorities ostensibly leaving the USSR for their historic homelands, but also Armenians who were leaving the Armenian Republic for a diaspora. Whatever their other reasons for leaving the USSR, disappointment with national and cultural conditions was prominent in the expressions of the emigrants.

The pre-1978 constitution of Armenia had declared the indigenous language to be the official state language of the republic. However the new constitutions, which were drafted in 1978 to reflect the attainment of 'developed socialism',²⁴ replaced the formerly pre-eminent status of the local language by a phrase holding out only 'the possibility of using the native language'. The implications of this change did not go unheeded. Unanticipated protest demonstrations in the Armenian capital induced the authorities to order the most unusual retreat. The old phraseology was reinserted into the constitution, yet the long term intent of the authorities to upgrade Russian relative to the native Armenian languages had been made clear. Once more the national identity preservation was at stake.

²¹ Alexander Motyl. *The Post-Soviet nations: perspectives on the demise of the USSR* (Chichester: Columbia University Press, 1992), 196.

²² Ibid, 31.

²³ Graham Smith. *Nation-building in the post-Soviet borderlands: the politics of national identities* (Cambridge: Cambridge University Press, 1998), 49.

²⁴ Alexander Motyl. *The Post-Soviet nations: perspectives on the demise of the USSR* (Chichester: Columbia University Press, 1992), 37.

Thus, prior to USSR collapse, much of the nationalist activity in Armenia focused on perceived threats to the church, language and tradition. Thus by 1991 the Soviet Union had dissolved and the national uprising had a role to play in the turn of events. The irony of nationalist resurgence in the USSR is that, according to Marxist – Leninist ideology, the solution to the ‘national question’²⁵ was supposed to be the most important and enduring contribution of the establishment of a socialist order. There were many different roots of the nationalist resurgence in the USSR and it was a consequence of a series of specific shortcomings of the regime. The economic theory behind Soviet- style socialism made three key assumptions. First, it was assumed that centrally organized, rationally managed economy could be designed to satisfy the human needs. Second, it was assumed that individual rewards could be disassociated from social contribution. And third, it was assumed that the transformation of virtually all private property into public, commonly held property, would eliminate the psychology of human acquisitiveness. On all three counts, these assumptions proved unwarranted.

Afterward the USSR collapse, Armenia was fully recognised by the international community and within four months of the dissolution of Soviet Union, it had been accepted as a member of the United Nations, the International Monetary Fund, and the Council for Security and Co-operation in Europe. The United States and Britain, along with European and Asian countries, opened embassies in Yerevan.

During the 90s, in Armenia there were hesitant moves towards market reform. Although the republic had won political independence, the control over economic policy was limited. Because it shared a past and a currency – the ruble – Armenia felt the reverberation of upheaval in Russia. Gradually people began to reel under annual rates of inflation that had passed the three-digit mark. A fistful of dollars, gained through assiduous black-market trading, helped many Armenians through the cold winter under blockade and an annual rate of inflation believed to have exceeded 2000 per cent.

In 1991, after the system had disintegrated beyond repair, the individual states of USSR had to reconstruct their planning and trade data so that they could develop independently. Instead of dealing with just one central authority, they were forced into bilateral negotiations with as many as fourteen other newly independent states.²⁶ In the post-Soviet period Transcaucasia has been especially prone to violent inter-ethnic conflicts, as communities has sought to redefine their relations with neighbouring ‘others’ in localities characterized by a mosaic of interwoven communities whose understanding of sovereign space did not sit easily with complex realities of ethnic geography. For example the large scale war fought between Armenia and Azerbaijan over the enclave of Nagorno-Karabakh.²⁷

However, after the USSR collapse, leading to re-evaluation of socio-political infrastructures, as well as the architectural and arts and crafts heritage re-establishment, a new concept of Armenian-ness has emerged. This in turn gave rise to the modern interpretation of once more resurrected Khachkar that has turned into a mere memorial stone for WW2 victims during the Soviet SSR. Contemporary ideas of Khachkars are represented by a new generation of stone artists and Khachkar makers that have been transformed into unique interpreters of the stone monuments (fig. 9). Traditional Khachkar workshops also remained, where the artist recreate the classic conception of Khachkar. They do so often by simply replicating a well-known ancient Khachkar. On the other hand, there are a group of artist that try to liberate Khachkar from the depths of its darker past into an innovative future. Their efforts were often meet with criticism for degrading the classical form of Khachkar and even turning it into an ‘anti-Khachkar’.

²⁵ Alexander Motyl. *The Post-Soviet nations: perspectives on the demise of the USSR* (Chichester: Columbia University Press, 1992), 7.

²⁶ Suzanne Goldenberg. *Pride of small nations: the Caucasus and post-Soviet disorder* (London: Zed, 1994), 72.

²⁷ Graham Smith. *Nation-building in the post-Soviet borderlands: the politics of national identities* (Cambridge: Cambridge University Press, 1998), 48.



Figure 9 *Modern Khachkars* by Ruben Nalbandyan. 2 metre high sculptures area shaped to resemble the letters of Armenian alphabet. These are located in gardens of Oshakan Church and carved from Tuff. Collage by Lilit Mnatsakanyan. 2015.

TERRITORY: ARMENIA IN THE CROSSROADS

The research revolves around Shikahogh village in Armenia (fig. 10), the strategic location of which is rather significant; here both borders with the neighbouring Turkey and Azerbaijan are shut and it stands as a constant reminder of the fragility of the country. And yet what exactly it means, to speak of Armenia? How does one put a precise label on this unique setting, which is simultaneously open and closed, elusive yet definable? It is arguable whether there is a satisfactory answer to the question by merely indicating to the physical position of a territory of Armenia. The basic difference between the concept of land as purely geographical entity and the more complex concept of land as total environment depends on the forms of life, humans in particular, that inhabit the land and leave traces of their experiences. The feature of the geographical territory remain practically constant in time, except from generally very slow periods of change, while the living environment changes and mutates much more obviously.

To understand the culture of people, or civilization, its history and the traces of its existence, one cannot consider the two aspects of the land – natural and man-made- separately and objectively, even though this would be the best and is, in fact, probably the most common way of doing it. Relations between forms of life and the land and, more particularly, between man and the land are extremely complex, especially if man's deeds and presence are seen from the twofold standpoint of both his material and spiritual requirements. If it was to be generalized, it may be defined as a double series of exchanges; on one hand the land conditions humans and their lifestyles; and on the other, man tends to expand his skills as he transforms the land in which he lives.



Figure 10 *Shikahogh Village*. Armenia. Surrounded by mountains and hills, Shikahogh is one of the five post-Soviet villages that are isolated due to lack of direct transportation routes. Image by Lilit Mnatsakanyan. 2014.

Undoubtedly, the features of the land – its climate, weather, elevation, plant life, rare materials and natural resources – do force the life that subsists upon it toward certain choices, decisive ones in ‘geographical territories’²⁸ with very marked features such as Armenia.

As a crossroad connecting Europe and Asia, Armenia was relentlessly caught between empires, mainly Persian, Ottoman and Russian, in a struggle for its survival and national identity preservation. This deeply rooted land consciousness bears strong correlation with the stone. The cultural rituals, the folklore and historic events were recorded and conserved through the stone inscriptions of Petroglyphs and Khachkars. So did the language; modern Armenian alphabet derives from the Petroglyphic hieroglyphs (from around 10000BC).

In the early 19th century, Russia's policies led the country into several wars against Turkey and Persia that brought a small part of historic Armenia out of Persian and Ottoman control and into that of Russia. A portion of this small part would become the Republic of Armenia, which gained its independence in 1918, joined the Soviet Union in 1922, and declared its independence again in 1990. It is tragedy of the Caucasus that nationalism is inseparable from territory.²⁹

The larger part of the Armenian population and land that remained within the domain of Ottoman Turkey would meet with a very different fate. During World War I, when fighting with the Germans against other Western nations, Turkey used the notion that Armenians were a hostile force in their midst as an excuse to slaughter some 1.5 million Armenians in their homes and on their way to exile in Syria between 1915 and 1916. In this genocide, the Turks completely cleared Armenians from the largest part of historic Armenia,

²⁸ Adriano A. Novello, *Armenians: 2000 years of art and architecture* (France, 1995), 89.

thus 'solving' the long-lurking 'problem' of the Armenian nation and homeland. Ironically, with this brutal act, it was also assured that the story of Armenia would become legend. Although only a small island of Armenian lands remains today as a nation, a far larger legacy has been left in the wealth of its arts, artifacts, cultural traditions, and memory.

Sarkis Zakarian is a concert pianist and a part time piano teacher at Harrow School in London. He is also a diaspora Armenian, whose two grand grandmothers migrated to Bulgaria during the 1915 genocide. Two sisters, Anush and Silvie, used to live around Cilicia, got married young and by the age of 25 already had house full of children. Sarkis is too young to remember them, but his father Aram tells the stories "Anush was younger, around 20 when the massacres spread. Turkish soldiers beheaded her husband and brutally killed her two young boys right before her eyes ... She was captured and forced to the desert, where she was left to die with her new-born baby girl in her hands... the little girl died on the way and the mother had to guard her flesh from being devoured by the other outcasts... Silvie lost her husband but managed to save herself, her two children and her sister Anush and get them all to safety of Bulgaria... Silvie used to tell stories about past days, however Anush never spoke...." Aram continues, pointing at the black and white picture of a petite old lady in black garments, with a handkerchief clasped in her tiny hands "she never spoke a word, but only held that handkerchief in her pocket and used to wipe her dry eyes with any mention of her homeland... her silence was more terrifying then all the other genocide stories of horror that my grandmother Silvie ever spoke about". Silvie educated the family in Armenian, and passed on the teachings about the Moses of Khoren, Gregory the Illuminator, king Tigran the Great and king Artashes the Reformer. She sung the ancient Armenian chants to her grandchildren and narrated to them the old folk tales of Armenia. Sarkis shares this knowledge and incorporates the Armenian folk music in his concerts. He has never been to Armenia and does not speak Armenian, however in his house, he keeps a selection of Tuff stones and when asked he said "The stones are from Armenia, when I hold them in my hands, I close my eyes and sense the land of my ancestors, where once they played and danced and lived their lives happily ... I feel closer and connected to them, I feel that there is a piece of land somewhere, where I truly belong".³⁰

IDENTITY: US AND THEM

The homeland has always been a key building block of Armenian national identity and a place where pseudo-memory is encouraged to flourish. Diaspora Armenians may disagree with the definition of current Armenia represented on the map as not real Armenia, but only the place that provides locality for the Armenian people by intermingling with the neighbouring regions.³¹ The strategic location of case study Shikahogh village is what makes it significant; as Syunik province in general is a rather fragile region, where both borders with the neighbouring Turkey and Azerbaijan are shut and are under the surveillance of both Armenian and Russian armed forces. Perhaps the current Armenia as a territory does not represent the

²⁹ Suzanne Goldenberg. *Pride of small nations: the Caucasus and post-Soviet disorder* (London: Zed, 1994), 45.

³⁰ Zakarian Sarkis. Interview by Lilit Mnatsakanyan. Personal Interview. London. 2013.

³¹ Kathryn Woodward, *Identity and difference* (London: Sage Publications, 1997), 11.

Armenian-consciousness as a whole, but the land itself implied a mix of sensual experience, memory and interpretation, thus representing the identity to a degree. Place is more than a location, indeed it is infused with meaning and feeling, hence how the place is distinguished from a more abstract and functional notions of 'space' and from territory'.³² Although latitude and longitude identify a location, they do not give identity to a place, it is interpretation and narrative that gives identity and it is identity that transforms space into place.³³ It is the land of Khachkars and the religious architecture that differentiate Armenia from its neighbours. It is also argued that the very notion of identity depends upon opposition through a contrast with something else.³⁴ Religious architecture and art represent the relentless effort of Armenians to differentiate themselves from neighbouring Persia and Turkey. The records of countless battles show how these countries failed to succeed in forcing Armenians to merge, to convert their religion and abandon their citizenship.

Hence rather than describe Khachkar as a relic of material culture, it would be more correct to prescribe to it a choral, community level meaning, bearing very precise, emblematic signs of both material and ritual necessities. Therefore it is particularly appropriate in the case of Armenian people, obliged as it was by the events of history, dramatic times of war, and prosecution even in times of peace – to struggle every day for its survival, obliged to make constant efforts to avoid assimilation with its neighbours, to fight for its very identity. From this point of view, the evidence presented on Khachkars becomes highly important, because they bear witness to originality and tenacious attachment to often very old traditions, along with an equally significant ability to absorb and recuperate models coming from the outside world. Of course the large part of the Armenian population worked in the fields, were shepherds and animal breeders; hard work, therefore, using wooden plows and wooden harrows too, with lamps of flint and some other cutting stone attached to them, heavy carts with full wheels. More often, however, the Armenians were outstanding as artisans, in small scale industry, as merchants, for their inventive powers and their curiosity about and opening towards the outside world (history reveals that this was due partly to conscious decisions and partly to the need to survive).

As trade routes, linking the East with Europe passed through Armenia, it enabled Armenians to carry trades with Persia, India, China as well as Black sea and Mediterranean ports, thus the impact of both worlds can be seen in Armenian architecture³⁵. Despite the neighbouring influences, it was always of paramount importance for Armenians to remain absolutely distinct, to maintain their national identity. Since Identity is relational; it relies for its existence on something outside itself, namely another identity that it is not.³⁶ The spread of inscribed stone crosses and memorial Khachkars in the para-Caucasian area dates back to remote pre-Christian times; for example, there are the menhir of Sisian region (2000 years before Christ); and the vishap, the apotropaic dragons, and later, the Urartian monoliths with epigraphs in cuneiform characters (eighth and seventh centuries BC). As early as the beginning of the paleo-Christian era, from the fourth century onwards, all pagan symbols were gradually replaced by crosses, often erected to consecrate the pagan sanctuaries of the past to the new faith or to perpetuate the memory of the first martyrs, according to the generally accepted narrative of Armenian historian Agatangeghos. As it was understood from various sources, the first memorial crosses were made of simple wood; but, later on stone was used, since it offered greater resistance to wear, atmospheric agents and tampering.

³² Cliff Hague and Paul Jenkins, *Place identity, participation and planning* (London: Routledge, 2005), 4.

³³ *Ibid*, 23.

³⁴ Shelley Hales and Tamar Hodos, *Material culture and social identities in the ancient world*. (NY: Cambridge University Press, 2010), 3.

³⁵ Gink Karoly and Gombos Karoly, *Armenia: Landscape and Architecture* (Hungary: Corvina Press, 1974), 10.

³⁶ Woodward Kathryn, *Identity and difference* (London: Sage Publications, 1997), 9.

The evolution of Khachkar typology (fig. 11) can be conventionally subdivided into three broad historical stages; an initial period of research and experiment with the configuration, a classical period of figurative codification and flourishing activity (from the eleventh through the fourteenth centuries); and, lastly, a period of apparent stasis followed by the arrival of traditional themes, integrated with figurative motifs and Iranian stylistic elements (beginning in the sixteen century).

Strangely, Khachkar and not any other of Armenian identity artefacts (such as the holy mountain Ararat, the holy book or any of the Christian temples) was the one on the spotlight during the trying times of USSR collapse. The Armenian critics, artists, writers and architects have played an influential role during the 70s and 80s national uprisings and the awakening of the sense of traditional heritage in a communist state of Armenia. Moreover, this was the era where Khachkar has finally established itself as the single symbol of the formation of Armenian Identity; Armenian intelligentsia and the world of artists were in unison portraying Khachkar on their flags for resistance in the national uprising.



Figure 11 Khachkars from the vicinity of Geghard Monastery. These are displaying the transitory stage of Cross Stones, between cave wall and stand-alone Khachkars. Photo by Lilit Mnatsakanyan. 2013.

The last stage of formation of Khachkar as the symbol of national identity is perhaps its silent recognition by the whole nation, which took place during those years, a united verdict to embrace Khachkar as a condensed form of representing the nation. It has become accepted by all, in the same manner as any Armenian knows the story of Avarayr battle, the importance of Ararat Mountain and the foundation of Armenian script by Mesrop Mashtoc. It is worth reflecting that any symbol of national identity is much dependant on its interpretation; apart from what it stands for, and the means and causes it represents, it is also important to analyse its interpretation and how it is adopted in accord with the current ideologies and socio-political and religious customs. It is often the case that the theoretical meaning and the nationally ascribed definition may contradict each other and this is true for Khachkars. On one hand each Khachkar is unique; it is said that there are no two Khachkars that are alike, not even their particular details. At this stage it is insignificant whether we are talking about similarity or sameness, whether it's about the conceptual or technical resemblance. Also how to determine whether the idea of similarities have been the same in medieval times as it is in modern times? It is, nevertheless, more widely accepted that the core philosophy of Khachkar remains a mystery throughout the centuries. This notion is beautifully described in Hrant Matevosyan's novel "*Master*"; 'We took off our hats and stood there in front of those wonderfully crafted Khachkars, we admired them, caressed them, we shook our heads in awe of some of the ornaments so skilfully crafted but nevertheless left without understanding their true meaning and the depth of their beauty, there was an obscure gap, some alienation between us and them'. The words, coming from first hand of the main character, who is the Father (the Master, the owner of the country, the population) and who speaks of himself in plural, are interpreted to be the voice of the Armenian nation.

REMEMBRANCE

In the funeral ceremony, Khachkars continued to be used for some time yet (in the fifth and sixth centuries); these were richly decorated with plant reliefs, geometrical patterns and religious figures. In certain cases, the taller, more graceful examples, rather like obelisks, were fitted into arched architectural structures. Remarkable examples have survived at Odzun (fourth century) and at Aghudi (seventh century), where their monumental impact is fully exploited. With the end of Arab domination and the reaffirmation of national identity, diffusion of the true Khachkar begun. There were first made from the pieces of crushed rock that were shaped into simple sculptured crosses, and then from rough-hewn blocks, gradually and very carefully shaped until they were quite flat, and the more elegant examples were sometimes given the typical curved crown of the archaic period (ninth and tenth centuries). Among the oldest examples that can be reliably dated, is the Khachkar of queen Katrinide at Garni and that of Grigor mimershehi, prince of Syunik and Aghvank at Metz Mazra.

Apart from its artistic merits and symbolic values, Khachkar is also a historic source of prime importance, a real 'stone file', on account of its commemorative nature and often, in fact, it bears epigraphs that tell when and why it was erected, who the clients were and even the names of master stonemasons.

Although the form, size and ornamental repertoire of the Khachkar have varied considerably in the course of its existence, depending on the time and place of its making as well as on its function and the identity of the people making it, the characterizing graphic feature, the cross, remained sustainably unchanged in its essential linear representation, aside from the more ancient Cses, in which the symbol is heavily schematized. Often design of the cross can, despite many calligraphic variables and stylization, traced back

to the form of the crux ansata, which has arms that broaden out at the ends and the edges. In most cases the cross is of the winged kind.

Upon initial inspection, the Khachkar bears resemblance to other forms of Christian art, namely the Celtic High Cross and the Lithuanian Kryždirbystė. A type of relief sculpture, it features a variety of floral, vegetative, and geometric motifs, as well as tableaux of famous biblical scenes. In order to understand how a medieval stone became so charged with the Armenian spirit, a lesson in iconology is needed.

Although sounding like a platitude, it is nevertheless true to say that Armenia is indeed a one great open air museum, displaying in its great variety and number of monuments the artistic talents and creative abilities of the settlers. The architecture is best preserved in stone and it was agreed by the historians of art and architecture that the particular skills of Armenian craftsmen are best expressed in stone buildings and the stone sculptures adorning the buildings. The abundance of suitable stone and rock in the country also aided in this.



Figure 12 A wall tablet with cuneiform writing in Erebuni, Yerevan, Armenia. Photo by N. Shirokova. Source http://www.123rf.com/photo_29382546_a-wall-tablet-wih-cuneiform-writing-in-erebuni-yerevan-armenia.html. 2013

Notably, it was the lightweight tuff stone in brown, grey, yellow and most widespread rose/pink, which was easy to work with, that was at the disposal of architects and craftsmen, along with marble, limestone and varieties of granite.

The advanced political life, building techniques, trade and commerce of the ninth to seventh century can be seen in the ruins of Tushpa on Lake Van, the capital of Urartu Kingdom. Similarly do the fortified towns of Nor-Bayazet, Covinar, Armavir, strongholds of Arin-Berd (Erebuni) and Karmir-Blur, excavated during the Soviet times. In the case of Karmir Blur (The Red Hill), it took a team of archaeologists, led by Professor Boris Piotrowski, the director of the Leningrad (current Saint Petersburg) Hermitage, thirty years to unearth. In the process, they have discovered that the modern capital of Armenia, Yerevan or Erivan as it was called in the past, was founded in 780 BC, by monarch of Urartu, Argishti the 1st. He has built the fortified settlements of Erebuni extended over five acres on the hills of Arin-Berd, currently stretching within the limits of the modern city. During the excavation, a large number of stone tablets with cuneiform inscriptions were discovered (fig. 12) that authenticate the tradition of this ancient city's foundation, of which the modern capital still retains its memory in the present name. One of this inscriptions read "By the greatness of the God Khaldi, Argishti, son of Menua, built this mighty stronghold and proclaimed it Erebuni for the glory of Biainili (Urartu) and to instill fear among the king's enemies."

Other stone inscriptions found in Karmir Blur, which is another hill within the boundaries of the capital, indicate on the existence of a powerful fortress built in the 7th century BC, of which no other remains have survived. The Urartu chain of fortifications, have been all built on important crossroads that gave view in all directions. Thus, being built on prominent peaks in the mountains, the locations of these fortresses were determined by strategic considerations.

After 1990 the iron curtains were shattered hence the links of communications have been re-established with the Armenian diaspora (representing 73% of the population). The term diaspora identifies a relational network, characteristically produced by forced dispersal and reluctant scattering.³⁷ The 1915 Armenian genocide has resulted in the constitution of an Armenian diaspora and the reproduction of diaspora consciousness. Third, fourth generation Armenians, born in different countries still think of themselves as belonging to the motherland Armenia; hence belonging can be seen as not in any sense about being necessarily in the same place, but rather about two things sharing something significant, wherever they are located and that belonging only becomes evident through some degree of distance, that the two require each other.³⁸ Thus the religion resumed its role and the religious, commemorative Khachkars of genocide become that significant symbol, shared by the two parties. In diaspora driven nation, identity is focused less on the equalizing, proto-democratic force of common territory and more on the social dynamics of remembrance and commemoration, defined by a strong sense of dangers involved in forgetting the location of origin and the process of dispersal.³⁹ This notion of remembrance is materialise in commemorative Khachkars of modern period, thousands of which, crafted in traditional Armenian tuff stone, are commissioned by the diaspora Armenians every year. The Armenian diaspora erected Khachkars along the roads through Georgia and in Aghvank in the Southern Caucasus, the Volga basin and Crimea, Moldavia and the Carpathians, Persia, Jerusalem and so on.

³⁷ Kathryn Woodward, *Identity and difference* (London: Sage Publications, 1997), 318.

³⁸ Kamal Boullata, *Belonging and globalisation* (Michigan: Saqi, 2008), 12.

³⁹ Kathryn Woodward, *Identity and difference* (London: Sage Publications, 1997), 318.

Chapter 2 Geology and Physicality of the Cross-Stone

VOLCANOS: THE LEGEND OF AR

Armenia's history has unfolded in three regions of the Near East: the principal one known as Greater (or 'True') Armenia, but also in Lesser Armenia, and Cilicia. Greater Armenia was defined by 9th-century geographers as the 'Armenian Highland,' a term that has come to represent a cultural, historical entity, as well as a geographical one. This Armenian Highland is a vast mountainous region of some 300,000 square kilometers located between the Anatolian and Iranian uplands, bordered in the north by the northern part of the Transcaucasian lowlands and in the south by the lowlands of Mesopotamia. The site of Lesser Armenia lies west of Greater Armenia and south of the Black Sea, between the Euphrates River and the upper current of the Licos River. It was one of the loci of the Armenian ethnogenesis and was inhabited by Armenians until 1915. The site of Cilicia is on the northeastern shores of the Mediterranean Sea, where in the 11th through 14th centuries there was first an Armenian principality and later a kingdom.

A molten rock gives birth to volcanic Tuff- the unique frozen lava stone used for Khachkar making. Thus Armenians also perceive the Cross Stone as a miniature carrier of the mountain's legacy; Khachkar benefactor was one step closer to divine origins, as traditionally mountain worship was prevalent. The mountain, as a biblical location, connoted austerity, reverence, and closeness with God. Moses, for example, communicated with God through the Burning Bush on Mount Sinai. For the early Armenians, there was no better way to claim their new Christian heritage than through the mountains, with which their land was replete, as Armenia's ancient territory included several biblical mounts. Gradually, the mountain worship evolved into Khachkar that could be conveniently erected near the home or church. Similar to tuff, most Armenian stones have igneous origins, tracing back to the seven active and extinct volcanoes in the country Ara, Alages, Geghama, Porak, Tskhouk-Karckar and Aragats (fig. 13). Most of these mountains are surrounded by myths and legends that have been passed upon generations through folk music and prose.



Figure 33 Peaks of mount Aragats, Northwest of Yerevan, Armenia. Photo by Vahe Martirosyan.
https://en.wikipedia.org/wiki/Mount_Aragats#/media/File:Peaks_of_Aragats.jpg. 2011.

One of the strongest beliefs commonly held by Armenians is that their forebears originated in the mountains of their homeland; that they were standing at the edge of the 'cradle of civilization' as it was forming in the neighboring Mesopotamian Valley.⁴⁰ Along these lines, a theory has recently emerged among some Armenian scholars that the Indo-European people - of which the Armenians are one-may have originated in the region of the Near East between the Black Sea and Lake Van. The more generally accepted theory, however, is that proto-Armenians migrated with other tribal people from the Balkan to Anatolia (present day Turkey) during the second half of the 2nd millennium BC, thus entering an already populated area.

The mount Ara is called after the Armenian King Ara Geghetsik (Ara the Handsome). According to the legend during the war against Assyrian queen Shammuramat King Ara arranged his army at the foot of mount Ara, and the queen – on the slope of Hatis. Unfortunately the king fell in the battle and from his flesh, the mount Ara was materialised (fig. 14).



Figure 44 Ara the Handsome and Shammuramat. Lithography by Iosif Rotter. First published in 1939 in Yerevan. <https://historyarmenians.wordpress.com/2014/08/01/из-древнеармянских-легенд-и-преданий/>

⁴⁰ Sandro Sardaryan *Armenia: the cradle of civilization* (Yerevan: YSU, 2004), 121.

However, according to the medieval Armenian historian Moses of Khoren, these actions took place on the Mount Ararat instead. Ararat is one of the most prolific symbols of Armenia, despite it being on the territory of current Turkey, Armenians still regard it as 'their mountain' and the image of Ararat continues to be stamped on the Armenian flag, the Armenian currency and majority of modern still life paintings portray it on the background. It is the religious connotation of the mount that still haunts the nation; the Bible says that Noah's ark landed on the mountains of Ararat.⁴¹ This does not refer to any specific mountain or peak, but rather a mountain range within the *region* of Ararat, which was the name of an ancient kingdom of Urartu (Medieval Armenia).

Mt. Ararat rises up from the southern end of this plain. This handsome, two-peaked mountain of biblical legend, was known and considered sacred by early Armenians as 'Masis' long before the arrival of Christianity. As this mountain became associated over time with the biblical legend of Noah, it was transformed into and renamed Mt. Ararat and the nations continues to believe that the Ark came to rest as the great flood receded.

Located in southern Armenia on the western slopes of Vardenis volcanic ridge, south of Lake Sevan, Alages is perhaps the youngest of all volcanoes, with the last eruption registered in 1340 and to this date, the mountainous area is prone to destructive earthquakes (on average one every 50 years), with occurrences at >7 Richter.

The Geghama Rindge is of volcanic origin including many extinct volcanoes. The range has 70 km length and 48 km width, stretching between Lake Sevan and the Ararat plain. Initial explosive eruptions at the Gegham Ridge volcanic field were followed by the extrusion of rhyolitic obsidian lava domes and flows. This obsidian revolutionised and accelerated the ancient technological advancement; it was sharper and more resilient than any other material used prior. Consequently, a great number of petroglyphs have been found in the area of Geghama Mountains dating back to around 7000 and 9000 BC.

Porak is a mid-Pleistocene stratovolcano located in the Vardenis volcanic ridge about 20 km south east of Lake Sevan at the border of Armenia and Azerbaijan, enabling the lava flows to extend into both countries. Fifth century BC petroglyphs found in the area were interpreted to depict volcanic eruptions. Stratigraphic and archaeological evidence indicates that an explosive eruption also producing a lava flow occurred at the time of a military battle dated to 782-773 BC.

A group of pyroclastic cones is located in the central part of the Syunik volcanic ridge along the Armenia/Azerbaijan border about 60 km south east of Lake Sevan. The Tskhouk-Karckar volcano group was constructed within offset segments of major Pambak-Sevan strike-slip fault trending south east from Lake Sevan. Abundant petroglyphs, burial kurgans, and masonry walls were found in nearby area of the mountain.

Lava flows from cinder cones of the Tskhouk-Karckar volcano group overlie petroglyphs dated to the end of the 4th millennium and beginning of the 3rd millennium BC and are themselves used in grave-sites dated at around 2720 BC. Following these eruptions, the area was not repopulated until the middle Ages.

Finally Mount Aragats is one of the highest points in the Armenian Highlands and is the highest in present-day Armenia. Situated 40 kilometres northwest of Yerevan, Aragats is a large and complex volcano with numerous fissure vents and adventive cones. Number of large lava flows descend from this volcano and are constrained in age between middle Pleistocene and 3000BCE. The volcanic system covers an area of 5000 square kilometers and is one of the largest in the region. Great many petroglyphs have been found around the volcano, portraying animals and human-like figures in Qasagh River valley possibly of early Holocene age, and in Aghavnatun on the southern side of the volcano including rock carvings created in 4th to 1st millennia B.C. The Mountain has always played a major role in economic, cultural and geopolitical

⁴¹ Ashkharhabek Qalantaryan, *Armenia from stone to medieval ages* (Yerevan: Science publishers, 2007), 245.

development of the country with its historic significance and the abundance of natural resources. For early Armenian settlements Aragats was the centre of their universe as a shelter and protection as well as source of water and an inspiration for the later irrigation and water supply system constructions.⁴² During the Soviet times, there were numerous excavations and studies in the fields of ethno archaeology, animals and vegetation, hydro-geology, mineralogy and meteorology conducted around the mountain. Aragats had an active participation in the built environment of the entry country, with its lake Ayghr, pems stone quarry of Ani and the biggest quarry of tuff stone in Artik. Being the highest peak of the country, it has attracted the settlers since thousands of years, with its wide slopes, fertile land, rich flora and fauna as well as of course the accessibility of water, creating the nurturing environment for economic and creative growth of the population. From all sides, it is surrounded by densely populated towns and villages, as once it was the headquarters of the country during the years of endless battles with the neighbouring empires. The mountain was strategic for self-defence, as well as being a major source of water, which was paramount for the development. Thousands of remains of material culture trace the progress of the early tribes that settled on the slopes of the mountains; the stone inscriptions on the man-made cave walls depict the step by step stages of the evolution. They portray the struggles and joys of these tribes, their day to day life and the rarest of ceremonies. In those stone texts as well as the myths and epos Aragats is presented as a defender and a saviour colossus.

The concentration of petroglyphs around all of these volcanos was due to the abundance of both the tools and the materials used by the early stone artists. These petroglyphs depict the legends and myths of the mountains, along with the sceneries of daily rituals and routine activities of the early tribes and settlements. Judging by the material culture remains and the inscriptions left on man-made cave walls of some of the mountains, it was proposed that the settlers were hunters of big animals and birds. The economy of these medieval tribes of mid Stone Age, was also reliant upon fishing, since the lakes and rivers of Armenian highland were thriving with sea life. Although snow was the major source for water extraction, some rivers around the mountains were also utilised. This was certainly an easier option, since there was no need to build artificial storages and worry about the filtering and maintenance of them. The river sources were more competitive to obtain and were reliable for building the infrastructures around; some of the water systems established during the Stone Age are still in use to modern days around Syunik region. The rivers Qasagh, Shaghverd, Arkhashan and Amberd have been providing water for the nearby villages for decades.

Across Greater Armenia, the Araks or Araxes River-often called "Mother Araks"-has its source and also its full flow, and Armenians have imbued it with eternal value. Others saw the turbulent river in different terms: for example, the Romans called it the 'Araks that bears no bridges,' equating it with Armenia's disobedience. By the 19th century, the river was used symbolically to remind Armenians of a lost, idealized past, as in the poem by Raphael Patkanian, in which the River Araks explains her sadness:

There was a time when I, too,
Like a comely bride
With my numerous adornments,
Was running along my banks.

⁴² Ashkharhabek Qalantaryan, *Armenia from stone to medieval ages* (Yerevan: Science publishers, 2007), 298.

What has been left from those days!

Which of my riverside villages,

Which of my wealthy towns,

Which of my joyous places? ⁴³

Extensive forests once grew in the foothills of the many mountain that cover the Highland. The foothills are set off by deep canyons randomly cut by screams of water flowing down from the mountains and below them are plateaus where people built their settlements and developed economic and cultural activity in relative isolation from each other. A few extended lowlands do exist, the lowest and largest being the Ararat Plain, a fertile agricultural oasis of temperate climate in the center of the Highland.

The Highland is crisscrossed intermittently by lowlands, some only about 2,300 feet (700 meters) above sea level. Grapes, pomegranates, figs, and, more rarely, olives have been cultivated in these valleys over the centuries, as they are today, while livestock has been herded on the subalpine and alpine meadows against a backdrop of craggy mountain peaks perpetually covered with snow. To the Mesopotamian Valley civilizations below, these peaks symbolized an alien coldness of land and people looming above them to the north. However, they also considered these mountains to be the sacred home of their gods.

THE CAVE DWELLERS

The formation of the current human has begun in the middle Stone Ages and the type of the humanoid has remained very much unchanged since then. It was the time of the rise of human will and consciousness, when he started questioning his dependence upon nature and the laws of nature that governed all other mammals. The earlier shifts manifested in the tribal communities; where members of the tribes started reducing exogamy behaviour and developing permanent coupling that led to the flourishing of the particular community. This change had a ripple effect on the management of the different tribe economies, their land and the linguistic advancements. Post ice age period was marked with the tendencies of exploration among the tribes that found various ways of crafting and tool making. They started spreading to different geographic areas, while experimenting with animal husbandry, stone crafting and gathering of fruits and vegetables, which later lead to the blooming of farming and agriculture. Thousands of imaginative stone inscriptions of petroglyphs and earlier stone crosses, portray these transformations from the middle to the New Stone Ages.

⁴³ Hamlet Petrosyan. *Armenia – Paradise Lost* (Yerevan: Science publishers, 2002), 152.



Figure 55 Karahunj (Carahunge, Zorats Karer or Zorakarer) is said to be one of the oldest observatories in the world, Syunik region, Armenia. <http://traveltrends.info/2011/05/karahunj-zorats-karer-observatory/>. 2011.

Rising above the neighboring upland, the Armenian Highland sits astride an ancient east-west route that has been crossed for centuries by migrating peoples who met, interacted, and often collided with each other and the indigenous populations. The early tribes and nations that populated this high inland island were sometimes able to stop or deflect the nomadic 'hordes' mostly moving westward and outward from Asia in search of pasture; however, when they weakened, the migrating people overran the whole region. The foreign tribes, nations, and empires that have ruled the Highland at various times have had a significant influence on the course of Armenia's history.

The earlier tribes that roamed the Highland were leaving their dead behind in spacious combs made of huge stones covered with flat stone slabs; the rudimentary ancestors of Khachkar. Knowledge of these people has come mostly from these burial sites, which seem to have been their only permanent constructions. They are located in Vanadzor (formerly Kirovakan), Ltchashen, Karashamb, and Treghk (now Trialeti, in Georgia). At the Zorakarer monument near Sisian (fig. 15), a group of these tombs is surrounded by hundreds of megaliths, 3 to 4 meters tall, the meaning of which remains obscure.

What is clear from the materials found in these tombs is that the nomadic tribes acquired wealth mainly through battle but also by raising sheep and goats. Archaeologists have excavated biers yoked to oxen that

were sacrificed at a burial, luxurious couches, metal weapons and tools, bronze statuettes, and both pottery and jewelry that were ornately decorated with mythical scenes. Other artifacts of this period were decorated in a dynamic style; for example, a red clay pottery found in Shikahogh village had painted black figures of fighting bulls, running goats, birds, and heavily pouring rain. Animals such as deer, goats, wolves, and sometimes boars figured prominently on other artifacts, next to battle and feast scenes, as portrayed on bowls found in Treghk and Karashamb, suggesting their connection to the culture's mythology.

The markings of these tribes in Armenian Highland is distinguished with countless ancient cave dwellings, differing in size and geological structure (fig. 16). Armenians, as historic cave dwellers, identify themselves with their mountains, it is said that in mediaeval Armenia, 'every mountain was a kingdom, every cliff was an invincible castle wall and every man-made cave was a home'.⁴⁴



Figure 66 The Tsaghkotsadzor valley manmade caves, looking south towards the citadel of Ani, historic Armenia.
<http://virtualani.org/caves/index.htm>.

⁴⁴ Varazdat Harutyunyan, *The history of Armenian architecture* (Yerevan: Luys publishers, 1992), 6.

Discoveries in the Areni cave complex yielded the world's oldest leather shoe (5500 years old), an ancient wine making facility (6100 years old), a straw skirt dating to 3900 BC, as well as a well preserved human brain. Apart from the natural caves, man-made caves are rather widespread in regions rich in sandstone, since these stone layers were easy to carve. The tribes resided in man-made caves as well as in more rare caves of hydrothermal origin (when lava from the inner core of the earth mixes with hot springs). Elaborate and often architecturally rather advanced for their time, monastery complexes with entire villages, carved out of rock, are found in abundance on the plateau. A number of these rock-cut cave chambers are small churches or chapels, some part of larger complexes, possibly monastic in function. The architecture of the rock-cut churches generally follows the typology of built architecture, not only in the overall layout but in the details, such as reproducing the v-shaped niches and the colonnettes. Armenians used caves as fortresses, places of worship, as housing, as storage facilities and as shed for the animals. Due to the minimal airflow, these caves maintain warmth in winter and a cool temperature in summer. Xenophon during his journey to Armenia describes the cave dwellings: "Their houses were under ground, the entrance like the mouth of a well, but spacious below; there were passages dug into them for the cattle, but the people descended by ladders. In the houses were goats, sheep, cows, and fowls, with their young; all the cattle were kept on fodder within the walls. There was also wheat, barley, leguminous vegetables, and barley-wine, in large bowls."⁴⁵

Some cave-dwellings found throughout the Armenian plateau are distinguished with a stone door; more than 160 structures carved into rocks and caves that were inhabited in the area around Aragats mountain were found. The particular caves with stone doors have a cave-hall, a stone door and a secret entrance, in the form of a tunnel with specific masonry. They were mainly used as hidden storehouses for the food of small groups of people or communities and it was suggested that only a few trusted people had access to these reserves. At the end of the tunnels, there were stone-doors that swung inward. On the walls of these caves Khachkar carvings were found and to draw special attention to these carved pieces, most were painted in ochre, or the details of Khachkars were highlighted with the dye. These doors were a curious and fundamental feature of the caves; if there was a hidden tunnel, there was always a stone door at the end. The stone doors had pegs near the top, fitting into specially carved holes in the frames. Both doors and frames were well-finished and skillfully crafted so that even now after hundreds of years, they remain functional and can be opened and closed. More research is needed to identify the exact date of these doors, but the studies show that by the 18th century, they had no practical use and were abandoned. The stone wall inscriptions depict pictures narrating a story of these unusual structures being granted to humans by mythical giants. Stone door caves are often found in the Aragatsotn marz, a region where there are no rock-carved churches. Moreover the churches that were built from the 5th to the 16th centuries don't have stone doors, therefore most studies agree that the stone door caves are related to a pre-Christian culture and the cave wall Khachkars were carved later from 6-13th centuries.

Majority of the caves were regular dwellings complete with associated storage areas, where the chamber complexes are the least regular in their designs and layouts, and often have very free-flowing, curving interiors and multiple levels. Most of the chambers were lit using windows; many currently open-fronted caves were originally sealed off by rubble walls or timber screens. Interior walls often have small niches for lamps, and bigger, cupboard-like niches for storage. Some very large niches may have been sleeping areas (fig. 17). Smaller chambers, sometimes with storage pits dug in their floors, are often found grouped around a large central chamber. Occasionally, the smaller chambers have narrow tunnels that extend deep into the rock and in most cases these tunnels don't seem to lead anywhere and stop abruptly. It was

⁴⁵ Andrew Zenos and Francis Kelsey, *Xenophon's anabasis*. (Digital book: University of Michigan, 1889), 218.

speculated that such tunnels may have been places of refuge. A number of the chambers that are close to the surface have pyramidal ceilings with a skylight at the apex, perhaps mirroring the wooden architecture found in traditional *Hazarashen* type houses. The most unambiguous function is that of dovecotes, which usually contain many rows of densely-packed rectangular cubicles for pigeons. There were also chambers intended for water storage, cellars for storage of wine and oil jars, stables, and a larger chamber that has been identified as a caravanserai.



Figure 77 A rock-cut dwelling in the Tsaghkotsadzor caves; the large niche suggested to have been for sleeping in. Ani, historic Armenia. <http://virtualani.org/caves/index.htm>.

With the passage of time, these caves went through physical alterations, in accordance with the world view and spiritual values of the residents at the time. Before the development of communal living, caves served as temporary dwellings, whereas in an auspicious climate, they were used for hundreds of years. Often evidence is found confirming that some caves were used as sites for rituals. Many of the cave chambers had clearly defined functions, whereas intended original use for some others, remains less clear or is

completely unknown. Erosion and collapses over the centuries have destroyed large parts of some of the cave complexes, often leaving the surviving parts fragmentary and confusing. Tribes continued modifying caves, adapting them to their needs and in this period, the "cave culture" was formed. We now know of more than a hundred caves with drawings on the walls representing the daily life and concerns of early humans. In different lands, caves had their own appearances, shapes, and building styles characteristic to particular residents. As the tribes progressed and their social conditions changed, they migrated into smaller caves, while the large caves were used for animals or other storage purposes. To this date, in the villages of Togh and Khndzoresk in Syunik region, caves are still in use as cellars and animal sheds.

THREE LEGENDS

1. THE ORIGINS OF ARMENIA

Ancient Greeks and Persians called the land that approximately coincides with the Highland Armenia and its population Armen. These terms appeared first in written form in the works of the Greek historian Hecataeus of Miletus and in the Behistun inscriptions (521-520 BC) of the Persian king Darius I. Others in the regions generally used the same terms, except for the Georgians, who called the people Somekhi and the country Somkheti. Armenians, however, as has been noted, called themselves Hay and their country Hayk, later Hayastan and these terms are still in use today. The myth of Armenia's origin has come down to us in writings of the early Christian historians Movses Khorenatsi of the 5th century and Sebeos of the 7th century. It tells the story of the original Armenian ancestor Hayk (fig. 18), a giant archer with an athletic build, curly hair, and flaming eyes, who lived in Babylon, where he fought against the tyrannical Assyrian giant, Bel. Hayk left Babylon with his family and went north to 'Ararad' country (located south of Lake Van), where he left a grandson, then continued further north, settling near Lake Van in the Highland. Here, he engaged and killed Bel in a decisive battle. After a long life, Hayk died, leaving his name in the names of the people (Hay) and the country (Hayk). His son, Aramanyak, moved farther north to the Ayrarat Valley (the present Ararat Valley); from this valley, Hayk's descendants spread over the Highland, naming its provinces, mountains, rivers, and lakes. Since in ancient beliefs, to name was to create, Hayk and his descendants appeared as 'creators' of Armenia.

There are currently several hypotheses about the origins of Armenians. The saga, related above, of Hayk's departure from Babylon and resettlement in the Highland suggests to some scholars the biblical story of the Tower of Babel, with its 'scattering' of peoples and 'confounding' of languages. However, this small shift to 'Ararad' country in the north may also have a historical base: there is a hypothesis that the Indo-European fatherland was located in the southern part of the Highland and that the Indo-Europeans moved from this fatherland a little to the north in the 3rd millennium BC.

Evidently, there was considerable population movement in the area by the end of the 2nd millennium BC. Egyptian and Assyrian texts of the 13th and 12th centuries BC report with anxiety a migration of 'sea-peoples' destroying the powerful Hittite kingdom in Asia Minor (Anatolia) and campaigning against Assyria and Egypt. Another, and more generally accepted, hypothesis suggests that the ancestors of Armenians were among these migrating people and maintains that they moved eastward from the Balkan Peninsula at the end of the 2nd millennium BC.



Figure 88 The Statue of Hayk (Armenian: Հայկ) or Hayg, also known as Haik Nahapet (Հայկ Նահապետ, Hayk the Tribal Chief), the legendary patriarch and founder of the Armenian nation. Photo by Sargis Mnatsakanyan.2012.

However, there is yet another theory, which supposes that the Armenian ancestors reached the northwest part of the Highland from Anatolia only after the fall of Urartu in the 6th century BC. This latter hypothesis appeared less probable to Armenian historians, since there is much new evidence, 'both linguistic and mythological, of the Armenians' presence in the structure of the Uartian Federation. While their origins remain a subject of debate, Armenians were nonetheless acknowledged as being effective and ongoing

participants in the history of the Near East by the beginning of the 6th century BC. During this time, the kingdom of Medea (673-550 BC), which had recently formed in the northwestern part of the Iranian plateau, was seeking to dominate the Armenians. The Achaemenid Empire (550-330 BC), which conquered Medea in 550 BC and subsequently dominated all of Asia Minor, was able to keep the newly formed Armenia within its political and cultural sphere for nearly three centuries.

In this period, Iranian style became evident in Armenian palace architecture and in metal artifacts. Elite Armenians adopted the manners of the Persian court, and they gave Persian names to their gods, for example, Aramazd, Anahit, and Mihr. During this time, Armenia also became known for its vineyards, wines, and horses. The Greek general and author Xenophon (430-355 BC), who crossed Armenia from south to north in 401-400 BC in the company of a Greek army of ten thousand warriors, spoke rapturously about the numerous provisions kept in Armenian houses. He wrote of wheat and barley bread and of a 'wine made of barley' that people drank from a common jug through reeds, as well as of old fragrant wines, raisins, sesame seeds and almonds, and turpentine oil. The Greek historian Herodotus (5th century BC) reported that wine was brought down the Euphrates River from Armenia to Babylon in specially constructed boats, while Xenophon stressed the speed of Armenian horses, which, according to the Greek geographer Strabo (1st centuries BC and AD), filled the stables of the Persian kings.

For all of this, excavations in rural settlements and ordinary burials suggest that most Armenians still lived as they had at the end of the 2nd millennium. They appear to have continued to believe in the local gods and their legendary struggles against the gods of southern civilizations, including the stories of Hayk and the Assyrian giant Bel. There were stories of Shamiram (Scmiramis), the queen of Assyrians who fell in love with the Armenian king Ara Geghecsik (Ara the Handsome, probably a personification of the god of spring); when he refused her, she started a war against Armenia and killed Ara, who rose to live again. There was also the myth of Vahagn, the thunder god, who stole straw from Barsham, forefather of the Assyrian, and spilled some of it as he carried it across the sky, thereby forming the Milky Way, which Armenians referred to as the 'Road of the Straw Robber.'⁴⁶

2. DRAGONS: THE PAGAN STONE

The myth tells us that Aragats volcano was source of water, where the guarding dragons were on watch.⁴⁷ Many tribes were residing in the area and some members of these tribes spent part of every year pasturing their sheep in the mountain. They raised stone monuments (fig. 19) at springs and lakes and by the water-storage pools they had built. The monuments were upright, 3-6 meters tall, and were often carved to indicate fish-like water creatures; when the scientific world discovered them at the end of the 19th century, the local population called them *Vishap* (Armenian dragon). There are numerous of these *Vishaps* on mount Aragats; these statues played a crucial role in the development of modern irrigation system, as the statues were planted at or around the water sources. With the help of these monuments, it was possible to locate lakes and river that have later been disappeared or have changed course. Through mapping the locations of *Vishaps*, it was possible to resurrect a blueprint of early irrigation system around Aragats, consisting of mostly artificial lakes such as Ghalacha and Sev (Armenian black) lakes. All these man-made lakes, that form a belt around the mountain, are linked to each other via water pipes. The belts have upper, middle and lower levels, where the top lakes serve as storages extracting the melted water from the snowy

⁴⁶ Hamlet Petrosyan. *Armenia – Paradise Lost* (Yerevan: Science publishers, 2002), 82.

⁴⁷ Ashkharhabeq Qalantaryan, *Armenia from stone to medieval ages* (Yerevan: Science publishers, 2007), 207.

peaks of the mountain. The water is then fed to the mid-level, where it is divided into sections to be fed to the lower lakes, which is where the actual water consumption would take place, such as irrigating the lands and providing bulk water for household needs. Some of the fish-shaped stele have a bull's skin (complete with head and feet) carved into them, as if the skin were thrown on top of the stone - strongly suggesting the involvement of these monuments with a ritual of bull sacrifice. There is also a stream of water flowing from the mouth of this bull's skin and some of the stones have images of water birds carved on them, as well.



Figure 99 Վիշապաքար Vishap (Armenian: Հայկ) from Selim ghaut, portraying bull/ram. Currently in Yeghegnadzor park, Armenia. Photo by A. Shahinyan. 2014.

A number of theories try to interpret the dragon or the fish meaning of these stones, although none of them seems to explain clearly the dragon/fish inconsistency of the enigmatic monuments. One theory holds that the monuments represented mythological dragon guarding the sources of the waters. Another traces the monument back to Astghik, the Armenian goddess of fertility and love, the fish being one of her divine forms. According to a third opinion the monuments are related to the Indo-European myth, in which the dragonish opponent of the main hero has the stem *uel- in his name, to which the Armenian form gel- (gegh-) corresponds. The Gegharkunik province or Geghama Mountains, where some of these monuments were found, might have been named after this mythological personage. The 'Dragons' series of monuments, consisting of twenty five stone steles, that resemble Menhirs, were discovered on the outskirts of Geghama mountain range. These stones were also formed into fish-like shapes, which could also hint on the cult of water that was very typical for the Eastern world at the time. These Dragons have been instrumental in understanding of their contemporary tribal culture, though the original Menhirs, that have been discovered later, convey even more in depth information on the modes of life of the settlers. It appears that the symbolism of the Vishap was well cultivated; each one had individual characteristics of its own so that no two monuments were exactly alike (much like the case with Khachkars), however the most archaic were those crafted in more rudimentary way, without taking note of any ornamental detail.⁴⁸

These *Vishap* monuments and the Urartian steles were precursors of the vertical stone stele of early Christian times, which would evolve into the Armenian cross-stone, or Khachkar. Adding to these the perception inherited from Urartu that the ideal world was a garden in the form of a vineyard, and it becomes clear how in these sources and in these forms, Armenian culture established the inner quality that poets call 'spirit and that anthropologists call 'identity.'⁴⁹

3. THE MYSTERIOUS MONK

The legend of Armenia's adoption of Christianity, which appeared in the 4th and early 5th centuries, asserts that the faith was brought to Armenia by a preacher named Grigor (St. Gregory), who had been raised as a Christian in the western part of Armenia, which was then under the rule of the Roman Empire. Gregory was a Parthian (a Persian) by descent, whose father, Anak, had at one time been commissioned to kill then-ruling King Khosrov of Armenia. Upon learning of Gregory's identity, King Trdat (Tiridates) the 3rd (AD 287-330), who was Khosrov's son, had him thrown into a prison pit at Artashat to die as an infidel and enemy. However, soon afterward, the king fell ill and assumed the form of a boar, while his court and the local inhabitants were affected by a strange disease. The king's sister, Khosrovdukht, who had not been struck by the illness, had recurring dreams in which an angel was indicating that Gregory could cure her brother. It was through her exhortations that Gregory was released from the prison pit where he had lived for thirteen years, miraculously, without water or food. (According to a folk tale, a sympathetic woman had been lowering bread and water to him during his imprisonment.) After Gregory baptized them into the Christian faith, the king, his circle of courtiers, and all the people of the capital were cured, and, at the legend's end, the king, having once more assumed his human form, ordered that the whole nation convert to Christianity. Thus early in the 4th century, following his baptism into the Christian faith, King Trdat had ordered his troops to destroy all pagan sanctuaries in the kingdom and to raise crosses over their ruins as signs of the new faith, forcing the populace to abandon its cherished beliefs for new and strange ones.

⁴⁸ Ashkharhabek Qalantaryan. *Armenia from stone to medieval ages* (Yerevan: Science publishers, 2007), 46.

⁴⁹ Hamlet Petrosyan. *Armenia – Paradise Lost* (Yerevan: Science publishers, 2002), 68.

These measures met resistance, and it became clear that new strategies and new forms of communication would have to be found for Christianity to succeed. This was true throughout the Hellenized world, wherever Christianity was beginning to take root among the largely illiterate populations. Therefore the cultural origins of the Khachkar lie in these events of the 4th through 7th centuries, when Christianity was struggling to take hold in Armenia. This is when the Armenian Church began portraying its message in a novel way, through pictorial images engraved on stone stele; the familiar four-sided stone monuments that had been used by earlier civilizations to extol the feats of war, the deeds of rulers, and various legends. The early Christian stele topped in a cross, which sometimes reached nearly 10 meter in height, was used to illustrate Bible stories and figures and the dramatic myth of the Armenian adoption of Christianity (in which the king temporarily becomes a boar) or legends of princes and feudal families who had come to the faith. These visual images played the same role for illiterate people as books did for the literate. Later on, driven by a desire to render the Bible in their own language, Armenians had produced an alphabet and written language by the beginning of the 5th century AD. During the next half century, some forty books were translated into Armenian, including the Bible, commentaries on the Bible, books on grammar and philosophy, and chronicles of the times. Within only a few decades, this new written language had developed grammatical constructions sufficiently complex to express the subtle philosophical ideas of Aristotle and Plato. Because of the cultural advances attendant to a written language, Armenians have come to consider the 5th century AD as their Golden Age. It was also during this century that Armenians were led valiantly by Vardan Mamikonian in a battle to retain their Christianity against Persians, who were attempting to turn them from their new faith by force of arms, the event referred to in the previous chapter under the “Story of the Cross.” Legend holds it that when Saint Gregory the Illuminator prayed one day on Mount Aragats a miraculous ever-burning lantern hanging from heavens came down to shed light on him. Armenians thus believe that the Illuminator’s lantern is still there, and only those pure in heart and spirit can see the eternal lantern – the symbol of hopes of the nation.

TUFF – THE IGNEOUS ROCK

Khachkar has a dual nature; on one hand it is esoteric and illusive, representing intangible values, on the other, it is very physical in its monumental presence and tactility. The evolution and becoming of Khachkar encapsulates many layers; starting from the choice of the stone to the religious revolution that took place in 5th century BC.

The Armenian Highland is a land of stone. Egyptian and Mesopotamian civilizations struggled perennially with flooding rivers, but the main dialogue with nature of the early Armenian civilization was with stone. Stone made female figures of goddesses were recovered in the temple of the Sumerian town of Erdu which, from recorded evidence, are ascribed to the great mother goddess Nanimu. She used to live before the creation in the heavenly ocean where she gave birth to the gods of the Earth, the sky, the lightning, the sun and others; and the organic world took its origin. The present work analyses the Sumerian and Hurrian myths related to the Mother goddess in the light of comparative date of Armenian mythology and epos. This is illustrated by the Armenian epic of Mher, in which the hero, tiring of the unfairness of the world, locks himself up in a rock. The vast majority of stones in Armenia are of igneous origin, tracing back to the seven active and extinct volcanoes, which are surrounded by legends and myths, passed upon generations through folklore tales and music. Stone is important; it is in the realm of the stone made steles (Khachkars) and architecture, that the cultural heritage of the Armenian past is best preserved.⁵⁰

⁵⁰ Gink Karoly and Gombos Karoly, *Armenia: Landscape and Architecture* (Hungary: Corvina Press, 1974), 18.



Figure 20 Tuff stone depositories, Artik, Armenia. Photo by Lilit Mnatsakanyan. 2013.

Volcanoes and earthquakes not only shaped the topology of the land, but played a dominant role in predefining the path of the cultural and the technological advancements; as people were confined with the tools and materials that the natural phenomena made available to them. Since Caucasus region and Armenia in particular is prone to earthquakes and volcanic activities, extrusive igneous rock deposits are abundant in the region. Depending on mineral composition and the setting of the stock, the formation method of the rock can vary slightly. After a violent volcanic eruption, volcanic ash, frothy magma, dust and fine rock particles settle and build up on the land surface. Of the three types of stones- sedimentary, metamorphic and igneous, Armenia is abundant of the latter.⁵¹ After the volcanic eruption, the ejected particles form a rock with a soft, porous texture. The particles may eject from the main volcanic vent or may escape through cracks in the walls of volcano, called fissures. These fissures are often smaller than the central vent but extend from magma chambers toward the land surface. Magma and rock particles that settle from the volcanic eruptions can form tuff rocks in several ways (fig. 20). Some tuff rocks form when the particles become buried under layers of other rock and harden into stone through compaction. Alternatively, the particles can form a rock through cementation, typically when calcite or quartz in solutions precipitates and glues the particles together into a rock. Sometimes, a welded tuff is formed, as the temperature of the rock particles are very high. Armenian highland holds enormous stocks of tuff, which is an easily cut, yet a very resilient type of stone. Tuff is the main source material for Khachkar (fig. 21).

⁵¹ Zareh Hatsagorcyan, *The catalogue of Armenian stones* (Yerevan: Kazmtechshinnyut, 1968), 9.

Other stones in the country include basalt (mostly used for petroglyphs and early Khachkars), travertine, felsite, granite, marble, etc.; however tuff remains the traditional material used for Khachkars and in most buildings. Igneous tuff contains crystals of various glass dusts, thus giving it around 40 different shades⁵². Tuffs are lightweight, low heat conductivity, with excellent resilience and longevity, with ease of extraction and development, high quality and big selection of colours. Unlike most rocks, tuff can contain a variety of minerals such as augite, biotite, plagioclase and leucite and these influences the overall appearance of a rock. Tuffs may be brown, grey pink, green etc. Individual grains within tuff rock can be ashy, glassy or crystalline and their size varies from sample to sample.

After extracting the stone from quarries, it sees very little post treatment before becoming a solid material for a stone building or Khachkar. Most structures in Armenia, those from early Christian period to modern day are made of orange, red, golden and black varieties of soft tuff. The customary expression is 'to talk about tuff stone is the same as to talk about Armenia' and in honour of the most widespread type of the pink tuff, the capital city Yerevan is referred to as 'the pink city'.⁵³ The Armenian name of this stone is lost in the darkness of passed centuries, but it is hard to imagine another material the story of which is so closely linked to the story of the nation. Armenians identify themselves with this stone; only tuff could have survived so beautifully against harsh heat and cold, and wind and rain and dust. The analogy is that even the low quality tuff can survive few thousand years despite weathering and harsh climate, just like the small nation that survived and maintained its religious integrity and traditional heritage.

The technical development of Khachkar – The creation of Khachkar begins with the choice of quarry and the right slab. It was preferred to use a local quarry, although in rare cases examples of Khachkar are encountered, where the raw stone has been outsourced. This is typical to yellow-red tuff stone that are often found miles away from their source of origin. Perhaps it is due to their softness and the variety of the colours, that these tuffs were particularly sought after. After choosing the right source, the emphasis was next on the size of the Khachkar in question. Despite the fact that Armenia is known to be 'the land of stones', it was nevertheless a very complex and laborious process to extract bigger tuff pieces. For example, the Karmrashen Khachkar from 990, which was built out of more rare grey Tuff, has an inscription describing the commissioner of the monument, who set off to a lengthy journey that lasted for months, in search for this particular size and shape slab. It was installed by Georg, who saw the source in his dream; "I, Georg, the son of Gregory, through the means of divine vision of a dream, have been shown the source of this stone. After much torment and difficulty, I brought the stone and placed it in front of the church, as a sign of gratitude and service. For when the day of judgement will come, may the light of this holy Khachkar show the purity of my soul and my intentions. Also for my sons and the sons of those kind souls who helped to craft this holy stone, may they have Gods mercy." Here a curious play of words takes place; while the Khachkar has not been crafted yet and Georg is describing the way he found it and the transportation, he refers to it as a 'stone' and only after it has been carved and stamped with the cross symbol (there might have been a ritual of the instalment and other religious processions involved as well), he speaks of it as 'holy'. Afterwards, the notion of the physical stone becomes secondary, moreover, during the second coming of Jesus, this Khachkar will turn into a beacon guiding their offspring to the light of God, to the salvation of their souls. On this Khachkar, the cross was portrayed encapsulated in three circles, perhaps emphasising its symbolic role of guidance and light. The height of this Khachkar is 3.66 meters, thus given the technologies available at the time, it was natural to consider it a divine intervention for the commissioner to come across a piece of that scale.

⁵² Zareh Hatsagorcyan *The catalogue of Armenian stones* (Yerevan: Kazmtechshinnyut, 1968), 10.

⁵³ Alexander Melqumyan, *In the world of Armenian stones* (Yerevan: Soviet writer, 1986), 42.



Figure 21 Detailing of a big Tuff piece, shaping it into a Khachkar at Khachkar studio in Yerevan Armenia. Photo by Lilit Mnatsakanyan. 2015.

Very often, similar Khachkar inscriptions describe the journey of finding the stone and the hardships of its instalment. Another monument from 1182 bears an inscription narrating; “Following good Lord’s guidance and graces, and the relentless power He has put in my arms, I departed to the land of the unknown and put to work all my skills, all my resources to find and bring about this blessed Khachkar, that is a manifest of my unshakable belief in the Father, the Son and the Holy Ghost”. This inscription is of great importance, since here the first time the word Khachkar is used in Nagorno-Karabakh region, where the monument is found. It was crafted in a place called Azu (currently it is unknown as to where is the corresponding location for this place, as no records have survived) but then transferred to Dadivank and was installed there, although the logistical and technical details remain somewhat mysterious. Indeed at a time Khachkar installation was an elaborate procedure and another record from monastery of Khadar Khachkar in Tartar informs us “The glorious knight Vasag of Hateqa, son of Hasan, known for his extraordinary power and wit, had to employ the best craftsmen and strong local men, to erect this stone to the sky”. Here is where the non-functional elements of Khachkar come in play. The protrusions on the sides and backs of the Khachkar have been interpreted as aid for lifting and transportation. It was speculated that holes on some Khachkars served the same purpose; to give grip and bearings for the transport and installation. Another Khachkar that is originally from Gegharkunik but currently resides in Echmiadzin depicts the arrival of the stone; there are angels carrying the stone with ropes adjusted to the protrusions on the sides. A similar scene of Khachkar being suspended on ropes and lowered down from heaven to the Earth is portrayed on Khachkar from Bjni from 1580. It was therefore assumed that the protrusions indeed served a particular purpose to ease the transportation and installation, thus Khachkar artists played with this notion in their stone carved stories of

Khachkars. On the other hand, most unfinished Khachkars found in hundreds of locations near local quarries indicate that the local sourcing was much more common.

From an artistic point of view, the creative medium of rock boasts a powerful statement. It is true that the rock has been mentioned in several Biblical references, such as Jesus in a famous discourse quotes, 'The stone the builders rejected has become the capstone' and at another time, tells Peter (Petra being the Latin word for rock) that '...on this rock I build my church....' Such strong imagery was necessary for the survival of the Armenian Church's; qualities like stability, permanence and grounded faith were perpetuated by the physical three-dimensional embodiment of Khachkar. As mentioned earlier, practicality has also played a huge role, since Armenia, with its vast mountain ranges and dormant volcanoes, had abundant resources of slate and Tuff. In a region prone to earthquakes, man-made structures had to prove sturdy, and rock, as a substrate of spiritual expression, signified the eternal and the infinite, amidst an unpredictable future.

Chapter 3 Semantics of Khachkar

PETROGLYPHS – IN THE BEGINNING

Khachkar played many parts in formation and development of Armenian identity; apart from being the religious stone of the nation, it also played a role of a book. In this role, Tuff made Khachkars single handedly preserved the Armenian alphabet, the language and recordings of the historic events. To understand the way in which Khachkar facilitated the development of education, literature and writing, we have to be start from the beginning and look into Petroglyphs, which preceded even the earliest forms of cave Khachkars.

From 15000 BC the petroglyphs have recorded not only the story of the evolution of tools and technologies, the craftsmanship and the lifestyle in Armenia, but the path that the language has undergone (fig. 22). There are exceptionally rich centres of rock carvings in historic Syunik; the province encompassing Shikahogh. The themes vary from most animals, to scenes representing hunters and hunting objects. The rock carvings of Syunik are based on the themes portraying the social life and the rituals of the time, such as wedding ceremonies etc.



Figure 22 A petroglyph depicting a celestial being and animals found in Geghama ridge, Syunik region. Photo by Yulia Grigoryants and Tigran Khachatryan. <http://www.azhdahak.com/index.php?lang=en&p=rockArt> 2009-2012.

These petroglyphs effectively communicate the information on activities, modes of life, production ways and means, animal husbandry and farming, ancient legends and myths, natural phenomena and general trends of past generations⁵⁴.

There is no precise dating of Armenian petroglyphs, as they have not been studied parallel to archaeological findings. Often there are discrepancies when trying to pinpoint the dates, as age-wise they do not match with the known primitive sites and settlements. However, the petroglyphic monuments, unlike letters or other papyrus documents, tended to stay in one place and were generally inscribed in that place, hence they were apt to acquire local peculiarities⁵⁵. Inscriptions were laid out with a logic that not only affects the texts of that structure but may also affect subordinate monuments in the vicinity of that structure. Many of Armenian petroglyphs were cut on high peaks and were addressed exclusively to the Gods⁵⁶; some hinting on the existence of a nearby temple that has been permanently vanished. Hence, by taking note of this factor, the correct relationship of monuments that have strayed from their original location may sometimes be established, or one can reconstruct the existence of a structure that has completely vanished⁵⁷.

Although no precise dating of the Armenian petroglyphs is available, they are divided into four main periods;

1. The monuments of most ancient period of Armenian petroglyphs, the figures of mammoth-elephants are characteristic to the late Old Stone Age, upper Palaeolithic (40000-12000 BC).
2. The period of unilinear petroglyphs, representing the appearance of goats and sheep as well as hunting scenes with people armed with bows, arrows and spears, without dogs. This is a period characteristic to the late middle stone age, Mesolithic (12000-8000 BC).
3. The period of engraving with deeper outline, when multi-figure anecdotal images of various animals, hunts for roes, sheep, bulls, deer and people armed with bows and arrows and accompanied by dogs. This is the period of early farming and cattle-breeding characteristic for Neolith (7000-4000 BC).
4. The period of carved outlines and silhouettes, where the figures are pictured by outlines, complex compositions and anecdotal pictures. They show horses, people on horse-back armed with bows and arrows, scenes of hunting for roes, sheep, bulls, and deer. In the farming and cattle breeding practices, draft animals have been used, which are characteristic for Neolith, the Copper- Stone Age (3000-2000 BC).

Of the rich petroglyphic heritage of Syunik region, one area in particular was an abundant source; more than 2000 decorated rocks were discovered at Oughtassar. The carvings are graphic and voluminous and have been presented horizontally or vertically on flat, brown and black basalt rock fragments. The depth of their cutting is around 2-6mm with the width of 2-21mm. The rock carvings portray scenes of most local animals, hunters and hunting objects and other scenarios referring to social life and rituals, such as ceremonial dance etc. It is speculated that these particular carvings are made by cattle breeding tribes who settled in those pastures in 5-2 millennium BC as dated by the radio-carbon method⁵⁸. Diverse forms of hunting were depicted from bare hands, to the ropes, clubs, traps, hollows, nets etc. Hunting done by means of bow and arrow, spears and hatches for example was aimed at preserving the communal herd from beasts of prey. Judging from the petroglyphs on the man-made cave walls, their occupiers were

⁵⁴ Gevorg Karakhanyan and Pargev Safyan, *Syunik petroglyphs* (Yerevan: GA publishers, 1970), 87.

⁵⁵ Ricardo Caminos and Henry Fisher, *Ancient Egyptian epigraphy and palaeography*. (New York: The Metropolitan museum of art, 1976), 30.

⁵⁶ Giancarlo Susini, *The Roman stonecutter* (Oxford: Rowman and Littlefield, 1973), 22.

⁵⁷ Ricardo Caminos and Henry Fisher, *Ancient Egyptian epigraphy and palaeography*. (New York: The Metropolitan museum of art, 1976), 31.

⁵⁸ Gevorg Karakhanyan and Pargev Safyan, *Syunik petroglyphs* (Yerevan: GA publishers, 1970), 86.

hunters of big mammals and birds. Different rock carvings on the same surface of a wall might have several thousand years gap; illustrating the awakening of early human that started to differentiate themselves from other mammals by rising to define their dependency upon nature⁵⁹. A vast number of the Syunik petroglyphs display, in various relations, Gods of Neolithic and early Iron Age and although they are anthropomorphic, their large dimensions with exaggerated iconographic details and functions differ sharply from pictures of ordinary men and hunters. Their appearance often is associated with celestial symbols, emphasizing the extraordinary heavenly origin of these supernatural creatures⁶⁰. From petroglyphs it can be derived that ancient civilization conceived the universe to be divided into three horizons (upper, middle and lower), which formed one indissoluble unity and did not differ essentially from each other. They believed that the upper horizon- the sky was inhabited with birds and celestial bodies, the second portrayed worldly affairs and the lower section referred to death and underworld. The morphology and logical succession of figures of these petroglyphs are of mythological nature and it was only natural for Khachkar, as a symbol of newly accepted Christian religion, to continue the tradition. The threefold perception of the world was also later translated into Khachkars.



Figure 22 Saint Hripsime inscription, one of the earliest to portray newly invented Armenian alphabet, Edjmiacin, Armenia. Photo by Hive Mind. www.hiveminer.com 2009.

⁵⁹ Sandro Sardaryan, *Armenia: the cradle of civilization* (Yerevan: YSU, 2004), 134.

⁶⁰ *Ibid*, 134.

1. EPIGRAPHY OF “GOAT LETTERS”

The petroglyphs are treated like written monuments, laying at the origin of all subsequent writing and scripture (fig. 22), which are based on the pictures of objects. Pictographic, hieroglyphic and ideographic characters originate in early Bronze Age, entering into Urartian (pre historic Armenia) culture and presumably changing into stylized scripts.

From early carved petroglyphs of the cave walls to the 5th century AD Khachkars with inscriptions, the native language was preserved through transformation and due to being embedded in stone. Thus the epigraphic studies of the stone inscriptions reveal the path that the language has undergone. Epigraphy specializes in stone/rock carvings only. In Armenian epigraphy -vimagrutyun means stone and written, similar to Greek epigraphy meaning ephi –surface and grafika- graffiti⁶¹. It is an auxiliary discipline of archaeology and history, unveiling the social development of early societies, their languages and linguistic logic, the path of the political, economic and juridical evolution, which can be accurately resurrected from epigraphic artefacts⁶². Petroglyphs are the earliest carriers of epigraphic material, these are the rock carvings of cave walls and other static surfaces in natural landscapes, dating back to 10 to 1 millennia BC. If the epigraphic material has been well preserved and the written text has survived undamaged, they constitute historical documents of primary importance⁶³. Unlike other forms of the historians’ records, which have come down to us through the centuries passing through many hands and most likely containing copyist’s mistakes etc., the stone inscriptions reach us directly in their original, uncorrupted form.

In Armenia, some Aramaic boundary inscriptions erected by Artaxias 1, king of Armenia (189-160 BC), who divided the fields between the villages in the course of his agrarian reform, reach us through inscriptions on small stone steles. Essential historic information was extracted from these inscriptions such as that there used to be various deviations from standard Aramaic at the time, in the form of non-Aramaic words and grammatical and syntactical anomalies. It appears that Medieval Armenians used Aramaic words, just as the Babylonians and Assyrians wrote Sumerian words but read them in their own language⁶⁴.

“The archaeology of epigraphy” is not concerned with writing as such, but with a man as a writer⁶⁵, in all his aspects, such as for example, his position and the angle etc. The epigraphic document is created via three different stages; first, the drafting of the illustration; next, the transfer of it on to the stone in the shape of a provisional outline, meant to guide the hand of the stonecutter; lastly, the actual carving. There were several carving techniques such as the “point beat” (this required hundreds and thousands of beats of the stone swingles to cover 1-3 cm of artwork) and the linear (which had a limited development). The rock art of Syunik province by its age and stylization, has developed the same way; from primitive linear-natural images to realistic ones and then, with vivid stylization, to outlinear images of the later period. The latter ones stand out for their finer lines; the artist had been using harder tools to carve the stone more skilfully⁶⁶. Late Neolithic iron age petroglyphs are carved out on comparatively smooth surface of basalt rock fragments by means of various hand-sized stone swingles and obsidian cutters, substituted, later on, by metal ones⁶⁷. The decoding of petroglyphs and creation of the copies of the epigraphs has several methods, of which the most popular analogue method is taking the impressions with the use of paper mache⁶⁸ or quick silicon moulds.

⁶¹ Grigor Grigoryan, *Armenian lithography* (Yerevan: Zangak-97 publishers, 2000), 9.

⁶² Ibid, 58.

⁶³ Joseph Naveh, *Early history of the alphabet*. (Jerusalem: The Magnes press, 1982), 2.

⁶⁴ Ibid, 130.

⁶⁵ Giancarlo Susini, *The Roman stonecutter* (Oxford: Rowman and Littlefield, 1973), 60.

⁶⁶ Sandro Sardaryan, *Armenian Petroglyphs from stone to bronze ages* (Yerevan: YSU, 2010), 19.

⁶⁷ Hamlet Martirosyan, *Geghama ridge petroglyphs* (Yerevan: GA publishers, 1981), 109.

⁶⁸ Grigor Grigoryan, *Armenian lithography* (Yerevan: Zangak-97 publishers, 2000), 89.

Indeed, rock carvings are a unique source for the study of ancient cultures of Armenia. Some of these petroglyphs have also been referred to as “Itsagir” - goat letters, since in the ancient Armenian language the words “goat” and “writing” were homonyms⁶⁹. During Soviet times, at the beginning of the 20th century, these petroglyphs have attracted the attention of certain archaeologists and investigators but they have not been studied as the time coincided with the USSR collapse. It was this time that the interest towards the monuments of rock-art blossomed in the country, when several prominent archaeologists indulged themselves to the study of the petroglyphs. However, very little has been preserved from the material collected during initial site visits. Numerous of the Itsagir monuments are stretched across several dozens of kilometres along the mountains near Tsghouk, spread around the slopes of Oughtassar Mountain, where the soil is rich with Alpine flora. Oughtassar can be translated as the Camel mountain (“ought” in Armenian means “camel” and “sar” means “mountain”) due to its resemblance with camel. Nearly nine out of twelve months, the rocks in the area are covered with thick snow, thus the study of the epigraphic material is only possible during summer months. Number of graves, traces of ruined site dwelling and cromlechs have been found around this region. The decorated rock-fragments are scattered at the feet of mountains and in valley, but the biggest portion of the petroglyphs are found on tombstones. The entire wealth of Armenian fauna is depicted through these rock carvings, where the compositions often include anywhere between ten to fifty pictures, amounting several hundred different patterns. Both wild and tamed animals of the time are portrayed in the carvings, such as gazelles and goats, deers and moufflons, horses and boars, dogs, wolves, jackals, bears, panthers and lions and more seldom there are pictures of aurochs and bisons. Hunting scenes are also rather common, with portrayal of hunters with bows, arrows, pikes and spears and other hunting objects like traps and lassos. Some carving show the early domesticated aurochs leading the cart, with covered carts and sledge-like ones as well as simplistic ploughs side by side with carvings which representing the universe. For an unknown reason, birds on carvings in this region do not usually occupy a significant place.

Syunik epigraphy is based predominantly on scenes referring to social life and ritual. And as mentioned, often single or collective hunting scenes of deers, goats, boars and aurochs are encountered. The abundance of such scenes assert B. Piotrovsky's conclusion according to which, with the spread of half-nomadic cattle-breeding, hunting once more becomes significant⁷⁰. The very vast spread and the high volume of rock carvings representing cattle testifies to the importance of cattle-breeding. There is a Cyclopean fortress and a lodgings which must have served as temporary dwelling site for cattle-breeding tribes are situated around three kilometres high at Oughtassar. Here the petroglyphic heritage of the graves point that the fortress and the lodgings were in use for many hundred years. Syunik petroglyphs depict subject scenes; single episodes of primitive people's social life represented as a merger with the surrounding nature. Scenes of ceremonial dances are also found in the rock art; these depict dances in pairs as well as collective settings. Although there is no precise answer, yet the comparison of monuments of material culture of Syunik and other regions of Armenia with those of the TransCaucasus and Asia Minor, gives some basis to assume the Syunik petroglyphs to belong to 5-2 millennium BC. Indeed the pre-historic rock carvings of Armenia are treasured historic sources of the tribal society, providing a detailed and comprehensive information on many aspects of Armenian ancestors, on their activities, on how they lived and made produce with the tools they have used, on their myths and legends.

Spread across myriad temple walls, bridges and Khachkars, the Armenian epigraphy portrays prehistoric man's simplistic perceptions of their surroundings and of the natural phenomena, as well as daily routines and first attempts on scientific discourses. Armenian petroglyphs continually evolved for over four

⁶⁹ G. Karakhanyan and P. Safyan, *Syunik petroglyphs* (Yerevan: GA publishers. 1970), 46.

⁷⁰ *Ibid*, 48.

thousand years⁷¹ and have been referred to as “Stone encyclopaedias”⁷². Through ages they have been constantly changing and becoming more complex: based on productive, religious, and ideological norm shifts of early farming, hunting gathering, herding etc. stages. The development of petroglyph production and use became more and more differentiated over time, and was expressed by an active interpretation of the surrounding landscape⁷³.

KHACHKAR

Khachkar (Armenian – cross stone, a stone that bears a cross, a cross shaped stone etc.) facilitated the development of Christianity, education, arts and architecture in Armenia since 4th century AD (fig. 24). Throughout history, Khachkar played a role of a gravestone, a book and most importantly it portrayed a new interpretation of a temple; as it was aimed to give holiness to an open air, to the secular territory. Khachkar is a common model of the Armenian world and the tradition of erecting the stele is kept intact to modern day.

The essence of the monument is rather accurately captured by the term “cross-stone”. Similar to the petroglyphs, Khachkars also have the three main zones: where the lower section highlights the earthly endeavour, the middle part is the cross tree and the upper area is where the sky and other celestial components are illustrated. The main focus of the composition is the cross, which is strategically depicted above the “profane” space of the lower portion yet below the “sacred” section of this tripartite composition. The cross is what links and simultaneously differentiates God and Evil, sacred and profane, the past and the future, left and right, death and immortality. Consequently, a bottom to top hierarchy is built, from portrayal of lower organisms, followed by plants and animals, then humans and lastly divine, spiritual entities. It is typical for any cross stone to have the cross and other illuminated symbols as main components and in addition also contain inscriptions, cornice, decorative elements (mostly geometric forms such as triangles, rosette etc.), lastly birds and other figurative reliefs. Despite the obvious similarities with petroglyphs, Khachkar reflects the rapid development of early settlements not only through more complex design solutions but with the added dimensions of socio-political and religious connotations, as well as pronounced manifestations of individualism.

By 5th Millennium BC, the Armenian cave dwellers raised stone monuments at springs and lakes and by the water-storage pools they had built – an invention that eventually led to irrigation systems. The monuments were upright, 10-20 feet tall, and were often carved to indicate fish-like water creatures; when the scientific world discovered them at the end of the 19th century, the local population called them Vishap (dragon). Some of these fish-shaped steles have a bull’s skin (complete with head and feet) carved into them, as if the skins were thrown on top of the stones – strongly suggesting an involvement of these monuments with a ritual of bull sacrifice. There is also a stream of water flowing from the mouth of the bull’s skin and some of the stones have images of water birds carved on them as well. When Khachkar came into existence as a separate stone, it abandoned the circular orientation of the earlier stele

⁷¹ Hamlet Martirosyan, *Geghama ridge petroglyphs* (Yerevan: GA publishers, 1981), 110.

⁷² Grigor Grigoryan, *Armenian lithography* (Yerevan: Zangak-97 publishers, 2000), 10.

⁷³ Andrew Jones, *Changing Pictures: Rock art traditions and visions in the Northernmost Europe* (Oxford: Oxbow Books, 2010), 102.

monuments – with its engravings on all sides – to establish, instead, a vector-like character toward the powerful images carved on one flat surface of the stone⁷⁴.



Figure 24 Three upright Khachkars in Noraduz medieval cemetery (a historic land with large number of early Khachkars). Photo by Rita Willaert, 2008.

1. KHACHKAR INITIATIONS

The motivations for embarking on Khachkar construction and the intentions for erecting a Khachkar have been traditionally very diverse and as varied as the medieval culture itself. The sacred stone could have been commissioned by any believer and for any occasion, as long as it did not conflict with the established traditions and ethics of the time. It was also important the Khachkar did not contradict with the Christian world view of the time, as testified by thousands of inscriptions of Khachkars. The stories depicted on the stones ranged from gloom descriptions of grief events of despondency and death to portrayal of joyous

⁷⁴ Andrew Jones, *Changing Pictures: Rock art traditions and visions in the Northernmost Europe* (Oxford: Oxbow Books, 2010), 63.

occasions of celebrations. Often Khachkar was placed in memory of someone dear who passed away, or to express their gratitude to God for miraculous healing of a family member, an acquaintance etc. Khachkars built for spiritual purposes seem to have been the most significant and respected ones. Sometimes the person who authorizes and supports the crafting and the setup of a stone might have had a spiritual aim in mind asking for help from God, a direction or salvation for their souls⁷⁵. Those with social connotations also were among important monuments, whilst the most widespread were the sacred stones commissioned for personal reasons were amongst.

Despite the myriad diversities of Khachkars, the main categories are to a great degree linked to the notion of cross and the themes revolving around prayers for help and protection, some form of intervention and eventually salvation of a soul.

Khachkar themes can be devised in six broad categories;

- Related to building of secular and non-secular constructions
- Highlighting economic and/or community issues
- Recording wars and battles
- Related to family/personal life
- Erected during burial ceremonies
- Mystical, religious and spiritual contexts

2. THE INTENTIONS

With a built or a restoration of a bridge, church, castle, tavern, chapel, mill or any other secular and non-secular construction, a Khachkar was commissioned, to mark the occasion. When initiated by the governing bodies of a time, upon completion of any significant structure, Khachkar was elevated almost as a record keeping, to “set in stone” the detailed information as to “how, when and why” such construct was commenced. It is this diligent documentation that has preserved the evidence for the built of the Yerevan city, the modern capital of Armenia, found by king Argishti in 782 BC⁷⁶. Khachkars were also carved into stone walls of the cities, with a wide array of inscriptions and compositional innovations at the time. Many of these “on wall” cross stones were installed in medieval Armenian cities of Kars and Ani, currently on the territory of Turkey). The significance of Khachkar in bridge building is remarkable. According to academic Shahinyan, it is thanks to the custom of Khachkar instalment, that we have any insight into this area; the sole source of information on the bridges constructed (especially during the period between 12-14th centuries), have been the stone inscriptions of the monuments⁷⁷. A cave Khachkar inscription of Gomq, that was designed to celebrate the successful construction of the new church and the chapel, reads in old Armenian script “We, Mkhitar and Arevik, children of Khoydanay, installed this holy cross, for thy church for the salvation of this village of ours. Thy church we have built with our own bear hands from scratch, where nothing existed. We have built it with the help of our brothers and our loved ones, so that the generations will remember us”.⁷⁸ This same text, with slight alterations, appears on the pedestal of Khachkar, where also the names of the Khachkar artists have been added too; Mkhitar, Shnohor and Aghbar.

⁷⁵ Hamlet Petrosyan, *Khachkar: the origins, symbolism and applications* (Yerevan: Printinfo publishers, 2008), 238.

⁷⁶ Ibid, 257.

⁷⁷ Abraham Shahinyan, *Armenian Khachkars and their inscriptions* (Yerevan: SUA press, 1970), 86.

⁷⁸ Petrosyan Suren, *Armenian petroglyphs* (Yerevan, Yegea publishers, 2005), 41.



Figure 25 The All-Saviour (Amenaprkich) Khachkar of Haghat Monastery dated to 1273. Photo by Sam Sweezy, 2001.

Another category is of Khachkars built in regards to community, economic and often administrative issues, such as development of the land, establishment and/or negotiation of mostly domestic borders, set-up of irrigation mechanisms and any rural planning endeavours as well as various types of reforms. In Martiros village, a classic example of this category of Khachkar can be found, where the stone inscription reads “In the name of the Lord, I, Mkhitar, the son of Deghka, with the blessing of Great Prasho the knight of the

knights and prince Hasanay, have fashioned this village and set up the sacred Khachkar, so that it will bestow upon us - me and my wife Mamerin, my son Kharipshah and my daughter Rzuqan, God's blessing and grace".⁷⁹ Haghpat monastery "All saviour" Khachkar (fig. 25) depicts a whole lifespan of constructional and economic activity, narrated on the shoulder of the stone by monk Hovhannes, who also installed the stone; "I, Hovhannes, the most humble servant of God, in the name of the holy trinity and Gods mercy, have obediently created this modest study chamber, furnished it with drawers of St Cross, all done in effort to praise the Lord".⁸⁰ The more practical uses of some smaller Khachkars cite socio-economic treaties and even smaller transactions of land, cattle and other similar exchanges between the local folk. In certain inscriptions of Khachkars that have been constructed on the borders dividing local or national lands, the monuments are referred to as boundary markers. It was speculated, however that the borders emerged as a result of a Khachkar being installed there and that the advantage was taken of the existing monument to mark the territory and not the other way round, when Khachkar would have specifically been constructed to indicate any land divisions. According to an inscription from Harichvanq, prince Zaqare announced; "and thus the land will be divided here; the territory on the left of Harich River, stretching north all the way to the Khachkar on the hill"⁸¹ therefore making the infrastructural divisions with the help of the marker Cross stone. Some Khachkars have been placed on pre-existing borders as well, as described on the stone inscription from Artcvanist; "The saviour cross was placed, on the border, dividing water from soil"⁸². A variety of sources inform of monuments intended for the protection of borders and preventions of foreign invasions. According to Stephanos Orbelyan, the bishop Hovhannes of Noravank, regulated the area surrounding the monastery in 12th century in the following manner; "...and in an effort to secure the land encompassing our holy residence, thy holy cross we erect that will protect us from female trespassers and visits of non-believers".⁸³ In this scenario, despite it being depicted as a holy monument, the use of Khachkar is rather pragmatic.

A different range of Khachkars, inform us about the triggers and outcomes of battles and wars, the heroes and martyrs and the missing persons as a result. Indeed a big significance was given to recording of wars and battles and these formed the basic source for historians to construct the missing pieces of the Armenian history⁸⁴. A classic example of this is a cross stone, most celebrated by Armenian art historians that was constructed after the victorious battle of Amberd castle. Here we find the narrative of the national hero Zaqare, who freed the country from Seljuk invasion - "Covenant. I, Zaqare the son of Sargis the Great, the warrior of Armenian and Georgian nations, liberated the impregnable castle of Amberd, built by Haqari generation, in the name of justice and freedom".⁸⁵ The contrasting topics of fight and feast have also been presented in the stone monuments. In most cases the image begins with the illustration of the army forces, including the infantry with less armours and cavalry adorned with various spikes and spears; noteworthy are the horseman and the variety of ornaments for horses. In general, it was widely accepted that the leader and the most renowned warriors were always portrayed riding a horse. Particular attention was paid to the armour and headpiece; these items were important indicatives of one's social and cavalry status. On one Khachkar, a wedding scene is depicted; whereby the groom was away in the battlefield and only his armour and headpiece were portrayed next to his fiance.⁸⁶

⁷⁹ Grigor Grigoryan, *Essays on the history of Syunik, 9-15th Centuries* (Yerevan: 1990), 130.

⁸⁰ Jean Michel Thierry and Patrick Donabedian, *Armenian Art* (New York: Harry N. Abrams, Inc., 1989), 534.

⁸¹ Abraham Shahinyan, *Armenian Khachkar and their inscriptions* (Yerevan: SUA press, 1970), 90.

⁸² *Ibid*, 88.

⁸³ Hamlet Petrosyan, *Khachkar: the origins, symbolism and applications* (Yerevan: Printinfo publishers, 2008), 227.

⁸⁴ *Ibid*, 242.

⁸⁵ Sergei Harutyunyan, *Amberd* (Yerevan: Armenian Academy of Sciences press, 1978), 229.

⁸⁶ Paris Heruni, *Armenians and the ancient Armenia* (Yerevan: Anahit press, 2006), 106.

Large number of Khachkars were dedicated to family and personal life, where the scenarios and motifs range from misfortune to celebration and personal plea. A particular type of Khachkar, targeted for infertility was rather common and a group of stone inscriptions testify to its existence. Often inscriptions of some Khachkars with tender images of maternity and baby Jesus illustrate the common belief in these cross stones as a source of fertility. A 1320 Khachkar from Darapas reads “I, Baghtar, husband of Karnoy, had my food and enjoyed my life, but did not have luck with an offspring. Thus this Khachkar we put, for the salvation of our souls”.⁸⁷ Another similarly themed cross stone can be found on Akana castle “I, Tagoh, the one with no daughter and no son, place this Khachkar for the salvation of my soul”.⁸⁸ There are myriad of inscriptions written by the infertile families appealing to the divine power of Khachkar, sometimes they would even commission the stones around or near religious buildings such as Tatev and Noravank temples, in belief that this would intensify the effect. It was proposed that mechanisms, perhaps bordering to bribery and similar, were employed in order to gain access to these special locations, since these temples were of great importance and only handful of chosen families were granted access to build on the premises. A different Khachkar from Saint Karapet temple from 1303, present a scenario where the prayers of the infertile family have been heard; “I, Sanchar, after years of childless life with my spouse, was at last blessed with an offspring and this Khachkar stands as our gratitude to almighty”.⁸⁹ Another monument from the same temple but about 80 years younger reads; “I, Hazari and my husband Milq, the childless couple, have been granted a child with Gods benevolence”.⁹⁰ Some Khachkars inform us of the various things that medieval residents referred to as a “child”, for example a 1278 Khachkar from Garni reads; “I, Papaq, son of Proshoy and my spouse Rousan, created this chapel and treated it as our own child. May this chapel, our offspring, live long and carry our legacy”.⁹¹ In a different Khachkar from 1224 commissioned by Princess Vaneni, she refers to the holy bible as her child; “As it is in the teachings of Yesayi the prophet, I had my child the book of holy father in my home that is the church”.⁹² Therefore it can be suggested that, a fragment of religious philosophy, an object bearing a spiritual connotations, was also considered an offspring for those fervent believers.

Vast majority of Khachkars were incorporated in burial ceremonies, hence the most widespread category is the one referring to death. Interesting to note that it was customary to commission Khachkar while the benefactor was still alive. In these common scenarios, the salvation of the soul was the emphasis of the monument and the “worldly life” of the benefactor was not mentioned in the inscription. A monument of Tutevordi reads; “hereby I follow the wishes of Georgy. I, Gregory the priest, the son of Tute Khachenatso, residing under the saint Atsatsin, have placed this holy stone for when I pass away. I pray you to accept this cross, with my silent lips I am begging you to look upon the undeserving soul of your servant with good eye. I, who worshipped you all his life long, living under the wing of father Hovhannes”.⁹³ Apparently at the time of the commissioning of this Khachkar, Gregory was very much alive and it is possible that he was anticipating his own death. In the second part of the inscription, he might be hinting on his dead state with the words “silent lips” meaning when he has already passed away and asking God's good will. Only on the exceptional occasions of sudden death caused by unforeseen circumstances of earthquake or similar, the actual death of the person was mentioned in the inscription.

⁸⁷ Hamlet Petrosyan, *Armenian folk arts, culture and identity* (USA: Indiana University press, 2001), 63.

⁸⁸ Ibid, 63.

⁸⁹ Tsatur Aghayan. *A visual reference of the Armenian history* (Yerevan, Hayastan publishers, 1989), 301.

⁹⁰ Ibid, 301.

⁹¹ Jacob Asaturean. *A history of stone and soil* (Lebanon, Atlas Publishers, 1969), 21.

⁹² Ibid, 24.

⁹³ Hamlet Petrosyan, *Khachkar: the origins, symbolism and applications* (Yerevan: Printinfo publishers, 2008), 239.

In the next category of Khachkars the stories have less to do with the daily routine activities; they were installed to record somewhat mystical and symbolic occurrences. Cross stones, narrating religious, spiritual and mystical themes were common, portraying religious conversions, occult and ghost encounters and similar. A theme of a vision is depicted in a Khachkar commissioned by Petros Akanates, during the emancipation of Aragacotn from Seljuk invasion in 1195; "I, Petros the priest, made this Khachkar as a divine sign, as I had a vision of the Holy Ghost".⁹⁴ Petros was called Akanates which means "eyewitness" in Armenian, after the dream-vision he had and was held in high esteem as a messenger of God for the long expected liberation of the land. Soon after the vision, the Khachkar was erected to record this mysterious event; it is possible that Petros made a resolution to install the holy monument if the vision will materialise. Another Khachkar from Gandzak, narrates a story of a religious conversion; "I, the spouse of Sargis, the prince of princes, abandoned the alien flag and embraced the holy cross. Remember my soul that worships you now".⁹⁵ Although this inscription is incomplete to an extent, the context has been interpreted as a religious conversation of Sargis's wife, who commissioned Khachkar to commemorate her newly adopted Christian faith. However, Khachkar's power reaches beyond the salvation of a particular benefactor; anyone who shares their gratitude and prayers around it, will be heard and their message will be resonated to the divine. Khachkar therefore as a spiritual centre, does not belong to any one particular person, but to all and to God. This universal, less limiting approach of Khachkar made it so popular in the Armenian culture and there are millions of these cross-stones crafted and set for myriad of purposes in the country. There are no two cross stones that are exactly alike; each is individual and unique in both its design and symbolism. The detailed carvings on Khachkars, unlike that of a temple ceiling, were visible at eye level, which made possible a more direct, personal communication between the believer and God.⁹⁶

3. POWER OF STONE

Hundreds of Khachkar inscriptions confirm that the instalment of the monument was not merely done to record specific situations and events; people were anticipating something and the occasion was simply a pretext for Khachkar placement. Nevertheless, the first thing was the erection of the monument and a wide spectrum of Khachkar inscriptions attest that lengthy traditional religious processions and blessings were involved prior to the stone monument erection. Indeed the instalment of the stone was not considered merely the upright placement of it; most inscriptions indicate that the monument was anointed with the blood of Christ. The permission to place a Khachkar was obtained with a certain fee and it was assumed that the fee might have covered the expenses for Khachkar blessing ceremony. Therefore the ritual could be seen not only as a way for the church to monitor newly constructed Khachkars, but also a vehicle to establish a constant revenue stream. According to Saint Hovhannes Odzneci, the holy leader of the Armenian Church in 6th century; "An inanimate objects, such as the symbols and the images, cannot, in themselves have any power, unless God resides in them. It is not possible for a non-living matter to help a living human being, not before Gods divinity is breathe into the stone".⁹⁷ The convention of Dvin, in 719, has accepted this ideology and the ritual of blessing the stone; "If a cross made of wood, or stone or any other substance, has not been blessed by a priest and has not been cleansed by holy water, has not preyed upon and chanted with holy words, then this stone is empty and devoid of divine power of apostolic church

⁹⁴ Margo Ghukasyan. *Stone made miracles* (Yerevan, HGM press, 2005), 46.

⁹⁵ Ibid, 46.

⁹⁶ Levon Abrahamyan and Nancy Sweezy. *Armenian Folk Arts, Culture and Identity*. (USA: Indiana University Press, 2001), 63.

⁹⁷ Hamlet Petrosyan, *Khachkar: the origins, symbolism and applications* (Yerevan: Printinfo publishers, 2008), 119.

and God”.⁹⁸ Thus it was established that any Khachkar made of any material, can be classified as holy, only after it went through this meticulous baptism. This is the “Odzneci order”, but there were many others to come. Another 12th century Khachkar inscription from Tavush describes the stone blessing tradition; “Thus brought this stone to be blessed in festive celebration”.⁹⁹ Many Khachkar inscriptions convey the message of the stone blessing through the blood of Christ, thus making it more potent and sacred.

Nerses Shnorhali (Nerses 4th the Gracious) the great Catholicos of Armenia from 1166 to 1173, describes the consecration of Khachkar; “In the light of the sacred moon, first wash thy cross with water, then rinse it with wine -meditatively, observing the presence of Lord Jesus. Utter the sacred words of God, reading from the Holy Scripture, consulting with divine and prophetic texts. Pray in the priestly isolation and purity, begging of God to bestow upon this cross His divine blessing and power. So that the holy stone can manifest itself as a leader and a teacher to those who are in suffering - to bring them salvation, to those who are in anger and doubt - to forgive their sins and bring them enlightenment”.¹⁰⁰ Thus if “Odzneci order” consisted of cleansing with holy water, Shnorhali emphasizes the purification with water and wine. Shnorhali have transcribed specific powers to the stone that has been blessed as having a capacity to heal the diseased, expel demons and alleviation of the wrath of Gods. Moreover, the cleansing with the wine, especially for Khachkars most of which conveyed the symbolism of grape vine, pomegranate or depicted origins of wine in many variety of forms, was considered a divine purification with that of a blood of holy Christ.

On the other hand the ritual of “Mashtoc order”, encouraged both the use of water and wine as well as holy water. The ritual of the holy water blessing was described on one of Khachkar inscriptions in the following manner “Bishop or priest, with the holy water in their hand... would first mark the holy cross crafted in the stone, then the crown, the base, followed by the right and left wings of the piece”.¹⁰¹

4. THE MEDIATOR

Whilst the occasions for erecting Khachkar have been very specific, according to the stone inscriptions the actual subjects of Khachkar instalment have been traditionally very diverse. Khachkar symbolised adoration, commemoration, mediation, salvation, hence the real purpose and inner inclination for Khachkar instalment were always anticipation and goal. The inscriptions depict pleas for help, protection-sheltering, longevity, victory, commemoration, salvation of one’s soul. The aim can be interpreted as holy covenant towards the future, without which the monument would have been nothing more than just a stone book with no impact on the future. Khachkar inscriptions are free from pragmatic requests. The only down-to-earth appeal that emerges quiet frequently is longevity, or as it was called “arevshatutyun”; literally translated means to have as much sun exposure as possible (arev- sun and shututyun-abundance).

Some Khachkar that adopted biblical stories on their inscriptions, have been shaped in a form of the holy bible to magnify the effect of the monument. Amongst all the construction of objects of worship, cross has assumed the most profound form of adoration. It was due to this mass national adaptation of the symbol of the cross that Khachkar become the most affordable, the least high maintenance and close to reach form of personal saint. This phenomenon of Khachkar evolution is best described by historian Mkhitar Gosh; “In misery or joy, the nation found a symbol to turn to – the cross-stone”.¹⁰²

⁹⁸ Hamlet Petrosyan, *Khachkar: the origins, symbolism and applications* (Yerevan: Printinfo publishers, 2008), 120.

⁹⁹ Margo Ghukasyan. *Stone made miracles* (Yerevan, HGM press, 2005), 48.

¹⁰⁰ Hamlet Petrosyan, *Khachkar: the origins, symbolism and applications* (Yerevan: Printinfo publishers, 2008), 327.

¹⁰¹ Hrayr Isabekyan. *Armenian renaissance architecture* (Armenia, Hayastan publishers, 1990), 116.

¹⁰² Zareh Melqonyan. *Mountains on the slopes* (Yerevan, Soviet writer publishers, 1984), 556.

This opinion was not shared by everyone; some philosophers interpreted this progression as a negative development, one that degraded the cross, making it too common and stripping it from its divine power. Armenian philosopher Vardapet expressed his concern; “By placing the cross around every corner, people have disrespected the cross and ignored its purity, making it a commonplace ornament, collecting dust and dirt from the streets”.¹⁰³ The mass production of Khachkars resulted in the emergence of folklore and non-secular themed narratives and motives in the iconography of Khachkars. This democratization¹⁰⁴ of the sacred monument brought about folklore variations of Cross stones, such as those found in village graveyards, in the areas of non-explicit Christian majority where the church did not exert as much authority and control, or in the areas where the earthly traditions of non-religious nature were more pronounced such as in Artsakh and during the period of foreign invasions, that also weakened the role of Christian church, especially between the 15th and 17th centuries.

Although Khachkars have had variety of applications, far stretched beyond their more traditional and widely accepted purposes, nevertheless every Monument was open for all devotees to light a candle, to worship and to pray or was involved in any religious ritual. Khachkar was the only Christian relic that enables such direct and intimate closeness with the divinity. There were no officially imposed rules, time restrictions or specially designated dates for a person to stop by one of these open air holy Stones. This unrestrained accessibility promoted Khachkars popularity across the country and especially amongst those who could not afford expensive religious ceremonies. Hence, Khachkar started to compete with religious saints to the point that some religious scholar monks, started expressing deep concerns around this popularisation, perceiving Khachkar as a threat. From scarce texts and inscriptions rewritten by historian Mkhitar Gosh, it becomes apparent that whenever a Khachkar would become popular, nearby monastery would start including it in their religious ceremonies, in an effort to exert a status of ownership or association.¹⁰⁵

Many stone inscriptions and religious manuscripts indicate that it was common place to name a Khachkar after a particular Armenian saint; St Sargis, St Poghos (Paul) , St Gevorg (George), St Petros (Peter), St Stephanos (Stefan), St Hovhan, St Harutyun, St Grigor (Gregory) etc. Khachkar was named after one of the Saints but it was extremely rare for a Khachkar to also depict the image of the Saint. 1171 Khachkar from Hovhanavanq portrays Jesus and Adam on the lower edge of the upper right wing, while illustrations of St Peter and St Paul were found on the opposite side of the stone. Same two saints were found depicted on the upper winged part of the central cross from the only surviving cave made Khachkar of Karmrashen from 1291. It was therefore assumed that both Khachkars were named after these Saints.¹⁰⁶ Another 13th century monument from Havuc tar, portrays Saint Sargis on a horse, armed with a spear. Following the customary ideology of depicting this saint, the artist tried to present St Sargis in motion, his horse is running while his cape is flying with the wind. Unfortunately there are no other inscriptions that have survived on this monument, apart from the “St Sargis”¹⁰⁷ text carved on the top, hence it was assumed that Khachkar was designed to pay homage this Saint (fig. 26).

¹⁰³ Sandro Sardaryan. *Armenia: the cradle of civilization* (Yerevan, YSU press, 2004), 413.

¹⁰⁴ Hamlet Petrosyan, *Khachkar: the origins, symbolism and applications* (Yerevan: Printinfo publishers, 2008), 442.

¹⁰⁵ *Ibid*, 379.

¹⁰⁶ Varazdat Harutyunyan, *The history of Armenian architecture* (Armenia: Luys publishers, 1992), 612.

¹⁰⁷ Paris Heruni, *Armenians and the ancient Armenia* (Yerevan: Anahit press, 2006), 95.



Figure 26 Stylised interpretation of St. Sargis Khachkar inscription. Original artwork date unknown, copied from manuscript by Armen Kurkchyan, 2003.

Another custom was for Khachkar benefactor, to dedicate the monument to the saint of the same name. For example a 13th century Khachkar from Taghavanq was dedicated to Saint Hovhannes and was commissioned by the vicar named Hovhannes. And a Haghbat monument from 1273 reads; “to the saint Peter the apostle”, while the pedestal inscription informs us the name of benefactor – Peter Harivanci. ¹⁰⁸

¹⁰⁸ Varazdat Harutyunyan, *The history of Armenian architecture* (Armenia: Luys publishers, 1992), 610.

REFLECTIONS

Archaeological excavations can tell certain amount about past lifestyles, such as when people lived, what they made, ate and even traded, whether they owned livestock, moved seasonally, and buried their dead; but it is also needed to learn about the other side of the coin, about their social activities, cognitive systems, esoteric and abstract thoughts, perceptions of morality, and concepts of reality, the very things that gave their lives meaning¹⁰⁹. Archaeology tells us little about how they perceived the world, especially in the Armenian world, where not only most of the historic land is lost, but the remaining piece is mostly wiped off any written archaeological record. In a certain way, Petroglyphic and Khachkar inscriptions are just about all that remain to give us insight into earliest ways in which prehistoric Armenians thought and survived in a world in which they were merely a part of the nature. Stone steles and Khachkars in particular are imposing public monuments bearing the texts of commendations, eulogies, accounts of imperial actions, as well as histories of temples and government buildings and religious texts¹¹⁰.

¹⁰⁹ David Coulson and Alec Campbell, *African rock art*. (New York: Harry N Abrams, 2001), 52.

¹¹⁰ Robert Harrist, *The Landscape of words: Stone inscriptions from early and medieval China* (USA: University of Washington Press, 2008), 24.

Chapter 4 Khachkar Digital Archive

The local narrative of place identity is represented by the rural dwelling of Shikahogh, and is constructed through direct action and participation. The strategic location of Shikahogh is what makes it significant; as Syunik province in general is a rather fragile region, where both borders with the neighbouring Turkey and Azerbaijan are shut and are under the surveillance of both the Armenian and the Russian armed forces. Shikahogh genealogy is marked with extreme scarcity and the village is also vastly under-researched; therefore all information is based upon the fieldworks. At 980m above sea level, the land is only 19 square km, with population of 211. No written scripture is available narrating village history, yet here can be found a 19th century abandoned bridge, a 17-18th century graveyards and 7-6th century BC burial grounds. The study of these relics as well as Shikahogh Khachkars, might shed some light.

EXPERIMENTAL ARCHAEOLOGY

The preliminary fieldwork conducted in summer 2013 revealed a great number of Khachkars in Shikahogh, that have not been researched and nothing is known of their origin and/or purpose. Like most other cross-stones, these too might have had unique significance in the past; perhaps leading towards discoveries of the village genealogy, of which no recorded evidence has survived prior to 18th century. The methods of experimental archaeology and digital reconstruction have been employed to replicate Shikahogh Khachkars and decipher semantics of some Khachkar inscriptions. Experimental archaeology, in the context of this research, used a series of hypothesis about the essence of Khachkar and Khachkar inscription, by re-enacting the ancient methods of stone carving.

The term experimental archaeology (EA) describes a cluster of facts and theories that has been collected through a century of interest in reconstruction and function of ancient relics¹¹¹. EA is a relatively new frontier and it is only in the past two decades that serious attempts have been made to test the functions of prehistoric tools (Fig. 27). The variation in material culture and its behavioural correlates is derived from studies that create analogies with past behaviour using modern material procurement, thus EA is the fabrication of materials, behaviours, or both in order to observe one or more process involved in production, use, discard, deterioration, or recovery of material culture¹¹².

¹¹¹ John Coles, *Experimental archaeology* (USA: The Blackburn Press, 2010), 21.

¹¹² Jeffrey Ferguson, *Designing experimental research in archaeology* (Colorado: University press of Colorado, 2010), 2.



Figure 27 A medieval hammer from an Experimental Archaeology workshop undertaken at Butser ancient farm, Hampshire UK. Photo by Lilit Mnatsakanyan, 2014.

The experiment is rather scientific; it is a method of trial or test that establishes a reasoned conclusion, against the initial hypothesis. For example, if the hypothesis is that a certain Khachkar inscription is made by using a stone blade of a certain size, then after re-enacting the process, that imitates the postulated conditions, the result will support or discard the initial hypothesis. If the comparison of the outcome with the prime data is positive, the hypothesis can be accepted as valid and the negative result will disprove the interpretation requiring another to be raised in its place¹¹³. EA is concerned both with the duplication of the artefacts of prehistoric men as well as determining the functional capabilities of these artefacts¹¹⁴. For both scenarios it is essential to produce copies of prehistoric objects, which then are either studied as replicas in themselves, or tested in some way. These copies may provide insight into how things were produced in ancient times, and often these experiments aid in interpretation of otherwise incomprehensible parts of objects or marks upon them. For example some Khachkars have additional structural elements that have no conceptual or ornamental bearings, such as protrusions on the back and the sides of the cross-stones. Khachkars from earlier period (before 8th century) also include large holes in them that do not confine with the overall design. Thus it was speculated by some experts that the role of these “non-functional” elements was to aid the laborious transportation and installation process of Khachkars (ropes would go through the holes and around the protrusions for lifting and grip), however this theoretical hypothesis is not based on any experimental tests.¹¹⁵

The long evolution of early man’s technology is rather conservative; prehistoric innovations were rare and singular, often separated by thousands of years, especially in the earliest stages. The slow development

¹¹³ Peter Reynolds, *The nature of experiment in archaeology* (England: Cambridge University press, 1976), 12.

¹¹⁴ John Coles, *Experimental archaeology* (USA: The Blackburn Press, 2010), 28.

¹¹⁵ Alexander Melqumyan. *In the world of the Armenian stones* (Yerevan, Soviet writer press, 1986), 165.

of the early stone tools is true representative of this inertia in innovation. Indeed, prehistoric man's technology was simple and direct, hence it can be speculated that this implies a direct relationship between man's needs and his intellectual capacity to find ways to meet these needs¹¹⁶. "Man is a tool-making animal" said Benjamin Franklin (1778)¹¹⁷; other animals use tools, but unlike man, they don't make them. Tool making is a unique human skill and those prehistoric men who made standard types of tools must have visualised in their minds the specific ends to which they laboured. Tools can encourage new ways of thinking, as they embody conceptual knowledge and harnessing tools may relieve its creator of some physical and mental effort¹¹⁸. It is this ability to convert creative thought into substantive works that differentiated humans from other organisms and it can be argued that our culture really is the outcome of this capacity for conceptual thought¹¹⁹. EA enables the deduction of precise use of the tools from prehistoric to mediaeval and current times, through the examination for wear traces that describe the material in terms of function and detail. In the example of Khachkars, the traces of tool marks enable for rather accurate estimation of the tools and methods employed. Tools explained by the potential marks that have been left, would be reflected as such; a hand held flake would be limited by the rotation of the wrist action, a maximum of between 180 and 360 degrees, whereas a more mechanised drill, such as a pump drill, allows several rotations and contra-rotations, depending on the pose of the bow, or pressure and bounce of the crossbar in the pump drills etc.¹²⁰. EA is ideal for isolating effects and relationships of small sets of variables (such as how Khachkar length relates to its thickness and the angle of a stone instrument used for carving). Hence these principles are utilised by EA to clarify past behaviours and practices, through theoretically contextualised experiments. The network of connection between intent, abstraction, fabrication and the resulting artefact are structured within the experiment, with the emphasis on fabrication. EA methodology offers a high degree of control of variables and explores specific research questions, which has great utility of examining the material culture in its social context¹²¹. Shikahogh Khachkars, are therefore the archaeological source for formulating the working hypothesis, where the reconstruction not only revolves around the replication of the old modes of craftsmanship, but also with the restoration of missing or corrupt data of the cross-stones.

METHODOLOGICAL EXCURSE

There are several EA methodologies that can be employed to test and re-enact a Khachkar. In one of them, the experiment is divided into five distinct categories: construct, process and function, simulation, probability trials and technological innovation¹²². Construct is the simplest form of reconstructing the initial form from its archaeological remains. It is to examine in minute detail every component and geometric intricacy by re-creating it at 1:1 scale, which is rather feasible with some smaller and medium sized Khachkars. "Process and function" stage involves the examination of how things actually work. This cycle of

¹¹⁶ Ervan Garrison, *History of engineering and technology* (USA: CRC Press, 1999), 137.

¹¹⁷ Charles Singer, *A history of technology: Vol. 1* (Oxford: Oxford University Press, 1954), 29.

¹¹⁸ Ruairi Glynn and Bob Sheil, *Fabricate: Making Digital Architecture*. (Canada: Riverside Architectural Press, 2011), 53.

¹¹⁹ Charles Singer, *A history of technology: Vol. 1* (Oxford: Oxford University Press, 1954), 141.

¹²⁰ Penny Cunningham, Julia Heeb and Roeland Paardekooper, *Experiencing Archaeology by Experiment*. (Exeter: Oxbow books, 2007), 29.

¹²¹ Jeffrey Ferguson, *Designing experimental research in archaeology* (Colorado: University press of Colorado, 2010), 2.

¹²² Peter Reynolds, *Experimental archaeology* (England: British museum publications, 1979), 3.

experiments demonstrates the methodology of experimentation and the need for extensive replication¹²³. Here the hypothesis upon the non-functional elements of Khachkar can be tested, via a re-play of transportation and installation processes. Next is the simulation trial, which requires a creation of a new state of the hypothesised original. Then the probability trial combines the previous three with the added component of seeking an outcome, ex. with Khachkar inscription it can be assumed it contains a specific information and work towards it, until proven otherwise. In practice the results from such trials have to be carefully defined in terms of the variables and constants within the experimental design, which, in turn, is dictated by the questions asked. Lastly, the technological innovation category perhaps falls into the domain of digital reconstruction, with the use of applications like fluxgate gradiometers, soil magnetic susceptibility meters, ground radar, X-ray etc. and even elements borrowed from other disciplines. The methodological stages can be followed in sequence, rearranged; some steps can be skipped, depending on the level of detail required, the availability of the initial data and the tools etc. Nevertheless, in retrospect the logic of the experiment should be kept intact; in the sense that it must confirm or deny any initial hypothesis raised¹²⁴.

Another EA methodology entails operations, in which matter is shaped, or matter is shaped and used, in a manner simulative of the past and these series of experiments are called imitative experiments¹²⁵. Unlike the above described scientific approach, this method differs significantly, as the aim here is to test beliefs about past cultural behaviours. Nevertheless, the logic and the flow of an experiment is maintained here as well; the limited working hypothesis converted into a verifiable hypothesis of the form “if I do A, I will get B”. Thus it is impossible to know if the converted hypothesis will pass the tests. The process of performing an imitative experiment may be summarized in following steps; converting the limited hypothesis into a verifiable form, selecting the experimental material, operating with the objective and effective materials, observing the results of the experiment and lastly interpreting the results of an experiment in an inference¹²⁶.

It is important to understand the true impact of this last stage- the interpretation of the results. The experiment is based upon conjecture, a belief that a specific cross-stone was made in a certain way for a certain purpose; however there is no precise way to be certain of the result. Theories about functions of ancient Khachkars are formulated, and they can be experimentally tested, but always with a degree of interpretation as the events portrayed on Khachkar inscriptions are past, gone forever, and cannot be observed or measured real time. There is much room for error to begin with; the methods of duplicating are inefficient, because of the inexperienced use of primitive stone tools. An equal skill-set for the use of the tools when comparing the prehistoric and modern men cannot be assumed, thus a degree of speculation is acceptable, based upon estimates of prehistoric time, surviving materials, economy and environment. Another impediment is of course the implication of the time; it is not possible to accelerate the effects of weather without distortion. Therefore, when making summaries based on the experiments, the inherent limitations of the methods and the materials must be constantly in mind. There are, however, variables that can be controlled to achieve better precision; when experimenting with the re-enactment process, only those methods which have been available to prehistoric men should be implemented. Moreover, since the environment plays a major part, the testing must be carried out with materials and under conditions approximately to those of prehistoric times.

¹²³ Ibid, 7.

¹²⁴ Ibid, 15.

¹²⁵ Robert Ascher, *Experimental archaeology* (USA: Blackwell Publishing, 1961), 793.

¹²⁶ Robert Ascher, *Experimental archaeology* (USA: Blackwell Publishing, 1961), 808.

A brief research indicated that EA methodologies have had extremely limited use in Armenia, hence a series of EA workshops have been attended at Butser Ancient farm in Hampshire, UK, to aid in later planning and detailing of the Shikahogh Stone lab. During the flint knapping session with Robert Turner I have ventured into creating hand axes, arrow heads and other stone tools like scrapers, denticulates, piercers and microliths. Two methods were utilized with hammer stones and the more accurate copper tools, while going through the initial stage of the core tool creation; the process of taking the piece of stone and reducing its geometry to tool like form (fig. 28). I have discovered the technical challenges involved in finding the stone of the right shape; the easiest shape achieved is the one that is congenial with the existing inner structure of the piece, thus the importance of visualising what is “inside of the stone”. It was proposed that prehistoric men had this knowledge and produced tools in accordance; they were letting out the hidden sculpture, the shape that was trapped inside the piece of stone. In the course of the sessions, a general overview of tool making and tool records was studied as well, examining how the tool-kit has changed with the emergence of different settlements.



Figure 28 Flint knapping workshop with Robert Turner undertaken at Butser ancient farm, Hampshire UK. Photo by Lilit Mnatsakanyan, 2014.

As time passes, both petroglyph and Khachkar surfaces have been weathered and are disappearing; they have been discoloured, cracked and accumulated moss and dirt. Exposed to the eroding power of wide temperature fluctuations, the wind and earthquakes, these outdoor inscriptions, begin to disappear as soon as they are completed. On the other hand, mining, spread of agriculture, construction of roads and dams, expansion of tourism all take their toll on the stone made artefacts. The digital component of EA within this research is focused on the recovery of the illegible art on the damaged stone surfaces, which is a rather challenging task. The use of the digital archaeology within EA has a dual purpose; on one hand it is employed for reconstruction purposes, since many Shikahogh Khachkars have been damaged and their inscriptions have been partially lost. On the other hand, apart from regenerating the missing data, the digital component aids in the preservation of stone relics. Khachkar is the commemorative stone of nation and represents the importance of the national identity preservation, consequently this leads to the need for conservation of the cross stone and the stone inscriptions. Digital archaeology (DA) has played an important role in giving methodological foundation to theoretical perspectives and follows the same logical flow as the EA. DA procedures provide a set of tools, similar to any other set of tools in the archaeological tool kit for solving problems that are generated by a variety of theoretical or narrative concerns. Here the future technology is used to understand past behaviour.

DA provides a large array of tools to record the surface of a sample rock inscription, such as structured lighting, multi-view and image-based digitalization. Structured lighting method projects lines to the surface and calculate the 3D points from recorded 2D images (fig. 29). The multi-view imaging uses either multiple images taken from a single camera or relies on multiple cameras. The image-based technique interpolates multiple images to synthesize one. To recognise the words and symbols on Khachkar inscription, optical character recognition (OCR) method was employed. Due to the noisy nature of the stone carved images and in the absence of contextual information (Khachkars may contain rare spellings or names which are obsolete today) OCR is best equipped for symbol representation variations and is able to accurately classify each character. Among the various methods of data manipulation and information creation, DA tools allow us to detect, identify and visualise hidden patterns of stone inscriptions, tools and artefacts. For example to evaluate the regularity of the edges of a flint tool, its contour has been selectively visualized and subsequently processed into a mathematical formula, enabling fast and reliable classification based on predefined criteria. Needless to say that if this process was done manually instead, it would have not only been extremely time-consuming but also less reliable than the digital application.

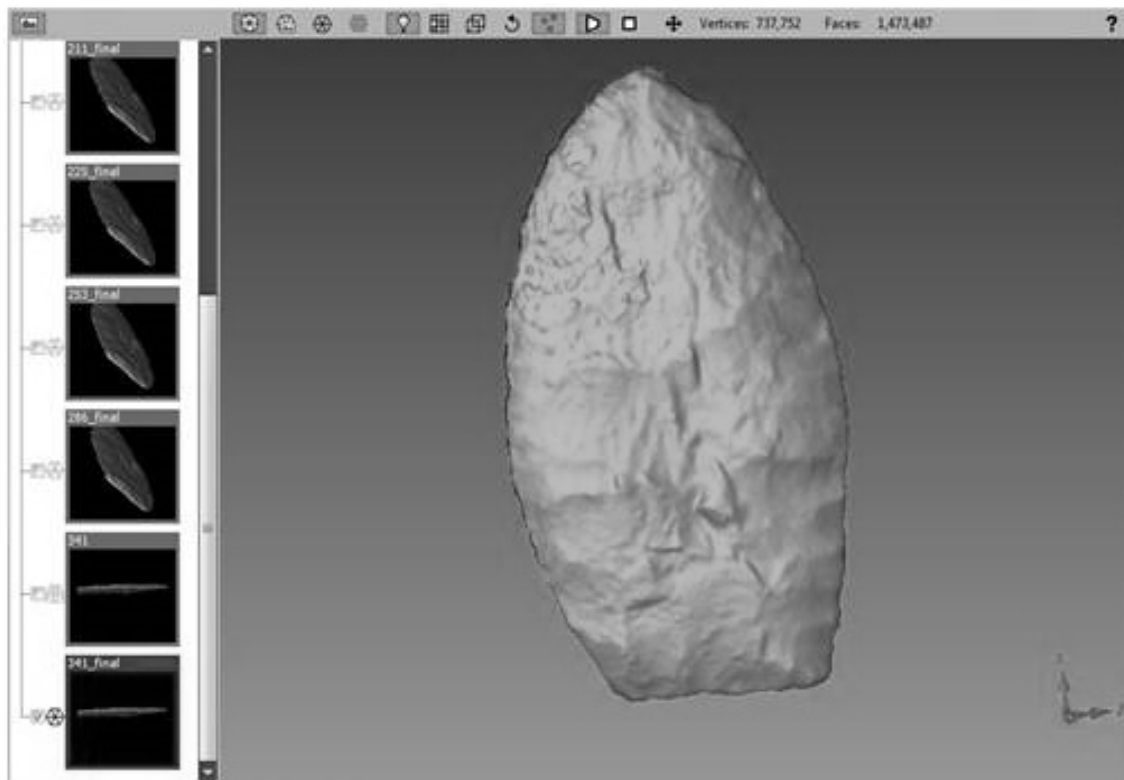


Figure 29 Khachkar carving stone tool 3D model created with structured lighting method, in Yerevan, Armenia. Screenshot by Lilit Mnatsakanyan, 2015.

A more complex DA methods include archaeological 3D modelling – the recreation of Khachkars by digital means based upon the current state of the stone cross and inscriptions on its surface. This process also integrates any available historical and archaeological data, allowing us not only to illustrate but to analyse the Khachkars. During my interview with Khachkar artist Varazdat Hambardzumyan, he explained that a vast number of Armenian Khachkars were destroyed, left behind during the 1915 Armenian genocide. His team put together a studio, collecting data such as old photography (mostly saved by the Armenian diaspora) that will enable them to resurrect / replicate these lost relics. Using archaeological 3D modelling will vastly accelerate this task, as it enables recording of all archaeological data in much more complete manner than the traditional photography and drawings. Thus DA method essentially creates a virtual benchmark, where any initial hypothesis on Khachkar can be tested and corrected in order to produce a relatively truthful image of these artefacts that have been buried or distorted by time. The creation and visualisation of a multidimensional model, does not just add an aesthetic aspect to reconstruction; the process allows for the interpretation of tools and artefacts where the input data is often fragmented, such as in case of Khachkar inscriptions. DA is utilised the same way as the archaeology itself; as a digital version of the EA, it provides tools of discovery and gives an interactive feedback, adding information and insight to what is already known. A 3D model offers a holistic perspective of the world because it synthesizes different qualities of information (microscopic, archaeometric, thermographic, wear-and-tear analysis etc.) into a whole that is greater than the sum of its parts.

Identity on the other hand, is not digital, but an abstract term used to describe a complex series of inter-related personal concepts and societal ideologies that allows both individuality and conformity. Through DA techniques, the elements of identity that can be addressed through the archaeological record are “digitised”. Here we are beginning to examine the constituent parts of the identity, rather than categorising the identity, and by doing so it may be possible to interpolate the bigger cultural picture.

RED HEATED SOIL

Ancient Armenians conceived the universe to be divided into three zones (upper, middle and lower) which formed one indissoluble unity and did not differ essentially from each other. They believed that the upper horizon – the sky, was also inhabited by various animals and their ancestors. Their heavenly life was pictured amid the stars and suns, frequently the remote images of celestial bodies were likened to the shapes of animals and were named after them. That is why often luminary birds and animals come across in the rock carvings. Birds in association with the sun disc or fighting against the dragon-snake are likewise pictured in the newly-found rock carvings of Syunik.¹²⁷ In other compositions, the same birds figure among goats, deer and men, accompanied by pictures or signs of celestial bodies.

When driving from Yerevan to Shikahogh village, one can observe the soil gradually turning from earth brown to red tinted. The name Shikahogh (orange earth or red, heated soil) originates from the orangey, fiery red colour of soil in the area (fig. 30). Scientists suggest the ten thousand hectares of forest help moderate hot winds blowing from desert plains in Iran to the south.¹²⁸ The vegetation is also influenced by air from the Caspian Sea to the east. These climatic conditions have created a mix of flora and fauna unique to the region, where the oldest parts of the forests are thousands of years old and the growth is so thick in places it blocks out almost all sunlight, so that deep in the forest even the brightest days can seem dark. The local ecosystem has been kept intact largely due to the region’s remoteness. Shikahogh is one of the five villages within Kapan municipality in Syunik province, along with Chakaten, Srashen, Nerkin Hand and Tsav, all surrounding the Shikahogh Natural Preserve, which is one of Armenia's largest natural reserves.

¹²⁷ Suren Petrosyan *Armenian petroglyphs* (Yerevan; Yegea publishers, 2005), 148.

¹²⁸ Grigor Grigoryan *Essays on the History of Syunik, 9-15th Centuries* (Yerevan; SW Press, 1990), 227.



Figure 30 Red soil on the hills of Shikahogh Village, Armenia. Photo by Lilit Mnatsakanyan, 2014.

Several fieldworks were conducted in the village throughout August 2013 to September 2015, where I had interviewed the local residents, the governor and the head of the Natural Preserve. It was a unique opportunity to immerse into the day to day village life and build a comprehensive understanding of the joys and impediments of farming, agriculture and local operation routines, as seen from the residents' perspective. Shikahogh is a key area due to its strategic placement and if a successful development project was to be implemented, it could potentially impact the surrounding four villages too. Thus Shikahogh would become a hub model of development, clustering around itself other villages and this could be a very efficient model to copy across other rural dwellings in the country. Yet most importantly, Shikahogh is a cradle for many Khachkars, of which no prior research has been conducted and nothing is known of their origins. During the fieldwork, most of these Cross stones were studied.

KHACHKAR WORKSHOP: CONVERSATIONS WITH STONE

Stone inscriptions are perhaps the oldest cultural heritage in the Armenian world as well as on earth. For more than ten thousand years, the ancient men have carved figures, symbols and signs on rock surfaces by pecking and scratching, generating textural patterns in an effort to understand, to document, to express themselves. Unfortunately, with the passage of time, most Khachkars and stone inscription surfaces have weathered and are disappearing. Erosion, coloration, accumulation of lichen, moss and dirt, all have their adverse effect on the monuments, thus making the recovery of these damaged surfaces a challenging endeavour. Prehistoric stone inscriptions mainly on flat panels and medieval Khachkars are very often to be found in remote areas such as Shikahogh Village. The contents are what considered to be primitive figures and ornaments, carved by basic picking tools like stone pieces and rods. Though Shikahogh site is away from man-made pollution, the Khachkars, nevertheless, have been gradually eroded by nature. Most Shikahogh Khachkar inscriptions have become illegible to the naked eye.



Figure 31 Carving of the smaller ornamental details in Khachkar making workshop attended in Yerevan, Armenia. Photo by Lilit Mnatsakanyan, 2015.

More modern soviet time stone monuments can be found around the habited areas such as buildings, wells and graveyards. In contract to prehistoric rock carvings, the more modern Khachkar inscriptions involve human languages. The processes involve modern, advanced tools such as drills and cutters. On the other hand, of course various human factors have contributed to the process of erosion, including the installation angles, selections of the types of stones, air pollution etc. It is rather likely that each of Shikahogh unknown Khachkars is a potential invaluable source of local heritage, genealogy, epistemological and even studies on earthquakes. The cause of death for those buried in a large graveyard adjacent to the village is largely unknown, but some of the death were assumed to have been result of a large earthquake (since the region is prone to earthquakes), as the dates on some survived tombstone Khachkars bear witness. Sadly, due to continuous harsh climatic conditions and weathering, the words on the stones are disappearing.

The attempt was made to recover textural patterns such as figures and words from these eroded outdoor Khachkars and number of others found around the village. During the field-trip, several weeks were dedicated to studying the stone carving techniques in Khachkar workshop in Yerevan, where established lines of design and conceptual executions of traditional Khachkar making are still exercised (Fig. 31). After the volumetric treatment (fig. 32) (the blocking out of the main body and bringing it to some degree of standard geometric shape) the frontal surface was chosen for further polishing. Once completed, Khachkar Master would then spend time “conversing with the stone”.



Figure 32 Volumetric treatment of larger stone slab in Khachkar making workshop attended in Yerevan, Armenia. Photo by Lilit Mnatsakanyan, 2015.

The artist would juggle with many fragile components; he has to be well versed in mathematics and geometry to produce the symmetries, but also contrast it with his depth of knowledge of structural constraints of the particular stone type. Lastly and most importantly he has to give due space to the spiritual symbolism and the depiction of Christian allegories. This is a stage of sketching and finalising the overall theme. Sometimes, the creative impulses and the overwhelming divine inspiration may prompt the artist to improvise direct carving without an initial drawing. After the sketching phase, the master would oversee that his most prominent disciples continue shaping and carving the Khachkar. Khachkar engravings were usually made by chipping small pieces out of a rock face to form the image¹²⁹. We have learnt that the artists worked in several ways; in method known as pecking, they would hold a fairly heavy hard stone, pointed at one end, and use it as a pick, striking repeatedly, against the rock face, chipping out tiny pieces of stone. A different pecking involved the use of two stones; a hard point, perhaps obsidian that was abundant in the region was held against the rock and heavier stone was used to hammer it into the rock, which removed small outer pieces. The master would most likely first scratch the outline an image into the stone surface and then laboriously chip it out by hammering the pointed tool, similar to point beat method of petroglyphs. The deeper the carving, the more likely the writing would survive; surprisingly, inscriptions on smoothed stone surfaces tend to wear down faster, so the less the writing alters the natural surface, the longer it will last¹³⁰. In modern Khachkar workshop, the carving is mostly done with the metal tools with sharp ends of various sizes, which can be traced back on the basis of their footprint. The simple lines are treated with double attack method, where two imaginary lines are projected on both sides of the desired line to be carved out, and then a carving at the angle from both sides of the imaginary line is drawn until the two lines meet at 45 degree angle at the intersection of the desired line.

STONE LAB: RE-ENACTING KHACHKARS

During summer 2015, a DA fieldwork was conducted in Shikahogh, where the concepts suggested in this research were put to test and the results were recorded. In particular, the research questions aimed to be explored;

-What are the stories behind the Shikahogh unknown Khachkars and how can we discover and interpret them?

-What is the evolutionary path that the Khachkar making has undergone? What are the elements that have been lost in translation or have been added as a result of technological advancements?

-Can digital mediums assist in collecting, restoring and conserving Khachkar heritage?

Employing the EA methodologies, a series of hypothesis about the essence of Khachkar creation and their inscriptions were made. Throughout the process, there was an ongoing Khachkar data collection and classification, to help with the archiving and identification of Shikahogh unknown Khachkars. The preliminary seven criteria for categorising Khachkars as presented in open source KhachkarLAB website:

- a. Size (for simplicity, the monuments were standardised into three main sizes).
- b. Time line/ Dating (refers to the geological period- 1. The monuments of the most ancient period of Armenian inscriptions, upper Palaeolithic (40000-12000 BC). 2. The period of unilinear petroglyphs, Mesolithic (12000-8000 BC). 3. The period of engraving with deeper outline; the period of early farming and cattle-breeding characteristic for Neolith (7000-4000 BC). 4. The period of carved outlines and silhouettes characteristic for Neolith, the Copper- Stone Age (3000-2000 BC). 5. The Christian inscriptions from 5AD).

¹²⁹ David Coulson and Alec Campbell, *African rock art*. (New York: Harry N Abrams, 2001), 55.

¹³⁰ Robert Harrist, *The Landscape of words: Stone inscriptions from early and medieval China* (USA: University of Washington Press, 2008), 28.

- c. Stone types (There are around 40 different shades of Tuff brown, grey pink, green etc., depending on the amount of crystals of various glass dusts and minerals it contains. The identification of the stone type was done to help with the mapping of the quarries that the Khachkar source stones came from).
- d. Stories (There are numerous intentions for erecting a Khachkar, such as a spiritual aim, in memory of someone, to express a gratitude to God, socio-economic treaties recording etc., hence the findings were divided into:
 - Spiritual/religious (Pagan, Christian)
 - Historic records (wars, sovereignty change etc.)
 - Economic (transactions of land, cattle)
 - Building records (city, church, bridge)
 - Personal (gratitude, plea, commemoration)
 - Mystical (for good luck, fertility etc.))
- e. Transport and installation (an attempt was made to classify Khachkars according to whether they have non-functional elements that helped with the transportation and erection, how many people carried it etc.).
- f. Tools (Based on the tool marks, Initial assumptions were made about the period tools employed (hammer stones, bronze or metal age tools)).
- g. Location (A rudimentary map of Shikahogh Khachkar locations, based on the initial fieldwork was attempted).



Figure 33 Shikahogh map showing the Khachkar locations (pink dots) in Shikahogh, Armenia. Image by Lilit Mnatsakanyan, 2016.

Using advanced 3D scanning equipment, 16 Khachkars from Shikahogh (fig. 33) were captured and transformed into 3D digital models (fig. 34). This was done by processing the raw data gathered during a 3D scan into a digital model that can then be used in number of ways, since a 3D model is incredibly versatile. In fieldwork, the following components have been used for 3D surface imaging system scanning; laser projector with a step motor, digital cameras, a laptop with 12GB RAM and 2000 GB hard drive space, 3D filtering and rendering software such as 3D Studio Max, V-Ray, AutoCAD, a support equipment such as tripod and customized box, a black tent for shading the scanner, a car battery and a DC/AC inverter and two digital cameras. There are multiple ways to collect 3D data but two of the most common methods, are laser scanning and digitizing, both of which have been utilized in this research. During laser scanning, a laser line is passed over the surface of an object in order to record three-dimensional information. The surface data is captured by a camera sensor mounted in the laser scanner which records accurate dense 3D points in space, allowing for very precise data without ever touching the object. Two sets of 2MB pixel digital cameras were used to record the laser line images for both micro and wide modes, however in this study the wide scanning mode was used to cover the whole Khachkar area. Here, the laser lines that are being swiped across Khachkar deform according to the surface profile of the carvings and as a result these image sequences were received from the camera by the laptop. Then, the laptop run the triangulation algorithm to synthesize 3D point data, which was exported in OBJ format.

The second major method is digitizing, which is a contact based form of 3D data collection. Digitizing is often used when precise measurements are required for geometrically-shaped details, such as tool marks on cross stones. This was done by touching various points on Khachkar surface, recording the 3D information. Using a point or ball probe enabled for a collecting of individual 3D data points rather than large sample of points at a time, like laser scanning. This method of data collection is generally more accurate for defining the geometric form of an object rather than organic freeform shapes. Other methods were utilized in conjunction, such as collecting the 3D data with white light scanning and photo image based systems.



Figure 34 3D scanning of Shikahogh Khachkars with handheld 3D scanner in Shikahogh, Armenia. Photo by Lilit Mnatsakanyan, 2016.

Pattern projection was another method that has been experimented with briefly, and it worked much faster than the laser scanning, however a more complex algorithmic method was involved here. The following procedure was adopted; cameras and projectors were calibrated to a chessboard pattern, multiple photos were taken as the projected pattern kept changing, later, the 3D points were reconstructed by triangulation and the respective mesh was generated. Here the projector makes hundreds of line patterns in a single frame, which the software automatically synchronizes. However, although fast and low-cost, this process is power consuming and on sunny days, the ambient lights may result in generation of noisy data. We have been able to discover carved details on Khachkars that have been unreadable to human eye, all due to the interactive visualization and digital filtering. Most of Shikahogh Khachkars that are over 400 years old, are heavily weathered, but with digital pattern recognition techniques, it was possible to scan some of the words and figures on the stone surfaces. Optical Character Recognition method was the starting point for the recognition of symbols, words and signs carved on petroglyphs and Khachkars. This technique has a wide usage in working with the printed text data; needless to say that the carved surface varies from a two dimensional printing on paper, especially taking into account the free form handwriting or drawing style of Khachkars. There are several constraints when it comes to Khachkar inscriptions; the carved images are noisy and, in most cases, there is no contextual information to gauge, or the context maybe all together obsolete for our modern times, as well as may contain rare spellings etc.

Therefore the Handwriting Optical Character Recognition technique can be appropriated, which can recognize individual characters and which is more robust to variations in character representations. This method, is nevertheless, still capable of precise classification of each character and is capable of producing more reliable data, given out input sources. The character recognition technology is very popular and widespread; it uses writing sequence and gesture, but these are the two variables which are unknown to us when it comes to stone inscriptions, hence the so called “off-line” handwriting recognition method is used. This method is rather complex, since different people have different handwritings and the technique is based on an automatic conversion of so called rasterized text (a text that is on an image) into a letter codes. One way of improving the recognition is to limit the range of input from Khachkar inscription, where each separate character is extracted as a glyph, then matched to prior known set. The findings were not fully decoded, but kept as algorithms available on the StoneLAB open source.

KHACHKAR: RECONSTRUCTED

The fieldwork was a steep learning curve, and while working in the village in a mobile setup, several observations were made, such as bright light sources in the area, including the sun, can have an extremely adverse effect on scanned data as well as the scanning process itself. Therefore most Khachkars were scanned either during late evening or nights, to avoid the “noisy” data effect. Often, Khachkar surfaces have been heavily eroded, ultimately resulting in missing data, which in some cases would remain impossible to recover. Digital tools of modelling and visualisation were employed to aid the process, yet certain portion of Khachkar expertise and reasoning must be included to solve some of Khachkar puzzles, which is beyond the scope of this research. The collected data was put through various routes of post processing and as a result a digital open source archive was created, which currently exists in a Beta version as a website open to public. Through the website, the users can explore Shikahogh Khachkars and the stories of their inscriptions, download the 3D CAD models of the monuments and even print their own 3D Khachkars at home.

The processing of the collected data was done via two routes; digital modeling for most parts and reverse engineering for some of the more complex details. The massive scanned data was exported with Rapidform: a point processing software for creating parametric CAD models of Khachkars directly from scanned data. Afterwards, the bulk of 3D scanned Cross Stones data was process with digital modeling. With the use of digital modeling, the 3d scanned data of Khachkars was transferred to the modeling software; a combination of 3D Studio Max and a digital sculpting software Z-Brush were utilized (fig 34). At this stage, the scanned meshes were aligned, edited and finalized as complete 3D models. Khachkar models were treated as hybrid polygonal models (STL files) and Rapid NURBS Solids. A Polygonal Model of a cross stone is a tessellated mesh, consisting of many triangular surfaces, where the facets are formed by connecting the points of point cloud. Thus unlike raw point clouds, digital models can be visualized in rendering software as a solid object, which is how Shikahogh Khachkar STL files were visualized for the KhachkarLAB digital archiving purposes. These files are also used for rapid prototyping, milling, and analysis as part of ongoing digital archive project. A Rapid NURBS Solid Khachkar model, starts with the polygonal model, where the surfaces are wrapped over the polygonal wire frame. This wrapped surface model of cross stone is smoother than a polygonal model, and can be exported into parametric modeling software, should the digital archive users wish to do so. Hence after a Khachkar has been laser scanned and modeled, there now exist a digital "backup" of it.



Figure 35 3D model of Shikahogh Khachkar in software 3D Studio Max, after postproduction in Z-Brush. Screenshot by Lilit Mnatsakanyan, 2016.

After the 3D scanning, there are different applications for 3D Khachkar files;

Documentation and Archival purposes – Website largely utilizes this

Exploration and Analysis - as a study tool

Visualization and Animation – the 3D models are versatile to be used in projects

Replication and Reproduction – members of public can download and reproduce the models

Replication is one of the most important uses for a Khachkar 3D file, intended in this research. With the help of 3D printing or milling processes, the digital Khachkar can be created as a physical piece, with variety of options for replicating, such as restoration, scaling, analysis and rendering. Rendering is the process of visualization; a creation of a still image from a 3D model; this is how a collection of high quality 2D renderings of Shikahogh Khachkars have been produced for the website. For the same purposes of visualization, but with an expanded option of 3D rotation, another method was also used, a direct 3D view, which is an interactive real-time 3D presentation of a digital model of a Khachkar in a virtual environment. This method is utilized for the creation of an on-line 3D catalog of the stones, allowing KhachkarLAB visitors to fully experience Khachkars in virtual reality. A smart web based viewing tool was used here that enables for small digital file sizes, which are faster to view and to download times. An additional section for downloading the STL files of Khachkars is also available via online database that can then be used for

additive manufacturing such as rapid prototyping and 3D printing, to reproduce a physical Khachkar from 3D digital data by layering materials.

DIGITAL MEMORY

It is thoroughly substantiated that Khachkar is a basic iconographic image reflecting a universal conception of the world of medieval Armenian society and a symbol of Armenian identity. Khachkar has become a complex message, encapsulating combinations of textual and graphic components that are individual and specific and which are very personal. The monument combines role of a cross as a saviour and a mediator becoming a place of localised worship. A transcendent stone being almost immortal, outlives humans to project their undying hopes and desires towards the future. Being installed in an open air, Khachkar was accessible and inviting to any believer; emphasizes the dual nature of the stone being simultaneously individual and communal. An important aim of KhachkarLAB is to promote the preservation of these monuments. It is said that the goal of an archive is to conserve and preserve a document; a document is any trace left by the past, which becomes a significant chronicle for historians as soon as they discover how to interrogate the remains of it and how to question them.¹³¹ KhachkarLAB digital archive intends to create close bonds and encourage the exchange of opinions and thoughts with all organizations and persons that are researching, creating, or simply interested in Khachkars.

The 3D models of Shikahogh Khachkars were also utilized in performing dimensional and comparative analysis of different Khachkars, but most importantly, the digital models were used for archival purposes - to accurately record the state and form of the cross stones. A digital repair of the damaged Khachkars was also explored, allowing for the reproduction of Khachkars in their more accurate representation of their original form, using rapid prototyping and milling technologies. KhachkarLAB assumes a rapid development of home 3D scanning kits to become available to public, in same way as 2D printers are now used worldwide. Mainstream 3D printers using fused deposition modeling technology, are becoming more and more popular, therefore in perhaps not so distant future, all KhachkarLAB archive users will conveniently download and print three dimensional Khachkars with the same ease as they would download and print texts on the stone monuments (fig. 35). Currently in Armenia, some stone artists are in search to unveil the “secret” of Khachkar.¹³² It is difficult to project what this search may yield, however KhachkarLAB will become a valuable resource to analyse the path of a cross that started its journey as a victorious symbol, then became a symbol of death on gravestones and finally once more resurrected after the USSR collapse, trying to break through the dark narrative, as shown in the modern interpretations of the monument.¹³³

KhachkarLAB is an open source project, where the public is encouraged to add their own Khachkar stories, share with their expertise and aid in populating the archive as well as helping with the decoding of the stone inscriptions. The true value of the computerized pattern recognition is hard to assess; many theories and expertise on Khachkar making and symbolism remain untested and unreliable. A questions like how to differentiate between a man-made marks on the stone from the unintentional marks created by nature or weathering or other factors? It is possible to put forward hypothesis whereby we assume that the man-made carvings have smoother edges compared to the naturally broken-away pieces that have sharper corners and then use digitalized techniques to verify this assumption in a repeatable and measurable way. However the public involvement, encouraged by the internet, can increase the flow of Khachkar studies

¹³¹ Michael Stone and Thomas Samuelian *Medieval Armenian culture* (USA, University of Pennsylvania Press, 1984), 67.

¹³² Sandro Sardaryan *Armenian Petroglyphs from stone to bronze ages* (Yerevan, YSU press, 2010), 325.

¹³³ Margo Ghukasyan *Stone made miracles*. (Yerevan, HGM press, 2005), 148.

and enable interactive discoveries, especially when it comes to tracing the family trees on gravestone Khachkars and bring about a new ways of looking at the Khachkar analysis. Reconstruction is a learning process as well, where traditional knowledge crosses with the intricate visual analysis. The 3D reconstructed digital models of Cross Stones, resurrect Khachkar inscriptions that are everyone's property and which enhance the pattern recovery, reaching through to domains of genealogical studies, archaeology and culture and.



Figure 36 A 3D printed model of Khachkar, downloaded from StoneLAB, scaled down and printed to desirable size. Inside the model there is a memory chip, conveying all the information about the particular Khachkar. Photo by Lilit Mnatsakanyan, 2016.

Conclusion

“Khachkar is a prayer, it is a sacrifice, it is the entity of our ancestors...

Khachkar is a conversation, it is an upbringing.

There are tears in Khachkar, there is joy in it.

Khachkar is imposing something...

It can act as a priest; people go to confess in front of it.

Khachkar represents the prayers of the people,

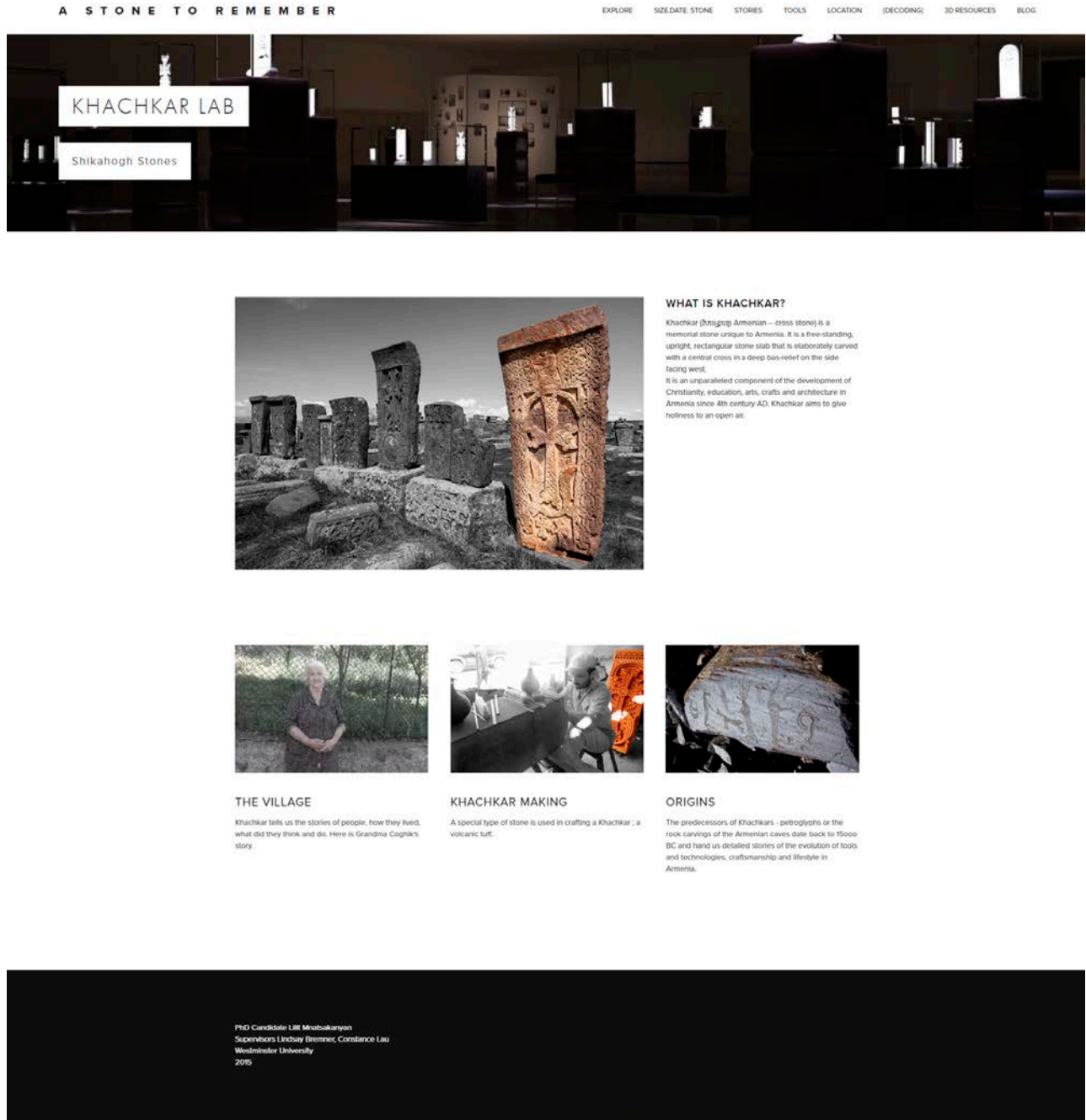
It is a conversation with God and the imprint of God.”

Varazdat Hamabardzumyan - Khachkar Artist

This research attempted to articulate the role of Khachkar in formation of the Armenian national identity through the simultaneous studies of the stone masonry and the notion of the territory, which in this case is represented with the Shikahogh village. The StoneLAB open source website and archive has discovered and interpreted some of the stories of Shikahogh unknown Khachkars. These stories, embedded in Khachkar inscriptions may relate to village genealogy, or give us some clues on particular persons or historic events of various magnitude. The village is a miniature model of the Armenia as a territory, and this paper has challenged the notion of belonging and identity of a diaspora driven nation through the exploration of the nation’s symbolic stone. From the manmade cave walls to the stand-alone stelles, Khachkar crafting has undergone centuries of evolution of tools and techniques as well as cultural, socio-political and cognitive growth, and this research has explored that path. It is assumed that throughout this journey many elements have been added and subtracted, have been lost in translation or misinterpreted; hence the practical aspect of the StoneLAB is designed to study these possibilities. By formulating working hypothesis based on theoretical and historic context of the village, the methods of experimental and digital archaeology have been applied to test these concepts and shed more light on the unresearched Khachkars of Shikahogh. Several contributions to knowledge stem from this research; Khachkar heritage preservation is now possible via utilizing cutting edge technologies, Shikahogh Khachkars are now brought into light and their intricacies made available to users across the globe via the online archive of KhachkarLAB, a new methodologies of collecting, storing and viewing Khachkar monuments is proposed and applied in this research, paving way for further research and archaeological interest in the area. The future development of Khachkar LAB is in its ability to become an expandable archive; the data is continually updated and added, enabling every viewer to not only explore and utilize the existing content but also to add to it, contributing to the growth of the stored information, as well as making it more polished and accurate. KhachkarLAB makes the unreachable and hidden parts of Armenia and its culture accessible to everyone in every corner of the globe. The memory of the nation can now be stored on myriad of electronic carriers, protecting them from annihilation and from being forgotten; much like Khachkars themselves depict the urge to be remembered long after the demise of their creators.

Appendix 1

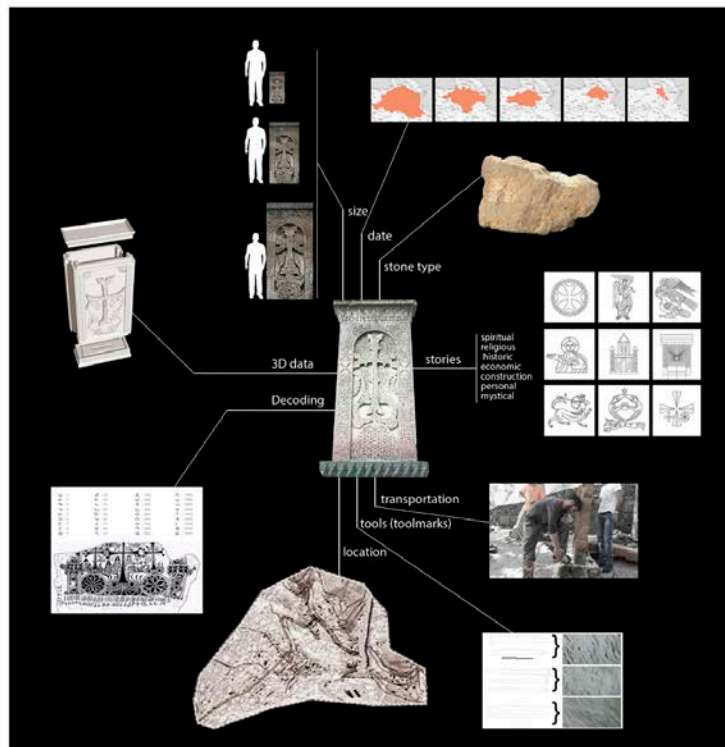
StoneLAB open source/ archive (designed by Lilit Mnatsakanyan)



Welcome screen, where visitors can see the horizontal menu of different sections, and chose one they wish to explore. The images are interactive and smart programming elements were employed to create a website with intuitive navigation.



Watch Khachkar LAB movie.



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The explore page provides the users with interactive menu of different faculties of the stone for further study (such as the inscriptions on the stone, the methods of carving etc.)



STONE

Tuff is the traditional material used for Khachkars and in most buildings. Igneous tuff contains crystals of various glass dusts, thus giving it around 40 different shades. Tuffs are lightweight, low heat conductivity, with excellent resistance and longevity, with ease of extraction and development, high quality and big selection of colours. Unlike most rocks, tuff can contain a variety of minerals such as augite, biotite, plagioclase and leucite and these influences the overall appearance of a rock. Tuffs may be brown, grey pink, green etc. Individual grains within tuff rock can be ashy, glassy or crystalline and their size varies from sample to sample.



After extracting the stone from quarries, it sees very little post treatment before becoming a solid material for a stone building or Khachkar. Most structures in Armenia, those from early Christian period to modern day are made of orange, red, golden and black varieties of soft tuff. The customary expression is "to talk about tuff stone is the same as to talk about Armenia" and in honour of the most widespread type of the pink tuff, the capital city Yerevan is referred to as "the pink city".

SIZE



Khachkars are standardized into three main sizes: handheld, medium requiring few men for transportation and monumental.

DATE



Time line/ Dating refers to the geological period: 1. The monuments of the most ancient period of Armenian inscriptions, upper Paleolithic (40000-12000 BC). 2. The period of unilinear petroglyphs, Mesolithic (12000-8000 BC). 3. The period of engraving with deeper outline, the period of early farming and cattle-breeding characteristic for Neolith (7000-4000 BC). 4. The period of carved outlines and silhouettes characteristic for Neolith, the Copper-Stone Age (3000-2000 BC). 5. The Christian inscriptions from 540.



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This section gives more detail record on the different sizes and dates of particular cross stones in conjunction with historic overlap of the ongoing socio-political situation in the country.



There are numerous intentions for erecting a Khachkar, such as a spiritual aim, in memory of someone, to express a gratitude to God, socio-economic treaties recording etc., hence they will be divided into:

- Spiritual/religious (Pagan, Christian)
- Historic records (wars, sovereignty change etc.)
- Economic (transactions of land, cattle)
- Building records (city, church, bridge)
- Personal (gratitude, plea, commemoration)
- Mystical (for good luck, fertility etc.)



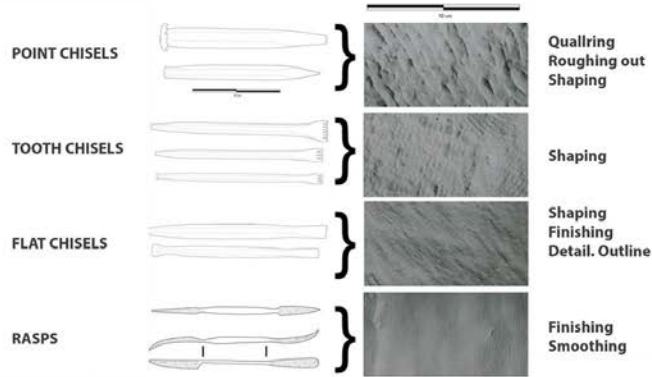
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The stories present the viewer a sliding interactive scroll viewer to explore the inscriptions and motifs of different Khachkars.



TOOLS

Based on the tool marks, initial assumptions will be made about the period tools employed (hammer stones, bronze or metal age tools). These assumptions will be recorded and later will be formulated into specific hypotheses to be tested in the experimental stage two.



TRANSPORT AND INSTALLATION

an attempt will be made to classify Khachikars according to whether they have non-functional elements that helped with the transportation and erection, how many people carried it etc.



An overview of different stone cutters and tool marks to be found on Cross stones are presented in this section.



SHIKAHOGH

Shikahogh Village
Is one of the five remote villages in the vicinity of Syunik Province.



SYUNIK

The Province
Bordering Azerbaijan, Iran and Turkey



ARMENIA

Capital city Yerevan
Population 3 million.

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Here a map of different Khachkars found in Shikahogh is presented.

Չ Ս ա ր գ ի ս կ ր զ խ ա չ

Չ Ս ա ր գ ի ս յ ի շ ե ց

{DECODING}

Decoding Khachkar Inscriptions



Չ Ս ա ր գ ի ս կ ր (աւ ն աւ ւ ր) զ խ ա չ ս կ ա ն (կ ն) ե ց (ի), բ ա ր տ (խ աւ ս)

1
2

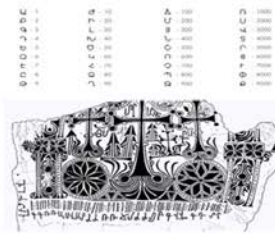
100

PATTERN RECOGNITION

We have been able to discover carved details on Khachkars that have been unreadable to human eye, all due to the interactive visualization and digital filtering. Most of Shikahogh Khachkars that are over 400 years old, are heavily weathered, and using the methods of digital pattern recognition, we were able to read the words and figures on the stone surfaces.

For example, in a case of this one unknown Shikahogh Khachkar, the depth image of the inscription is used and despite the font being rather generic, the image is very noisy and there is no exact sample for it. A vector representation is produced for each glyph then compared to the existing vectors from the database.

The true value of the computerized pattern recognition is hard to assess; many theories and expertise on Khachkar making and symbolism remain untested and unreliable. A question like how to differentiate between a man-made marks on the stone from the unintentional marks created by nature or weathering or other factors? For example it has been suggested that the man-made carvings have smoother edges compared to the naturally broken-away pieces that have sharper corners. Digitalized techniques can verify this hypothesis in a repeatable and measurable way. Moreover, it is possible to turn the clock back and forth by simulating the physical impacts on Khachkar inscriptions. The public involvement, encouraged by the internet, can increase the flow of Khachkar studies and enable interactive discoveries, especially when it comes to tracing the family trees on gravestone Khachkars.



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There are various methods of decoding ancient Khachkars and here some of them are explored as well as links are provided to watch videos on Khachkar decoding.

3D RESOURCES

3D data collection, reproduction.

ARCHAEOLOGICAL 3D SCANNING

3D points are calculated from recorded 2D images by projecting lines on to the surface of the rock inscriptions and these are done with the help of laser scan, pattern projection and stick shadow. The multiview processing is done either with multiple images taken by a single camera much like a conventional 3D scanning or with a help of multiple cameras. So this method only synthesizes the image by interpolating multiple frames. Instead of creating a true 3D model and the most convenient technique is the Polynomial Texture Maps (PTM). The laser scan procedure involves swiping laser lines across the surface, whilst the camera captures the scans in frames. A lengthy computation process is involved in the next stages, in order to create the 3D point cloud. Then from the reconstructed surface, a 3D mesh can be generated, which can in turn be transformed into a 2D image, to which a pattern recognition can be applied either manually or automatically.

3D MODELING

A more complex DA methods include archaeological 3D modeling – the recreation of Khachkars by digital means based upon the current state of the stone cross and inscriptions on its surface. This process also integrates any available historical and archaeological data, allowing us not only to illustrate but to analyse the Khachkars.



3D PRINTING

Below is a miniature version of a Khachkar from Shilahogh village. It was created by 3D scanning the original piece, then 3D printing, using a process called Selective Laser Sintering (SLS). It comes with an embedded memory chip containing historic and archaeological data, maps and textures, information on wear and tear analysis, tools and methods used to create this particular Khachkar. It includes any inscriptions found on the original Cross-stone, with corresponding decoding mechanisms. The chip also contains all 3D data, so anyone wishing to download and recreate this monument, in any size and available material, can do so.




DOWNLOAD KHACHKAR

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The journey of Khachkars from physical to digital is presented here as well as an option to download a 3D print ready files of Cross Stones is provided.

BLOG


[Read PhD at Westminster Blog](#)




February 4 March 2014
The Stone Lab: Inflation




Digital applications of ancient amphitec stone carving techniques for the development of "stone lab" is an innovative digital research, with a real time application of a "stone lab" in a remote stage of digital in airways.




In this research, the formality and traditional stone masonry heritage of the labors (these are the stone masonry) present the combined solutions, whereas underneath the lab, a deeper and more spiritual metamorphosis of being and identity preparations marked.




One of the ways of adding it to the re-generation process, where the original pack is later learned, creating a three-dimensional electronic model that could be used by 3D machines. Once the stone is selected, the digital carving process first begins, then when the surface, however the four details are usually hand carved.




Digital reconstruction can also be used for virtual restoration and conservation purposes. For example the top virtual blocks, where the most advanced digital simulation techniques have been applied, was constructed as a largest reconstruction for accuracy of the digital labors (whereas a stone labors which is used to guide since 2011).




The archaeological 3D modeling is the restoration of the objects by digital means based upon the current state of the original objects integrated with the data coming from historical and archaeological researches using software for developing 3D models.



It creates a virtual benchmark, where the hypothesis is tested and corrected in order to produce a highly range of something based to time, it is a solid modeling that can just happen. However, but to analyze.





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Throughout the research an ongoing blog on Shikahogh Khachkars was updated with fresh findings and the users can look into the all aspect of how StoneLAB came to existence, the various fieldworks and workshops are also portrayed here.

Appendix 2

Shikahogh village interviews (conducted by Lilit Mnatsakanyan)
Original audios are saved on a USB submitted with this document.

Interviews with:

- Andranik Margaryan, previous village governor from 1967- 1987. Interview conducted in Shikahogh village, on 29th of June, 2013.
- Coghik, or grandma Coghik a most beloved and one of the oldest residents of the village. Interview conducted in Shikahogh village, on 29th of June, 2013.
- Nare, village representative, member of “Avagani”. Interview conducted in Shikahogh village, on 29th of June, 2013.
- Arayik Hovhannisyan, current village governor. Interview conducted in Shikahogh village, on 30th of June, 2013.
- Rouben Mkrtchyan, head of Shikahogh Natural Preserve. Interview conducted in Shikahogh village, on 30th of June, 2013.
- Gayane Gumashyan, board of directors of Luys foundation. Interview conducted in Yerevan, on 1st of July, 2013.
- Gohar Aslanyan, representative of TUMO foundation. Interview conducted in Yerevan, on 3rd of July, 2013.
- Lilit Ghazaryan- representative of Schools for Armenia Foundation. Interview conducted in Yerevan, on 5th of July, 2013.
- Sargis Mnatsakanyan, Khachkar artist. Interview conducted in Yerevan, on 19th of July, 2013.
- Hayk Davtyan, Khachkar artist. Interview conducted in Yerevan, on 25th of June, 2013.

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