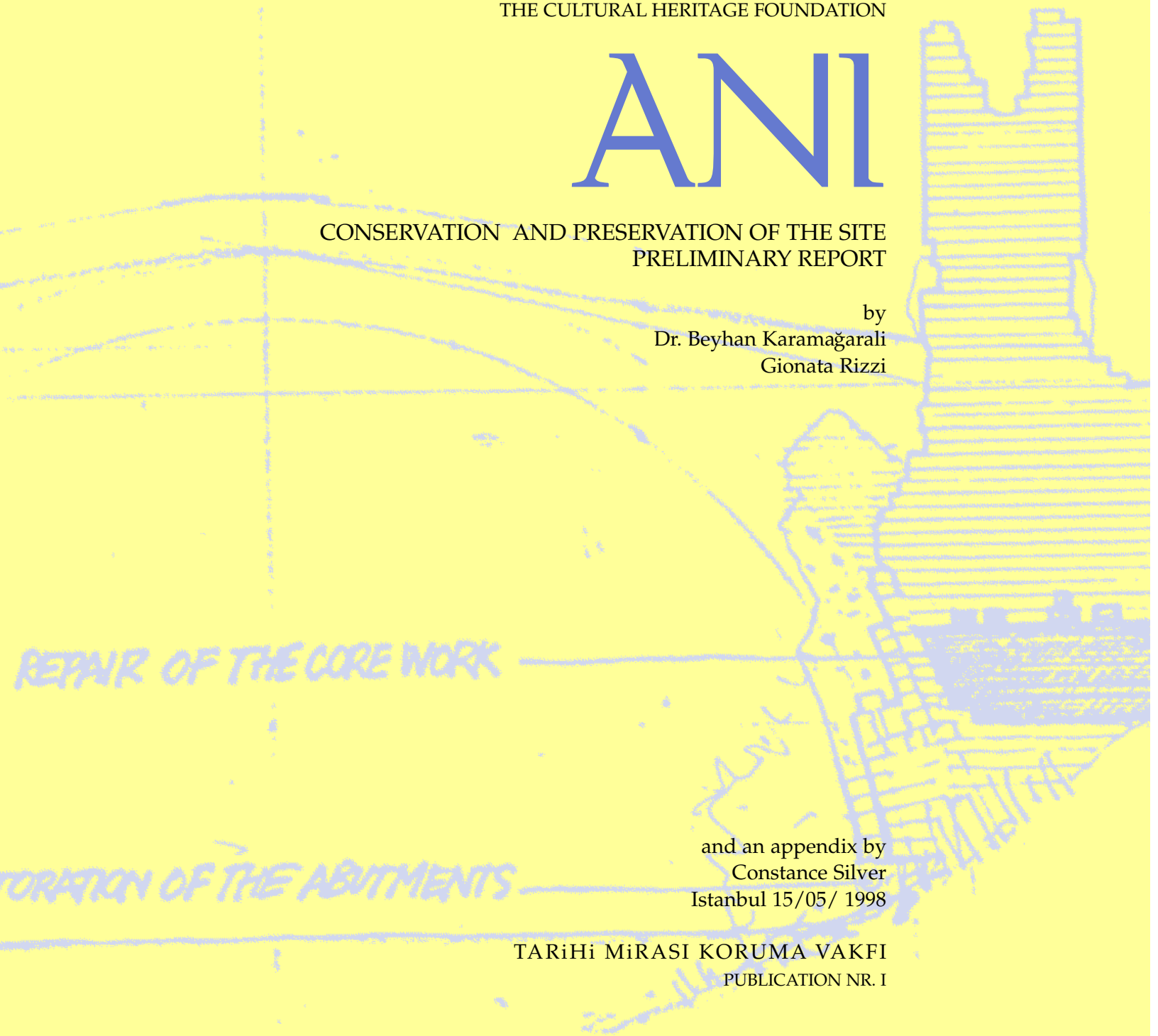
TARiHi MiRASI KORUMA VAKFI

THE SAMUEL H. KRESS FOUNDATION
THE WORLD MONUMENTS WATCH
PROGRAM OF THE WORLD MONUMENTS FUND
THE HISTORICAL HERITAGE PROTECTION FOUNDATION
THE CULTURAL HERITAGE FOUNDATION

ANI

CONSERVATION AND PRESERVATION OF THE SITE
PRELIMINARY REPORT

by
Dr. Beyhan Karamağarali
Gionata Rizzi



and an appendix by
Constance Silver
Istanbul 15/05/ 1998

TARiHi MiRASI KORUMA VAKFI
PUBLICATION NR. I

ACKNOWLEDGEMENTS

The present plan to conserve and present the Historic City of Ani stems from a reconnaissance visit to the site in August 1995 by John Stubs of the World Monuments Fund, Verkin Ar›oba and Sam Green. On this occasion it was noted that archaeologists Dr. Beyhan Karama aral› of the University of Hacettepe in Ankara, was conducting research at the site. In subsequent months Ms. Arioba contacted Dr. Karama aral› and concepts for possible collaboration were discussed. As good fortune would have it,the World Monuments Fund was launching a new programme entitled the World Monuments Watch, A list of the 100 Most Endangered Sites in the World. Through hard work on the part of Ms. Ar›oba, Mr. Green and Dr. Karama aral› The Historic City of Ani was added to the 1996 list of the 100 Most Endangered sites in the World, which has helped greatly in drawing attention to the plight of this little known, but very important historical site. World Monuments Watch listing resulted in a grant from the Samuel H. Kress Foundation in New York, which enabled the despatch of an initial international technical mission to Ani, with its accomplishments being documented in the present report.

Many people are to be credited with the progress made on the project thus far. Dr. Y›ld›r›m Yavuz has spent countless hours as a scholar working as an architect on this plan. Dr. Haluk Karama aral› is to be thanked by the present mission for his creativity, patience and most valuable advice. H. R. H. Elizabeth Karageorgevic of Yugoslavia for the photography, and for her high spirits..

In response to this interesting challenge Verkin Ar›oba, a preservation activist based in Istanbul and Tar›k Ar›oba worked tirelessly to set up the TAR‹H‹ M‹RASI KORUMA VAKFI (THE HISTORICAL HERITAGE PROTECTION FOUNDATION) which is a non profit, non political organisation that will coordinate various international efforts at the site. This organisation was legally established in Istanbul in 1997, and Lawyer Erdem Yücel has graciously volunteered his time to serve on its board.

FOREWORD

The site of Ani, in eastern Turkey, was visited from August 22nd to 28th 1996 by a group of experts for an on-site assessment of the potential for conserving its architectural remains. This group consisted of conservation architects, a structural engineer, a fine art conservator, architectural historians, and archaeologists from Turkey, Italy, France and United States.

This mission was made possible as a result of the listing of Ani on the World Monuments Watch list of the 100 Most Endangered Sites, and financial assistance from the Samuel H. Kress Foundation through the World Monuments Fund. Additional support was provided by the Historical Heritage Protection Foundation (Turkey) and by the Cultural Heritage Foundation (New York).

The following notes give an account of the observations that were discussed among the above mentioned team of specialists.

In Ani, the team concentrated on conservation problems, and the subject of this report. Special attention, was paid to the architectural value of the ramparts which, unlike most of the other buildings, have never been studied in depth. Indeed, the importance of the fortification system must be understood in order to set out a comprehensive preservation strategy. The town of Ani has also proven to be a very important site for the archaeology of the medieval period, therefore, the ongoing excavations in the town were encouraged to be continued simultaneously with the proposed conservation efforts. This will allow for the display of the urban structure of the town together with a correct interpretation of its complex history.

The report is the result of a common effort and all the ideas contained within have been discussed with the members of the team. However, the report presented here is the result of only preliminary observations at the site and no further site survey, analysis of the artery or measured survey has yet been done after the earlier publications on Ani.

Beyhan Karama aral›

Gionata Rizzi

[1]See the Appendix for the List of Prticipants

INTRODUCTION

The ruins of the ancient city of Ani on the high Eastern Anatolian Plateau form an exceptional archaeological and architectural whole and should be looked at as being of paramount cultural importance.

Inhabited since prehistoric times, Ani has its raison d'Ítre in the very special topography which provided ideal conditions for settlement and defence. The toponym has certainly existed from the 5th century when the Kamsarakan dynasty built the Citadel; and handed it over to the Bagratids in the 8th century. In 961 A.D. it became the capital city of Armenia and it experienced an outstanding growth. Possibly enjoying the northward shift of the trade routes due to the fighting between the Caliphate and the Crusadersas a result of which there was no more security in the Mediterranean. It became the centre of cultural, religious and economic activity of utmost importance towards the end of the 10th century. The remains of the outstanding structures belonging to this period testify to a spectacular architectural development, resulting from the blend of eastern and western traditions, and are likely to have influenced the history of European architecture.

To this period also belongs an impressive fortification system which took full advantage of the topography to create a protected urban space, closely fitting the natural setting. Built in different phases and various campaigns, the walls display many inscriptions and provide clues to the history of the city.

Conquered in 1064 by the Seljuk commander, Alparslan, Ani changed hands many times before its decline

following the Mongol invasion in 1239 : until then, urban life and cultural exchanges continued very intensively and, in this respect, the site is crucial to the understanding of trade and settlement within a multi -ethnic and multi-cultural framework at the turn of the millennium. Indeed, in the words of Prof. Yildirim Yavuz, "Ani was a place where the east has met the west, tolerated each other, and prospered together, creating an amalgamated culture of many traditions which has allowed the town to be embellished with exquisite and unique monuments". Its importance for archaeological research is therefore quite clear.

Moreover, the dramatic beauty of the natural environment and the evocative power of the ruins make Ani an ideal place to be developed for cultural tourism.

Unfortunately, the surviving structures of Ani are now found in such a state of decay that, in many cases, collapse could occur at any moment. As a matter of fact, several buildings have disappeared in the last decades and others have lost substantial portions of their formal structures. Neglect, recycling of original building material and strong earthquakes have brought the whole site to such a state of disrepair that its rescue is a race against time.

Indeed, should these architectural landmarks fall, the intrinsic value of the site will be lost and nothing could bring back to Ani the interest it deserves.

Emergency intervention should therefore be initiated immediately and it is crucial that no work on the endangered monuments other than structural repair be undertaken at this stage. It is however desirable that, as consolidation work is carried out, archaeological excavations proceed, so as to complete the general urban picture of the town including streets, houses and other public buildings still hidden underground.

It is recommended that a team of supervised masons be employed for six months each year for immediate masonry repair while additional funds be raised for more sophisticated structural work. At the same time, technical and financial support should be sought for undertaking proper documentation of each building. (detailed measured drawings, rectified photography, photogrammetry...) necessary to work out specific conservation projects.

It is also suggested that a set of guards be employed to protect the site and deter any unauthorised access and vandalism.

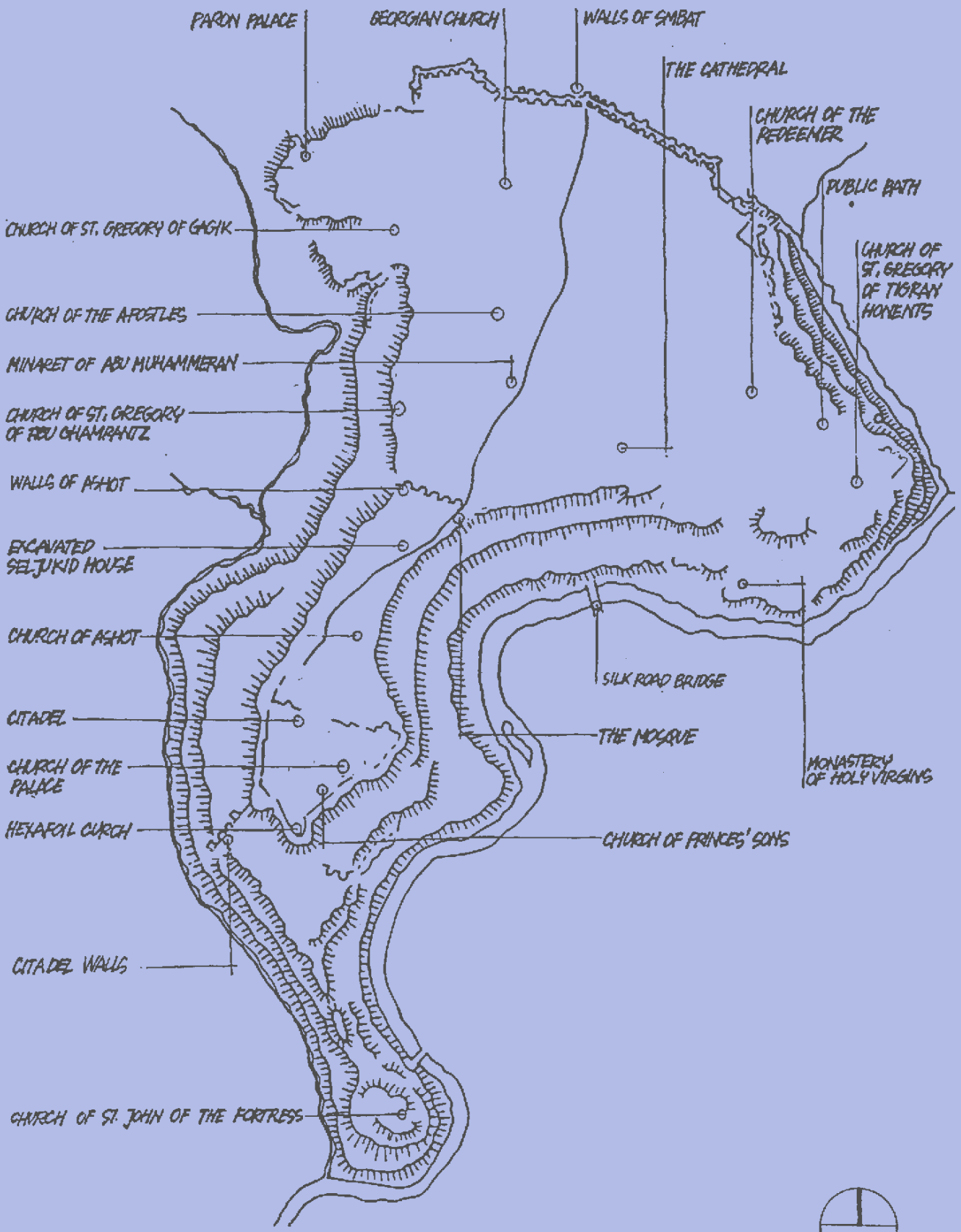
Finally, it is imperative that the ongoing restoration of the city walls be suspended for the inappropriate workmanship and wrong materials which are harming the original fabric and obscuring archaeological and architectural evidence.

TOPOGRAPHY

The ruins of Ani are located forty five kilometres east of Kars, on the western bank of the Arpaçay river (Akhourian), near the border of Turkey and Armenia. The city was built on a steep rocky spur delimited by ravines at the bottom of which run

2A general topographic survey of the site is actually a priority in order to understand the development of the sity and plan future action.

3Chief of the archeological mission in Ani is Prof. Dr. Beyhan Karama aral› of Hacettepe University.



THE CITY OF ANI ANI'96 GENERAL PLAN

the Arpaçay and the Ani river, at 1500 m. of altitude. The site lies on a basaltic crust sitting atop a thick geological layer of volcanic tuff in which the underground city is found.

Approaching Ani from the north, one views a large triangular plateau overlooked by the Citadel on the south side ending in a steep, rocky cliff at the river's confluence.

The spatial organisation of the city is still largely unknown: only a winding street provided with a central drain leading from the Citadel to the main gate has been uncovered, while a diagonal path can be perceived leading towards the bridge that crossed the Akhourian river as a natural passageway of the Silk Road.

The site, barred on the northern side by two lines of fortification, contains the standing remains of twelve churches, a mosque- possibly the first one in Anatolia- a palace, plus two baths and a few houses recently excavated by the Turkish archaeological mission. Many of these buildings stand on the edge of the cliff and therefore serve as landmarks delineating the perimeter of the city.

A SHORT HISTORY OF THE TOWN

Ani is an ancient settlement which dates as far back as the Palaeolithic period. Colonised by the Urartians during the 7th century BC and fortified after the 5th century BC, the exact foundation date of the city is not known. This region, like most of the other regions lying at the feet of the Caucasus mountains between Cappadocia in the West, lake Urmiyah in the East and lake Van in the South, was divided between various local dynasties whose populations gradually intermixed with immigrants from the West, most probably of Thracian-Phrygian origins. These dynasties slowly consolidated their independent principalities against an ethnic and cultural background and much later were converted to Christianity.

The high eastern Anatolian plateau became the cause of periodic disputes between the Greco-Romans who were later replaced by the Byzantines and the Parthian- Sassanian states of Persia followed by the Arab caliphate of Baghdad. During the 5th century, the region of Ani, which was later called Chirac, was captured by the Kamsarankan Dynasty who built here a citadel and a palace with a family chapel in it. After the battle of Bagravand between the Arabs and the Kamsarakans, Ani was handed over to a different local dynasty; the Bagratides, by the victorious Arabs, who secured their political support. These new rulers of the towns progressively consolidated their rule in the region by uniting independent and feudal principalities. Thus, at the end of the 9th century the Bagratid kingdom extended as far as Erzurum and Mufl in the south-west and Allahverdi mountains in the north, while one branch of the family ruled in Georgia.

By the beginning of the 10th century, Ani had become the centre of an agriculturally developed region as well as an artistically, culturally and commercially rich capital due to the shifting of the trade routes from the south to the north because of the presence of the Baghdad caliphate in Syria who

had to fight the Crusaders during these years. Hence, the Black Sea ports reached through Ani had become more popular for caravans coming from China, Central Asia and Persia instead of the eastern Mediterranean ports. The thirty years between 990 and 1020 when Gagik I ruled as the king of the region were certainly the golden years of Ani as a religious, cultural and economic capital. It was during this period that the renown architect Trdat built the majestic cathedral and the round church mausoleum of St. Gregory of Gagik I.

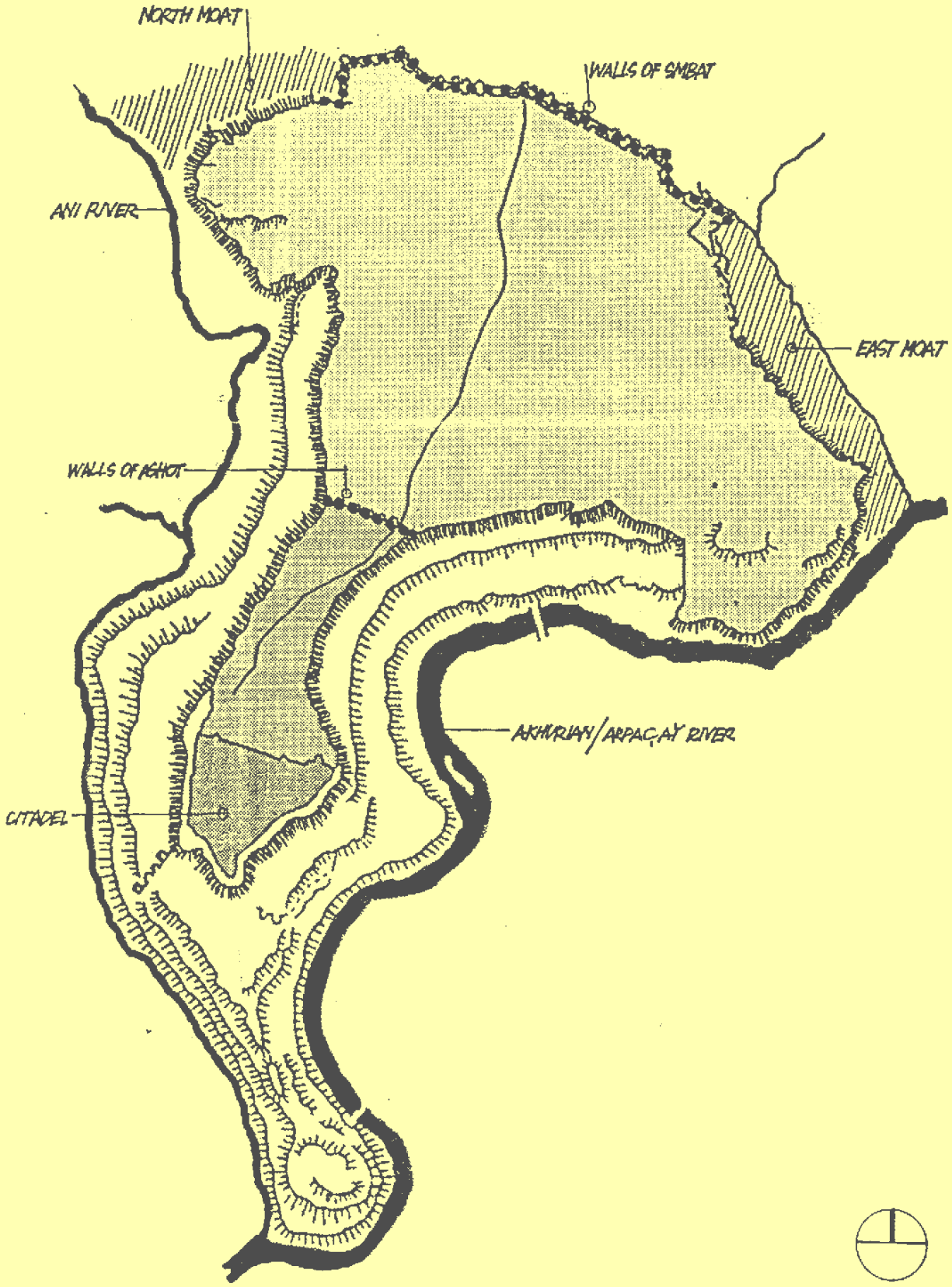
The years following Gagik's rule were turbulent because Georgians, Arabs and Byzantines attacked and pillaged Ani, while the city changed hands several times between the invading powers. In August 1064, after 25 days of siege, it was occupied by the Seljuk Turks under the command of Alp Arslan, who left the rule of the town to one of his faithful commanders. During the 12th and 13th centuries Ani changed hands several times but it always remained a bastion or tolerance towards its multi-national and multi-religious population which had amassed here from the Caucasus region, Syria, Persia, Central Asia, Mesopotamia and Anatolia. Living in different sections of the town, these various ethnic groups have left their artistic and architectural traces in their respective quarters which, even today, are partially recognisable.

After the Mongol invasion of 1239, Ani began to lose its population reputedly, after a strong and disastrous earthquake at the beginning of the 14th century, and what remained of the old citizens abandoned the town to settle in Crimea and Eastern Europe.

The general belief that the city stopped to exist after the earthquake which took place in 1319, seems to be incorrect because the coins found in recent excavations indicate that the town continued to exist even during the Ottoman period. A ceramic piece dated 1070 H. (1659-1660 AD) which was found in 1991, and an unglazed ceramic mouth piece from water pipe found in 1966 prove that people continued to live here after the earthquake of 1319.

The first archaeological excavation in Ani was started in 1892 by Nicholas Marr, on behalf of the St. Petersburg Academy of Sciences. These digs continued till 1917. In 1944, I.K. Kökten dug up at spot ditches at the Citadel and outside the city-walls. In 1965, Prof. Kemal Balkan dug up at the palace called ' Cirit Tepesi', located to the south east of the nearby village, above the 'Bostan Deresi' He also excavated at the thrashing ground inside the village, as well as at various other spots inside the old city. Since 1989, the excavation in Ani have been conducted by a group of scholars under the direction of Prof. Dr. Beyhan Karama aral› of Hacettepe University in Ankara.

4The first urban nucleous of the northern foot of the Cithadel was enclosed within a wall by king Ashot III Bagratit aroud 963. The rapid growth of the urban area obliged his succesor Simbad II to build a new enclosure further to the north in 989. The town fell in 1045 to the Byzantynes, who reinforced it, and was then taken by assault in 1064 by the Seljouk sultan Alparslan. Ani was held by a muslim dynasty during the twelfth century and recovered by prince Zak'are Long-Hand in 1119. The inscriptions indicate that the towers were built between 1208 and 1219. In 1239 the city was taken by the Mongols and began to decline.



THE CITY OF ANI

ANI '96

FORTIFICATION SYSTEM

THE FORTIFICATIONS

The fortifications of Ani have not previously been the subject of a specific study. However, restoration here is currently underway and it is destroying essential information about the history of the site. It is therefore imperative that restoration be preceded by an architectural study, including measured drawings, photographs and archaeological description. Paradoxically most of the site's intramural religious buildings have been studied but unfortunately have not benefited from a policy of conservation.

The study of the successive enclosures of Ani is of major interest for two reasons . Firstly, it brings an understanding of the way city grew; secondly, it yields information about the sieges it suffered, construction techniques, the tactical principals elaborated in Ani and, consequently, about the city's role in the renewal of active defence in the East, all of which came together and culminated in the Armenian fortresses of Cilicia at the end of the twelfth century. Indeed, the walls of Ani are conceived with the mountainous terrain of the site in mind, so as to achieve maximum tactical efficiency with a minimum of means, techniques that are not to be found in the Byzantine world of the same period.

On the other hand, the ruins are not homogeneous : earthquakes have destroyed entire sections whereas other portions of the elevations (over four fifth of the enclosed perimeter) are admirably well preserved with the crenellation still intact in many cases.

Finally, it should be noted that some of the pathologies affecting the walls are the direct consequences of the sieges they have experienced : one can consider, for example, the traces of shots around the loopholes in front of the tower of Dvine, which clearly result from intensive mechanical artillery bombardment, or the collapsed curtain walls in the area of the gate of Kars, which indicate that offensive bridges have been made by sapping and wooden mine-galleries.

The Northern Front

Wherever possible, fortifications were set up on the flat terrain immediately atop a slope. It was only necessary to create artificial obstacles to obstruct access from the north. A first barrier, the one erected by Ashot, was put in place at the foot of the citadel, at the narrowest part of the isthmus, obstructing it to a width of 150 m. 800 m. to the north, the great urban enclosure took advantage of two dry valleys, the ravines of Igazdor and Gaylazdor which reduce the spur to a width of no more than 600 m. Added to this natural obstacle there is, in Ani, a most formidable artificial one i.e. the high curtain wall flanked by nearly thirty towers with five gates set in and lined by a flanked fausse-braye. By excavating a diagonal ditch to the east, the designers even managed to strengthen this enclosure so as to make it face due north in three concave portions situated between the main gates and jutting out in front of the curtain wall. Thus, the besieger always had the sun in his eyes as he advanced like todays's photographer who can only take pictures into the light from outside the enclosure.

The chronology of the construction of the defences can be established with great accuracy thanks to the action of the earthquakes. In some cases, tremors destroyed the first curtain wall, offering the opportunity of retracing the successive additions like so many onion skins peeled back to the heart. In other cases, they opened cut-away 'windows' into the outer skin of the towers, revealing the complex interweaving inside. In this respect, the fortifications of Ani constitute a privileged experimental field for above grade archaeology, the buildings offering themselves like an open book of teachings.

Five successive phases can be distinguished in the construction of the northern front although they cannot for the moment be placed in a precise context, except for the last which has enough inscriptions to be dated with certainty. However, it will not be difficult to establish the precise chronological order of the different phases of constructions thanks to the inscriptions to be found on the facing of the towers and to the pattern which decorate them (swastikas, Armenian crosses, check patterns, twisted cords with snake heads, bucranes, etc.):

First Phase

Construction of a rectilinear wall flanked by no fewer than two square towers, one at each angle, certainly with five gates and two posterns already set in. This phase is characterised by the medium-sized, cubic, roughly squared bond with stone blocks penetrating the core work and the buttered joints underlined by a trowel mark, and by the presence of pumice stone in the mortar.

Second Phase

Semi-circular towers, seven metres in diameter, were built against the wall in several different stages so as to provide it with flanking approximately every 20 meters. These towers are built with clay mortar and frequently take the shape of flattened cones and are set out in a very open horse-shoe plan so as to give the flanks a view over the ground outside.

The works of the first two phases are crowned by highly characteristic merlons: rounded, but with a parabolic outline, they rest directly on the ground of the roundway, without the intermediary of a parapet.

Third Phase

In front of this enclosure is a fausse braye nearly 5 meters in width, flanked with small semi-circular compact turrets two meters in diameter. The bottom third of the scarp is made of basalt blocks to make sapping more difficult in this dry ditch with a non faced counter scarp. In compliance with a procedure which is very well known in Armenia, the gates of the low enclosure are not placed right in front of those of the high enclosure so that entry could only be gained by weaving to and fro under the watchful eyes stationed above.

Fourth Phase

The original towers were claddedfrom the outside, their diameter increasing from the original seven meters to an average of ten, with the purpose of doubling their height and topping them with a large firing platform; this was done so that the defenders could supervise the surroundings and counter efficiently the moves made by the attackers. Therefore, the platform is placed atop a vaulted firing chamber with strong joist

arches and 5 to 7 loopholes allowing cross-bows fire in front of the tower (there were no lateral openings) . In practise increasing the diameter of the base of the flanking towers, especially to the west, means that thoroughfare along the fausse-braye, now cut off by the projection of the towers, was rendered virtually impossible.

Fifth Phase

Next, those portions of curtain walls positioned between the towers were added to from the outside so as to bring the height of the enclosing wall up to the level of the summit of the towers. In many cases, the ruin of the original wall, that this portion of curtain wall was set against, actually left some sections of masonry suspended in mid-air. This high curtain wall was crowned by a roundway with the doors set in to allow entry in to the tower. These doors may have had bartizans over them.

To sum up , the fortifications evolved very rapidly, over a period of 250 years, under the influence of two parameters which were indissociable and yet contradictory:

One the one hand, the threat of earthquakes meant that towers had to be designed as low flattened cones and that there was an absence of link between the different works to allow for differential settling after tremors.

On the other hand the evolution of poliorcetic necessitated the creation of elevated firing crests in order to counterattack enemy offensives and of several lines of defence.

SIGNIFICANCE OF THE MONUMENT

The urban enclosure of Ani is an exceptional monumental whole due to its vastness, its quality and its state of preservation. No other urban fortification of historical Armenia seems able to rival it. Isolated fortresses, like Amberd or Maghazberd, display nothing like the sophistication of its military disposition. Nevertheless, the defensive design of the phase dating from the first third of the XIII. century was considerably behind those of contemporary fortresses in little Armenia, influenced by the contract with the Franks in Holy Land. This account for a perfect mastering of the machicolation, of the niche and flanking loopholes, of the right-angle gate with a murder hole : none of such devices are to be found in Ani, which are of strictly Byzantine lineage.

Singling out the different strands of these influences would lead to a better understanding of the local genius for adapting to the terrain. The architectural study of this enclosure, which is part of the world heritage, must therefore be recognised as a scientific and cultural priority.

CONDITION ASSESSMENT

In spite of the quality of the masonry and the shape of the buildings which make them suitable to withstand seismic action, earthquakes have been a major cause of decay for the monuments of Ani. As a matter of fact, the failure of one of the facings is enough to prime a process of

[5]Apart from the aesthetic appearance the use of the cement mortar should be avoided for this material is too hard for traditional masonry and already tends to detach from the wall.

[6]Two different types of mortar have been identified; one, very peculiarly, is extraordinarily light, for it is made of lime and pumice stone which gives the mix and hydraulic setting.

deterioration since the mortar of the core-work, left unprotected, starts to crumble until finally the entire structure collapses.

A similar phenomenon has occurred, possibly due to the action of the moisture (salt crystallisation and frost) resulting from melting snow, at the base of the walls, particularly on the fortifications : in this case the threat comes from the extent to which the structure is undermined. Under these circumstances, neglect becomes a main problem in a site where only maintenance could prevent further deterioration.

In addition to this, one should add man-made deterioration, the evidence of which is too obvious to be overlooked. In fact, many buildings - among which the Cathedral and St. Gragory Abu Ghamranz show signs that stones have been removed perhaps to re-use them in the nearby village.

Paradoxically, a further problem, and certainly not a minor one, is represented by the restoration work carried out at present. If the capping applied to the wall tops of the structures recently excavated could only be improved it would certainly help the aesthetic appearance enormously. However, as it is, it only serves the purpose of protecting these remains. As such, the restoration of the palace was structurally unnecessary and aesthetically debatable; moreover, it could be criticised for it has visibly been carried out without archaeological evidence.

More serious a matter is raised by the restoration of the city walls which is presently being undertaken : not only is this work carried out without proper study (a tower of the outer line of defence has been joined with the inner fortification preventing the circulation between the two walls!), but archaeological and architectural evidence is being obliterated. In addition to this, restored portions look awkward, for stone blocks have been cut with a straight face instead of following the curve of the towers; the extent of stone replacement is also disturbing and it gives the walls an inauthentic appearance. Furthermore, the amount of Portland cement used in this work introduces a consistent amount of soluble salts which are already damaging the soft tuff of the original structure.

BUILDING TECHNOLOGY

Apart from a beautiful dove-tailed joint ashlar of which some re-used blocks can be seen in the citadel, all buildings in Ani are constructed with a rubble masonry faced with dressed stone. Although in some instances (the remains of phase 1 of the fortifications) the infill is set in mud mortar, it is generally the excellent quality of the core that gives strength to the walls and it is not uncommon to see it surviving despite the loss of the facing. Indeed, the corework must have been laid between the stone block of the facing of every course, often in a herringbone pattern, with very good line mortar very much in the tradition of the Roman concrete(opus caemanticium). Actually, the quality of the mortars gives the structures a monolithic character that allows many ruins to

[7] In the outer wall of the fortifications, each course is slightly receding and this creates a gentle taper, which, combined with the use of blocks of different colours, makes the ramparts very elegant.

[8] See List of Participants.

stand almost against the laws of static and very large portions of masonry keep holding together on the ground after the building has collapsed. According to laboratory analyses, the mortars usually consist of powdered basalt anderite together with volcanic pumice mixed with a silted mud which contains a minimal amount of carbonates.

The facing is made of carefully cut, wedge shaped blocks of tufa. Oddly enough, the blocks span the thickness of the walls and this accounts for the hypothesis that they were meant more to provide the core with formwork (during construction) and with a protection, then to give it structural stability.

The softness of the tufa proved successful in absorbing the shocks of medieval shelling, the traces of which are still visible on the city walls, and this lightness, combined with the lightness of pumice mortar may not be foreign to the good seismic response of Ani buildings: given the same strength, a lighter structure is less vulnerable since the horizontal force to which a building is submitted during an earthquake is proportional to its own weight. Another interesting 'anti-seismic device' can be noticed at the arch of Kars gate, where a joggled arch is observed. Structural strength of the building of various periods depended also on the kinds and sizes of stones which were used during that particular period. For example, the larger sizes of stones used in the construction of the circular church of Gagik has caused its collapse during a strong earthquake. The church of Tigren Honenz on the other hand, has largely withstood this earthquake because of its construction with smaller stones.

Vaults and domes which are a common roofing system in Ani, are beautifully built and it is obvious that the architect and the masons had mastered this technique.

Most interesting, is also the use of special flat vaults to create flat ceilings that can be seen both in the mosque and in the zamatun of the church of the Holy Apostles.

CONSERVATION STRATEGY

In their report, the Turkish experts who inspected the site in the course of the mission write : '... Ani, with its impressive fortifications and monuments still standing to a great extent, without any modern development is a unique medieval town which should be studied thoroughly without further delay(...) while the standing monuments are restored one by one.' Indeed,[25] the preservation of a site so rich in cultural and architectural values should be considered, internationally, a priority in the safeguarding of cultural heritage.

Ani is a ruined city. Its buildings must be repaired and consolidated, and to do so a certain amount of reconstruction may be necessary; but, on the whole it should be conserved as a ruin, and actually over restoration could easily lead to a loss of authenticity and cause the genus loci to be destroyed.

The issue is to preserve and enhance an OUTSTANDING ARCHAEOLOGICAL PARK displaying the entire history of a city, including the wars, the earthquakes and the action of time.

The outer walls of the fortification, for instance, bear the traces of the medieval shelling and it would be a

shame to lose such evidence of a siege, in most cases as we have said, the facing has little structural significance and it does not always need to be replaced if the corework is properly pointed and consolidated. Similarly, the Church of the Redeemer would be best conserved avoiding the reconstruction of the missing half, so as to retain this 'living cross-section' of a masterpiece of the XIth century architecture.

In this respect, ordinary masonry repair (pointing, underpinning, partial reconstruction...) can be successfully used to stabilise many of the endangered structures; actually nearly every building in Ani needs some attention and this can be done by a team of supervised masons working six months per year. In this activity, the choice of material is crucial and some research may be necessary to identify a suitable mortar mix.

In other cases, more sophisticated intervention (grouting, stitching, core-drilling...) is needed in order to prevent collapse and to consolidate unstable monuments; for this, a specialised contractor should be engaged and each project should be carefully planned and designed.

Only when urgent work is finished and structural failure is no longer a threat, will it be possible to study in depth each building, with the necessary excavation and documentation, and eventually to develop specific projects to correctly restore the monuments and preserve the site.

Hereafter we give a summary, building by building of urgent intervention which needs to be thought of, and implemented, as soon as possible, after proper measured drawings are completed.