# PROCEEDINGS Edited by Prof.Dr. Hüseyin Gökçekuş

# **VOLUME 3**

International Conference on 19-24 February 2007 Nicosia-Turkish Republic of Northern Cyprus Environment: Survival and Sustainability Organized by NEAR EAST UNIVERSITY



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# PREFACE

Creating a sustainable and a healthy environment is one of the most important global issues facing mankind today. Therefore, serious consideration should be given to environmental problems and concerted efforts should be made worldwide in order to respond and prevent present and future environmental risks and challenges.

The International Conference on Environment: Survival and Sustainability (ESS 2007) organized by the Near East University between the dates 19 and 24 February 2007 was held in Lefkosa, Turkish Republic of Northern Cyprus. The main objective of this multidisciplinary conference was to gather scientists from all over the world to discuss the overall issue of the environment, to find out sustainable solutions for environmental problems and to identify areas for future collaboration in this matter. The conference brought together 2,052 participants from 108 different countries. During the conference a total of 1,463 papers were presented under 21 different subtopics, representing various scientific disciplines. The topics included environmental law and ethics, environmental knowledge, technology and information systems, media, environmental awareness, education and lifelong learning, the use of literature for environmental awareness and the effects of the green factor in politics and in international relations.

The Scientific Committee of International Conference ESS2007 evaluated all of the 1,463 papers and selected among them 610 papers to be included in The Proceedings of Environment: Survival and Sustainability. The readers will notice the wide range of topics represented by the papers included in the Conference Proceedings.

It is hoped that this book will serve to contribute to increase in awareness towards various environmental issues as well as drawing more attention to the urgency of international cooperation and collaboration in pursuing sustainable environmental management.

Prof. Dr. Hüseyin Gökçekuş President of the Conference and the Organizing Committee Vice Rector of the Near East University Lefkoşa-TRNC 18 February 2009



### ACKNOWLEDGMENTS

The Organizing Committee of the ESS2007 Conference would like to extend its sincere appreciation to Dr. Suat Günsel, the Founding Rector of the Near East University, to Prof. Dr. Ekmeleddin İhsanoğlu, General Secretary of the Organization of Islamic Conference and to Prof. Dr. Walter W. Kofler, President of ICSD/IAS for their significant support and encouragement in the conference.

Appreciation is also extended to the chairpersons, the keynote speakers and the presenters of papers in the conference.

We are deeply grateful for the members of the editorial board who have carefully read and recommended the papers for publishing.

We also wish to express our gratitude to numerous individuals for their valuable contribution to the editing process.

Prof. Dr. Hüseyin Gökçekuş President of the Conference and the Organizing Committee Vice Rector of the Near East University Lefkoşa-TRNC



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International Conference on Environment: Survival and Sustainability 19-24 February 2007 Near East University, Nicosia-Northern Cyprus

#### Message from the Honorary President of the Conference

The interaction between humans and their environment has entered a critical stage as the delicate balance between them has become more fragile making it difficult for the nature in many areas to renew itself. All this poses a variety of serious challenges for us all. The main challenge before us is no less than redefining our entire relationship with our environment. At this critical juncture, I feel excited and take pride in once again hosting such a distinguished group of scientists, researchers, journalists, and students from all over the world at our university addressing such a critical global concern. I look forward to welcoming you all in Turkish Republic of Northern Cyprus.

Yours truly, Dr. Suat İ. Günsel Founding Rector of the Near East University

#### Message from President of the Conference

It gives me the utmost pleasure in welcoming you all to the International Conference " Environment: Survival and Sustainability" here at the Near East University in Turkish Republic of Northern Cyprus to be held at 19-24 February 2007.

The conference aimed at bringing together more than 2,000 scholars and researchers from over 90 countries around the world to discuss environmental issues from a variety of perspectives; underline the importance of the need for urgency in taking steps by the international organizations, states, local authorities and non-governmental organizations to move to a sustainable environment/development model; and thereby makes its contribution to worldwide debate effort on strengthening the bridge between theory and practice in meeting environmental threats/challenges.

Since our last international conference on environment, "Environmental Problems of the Mediterranean Regions", worldwide environmental disasters as well as local ones have multiplied and environmental degradation and pollution has continued. While major strides have been made in the world in analyzing, understanding and informing the public about the environmental challenges we are facing, we still have a long way to go. Our way of life is still far from a sustainable model and our environment continues to degrade and deteriorate due to human activities. The consequences can be seen in worldwide environmental disasters as well as locally in our daily lives.

This is going to be our third international conference on Environment organized by our young university since it was established in 1988.

Yours sincerely, Prof. Dr. Hüseyin Gökçekuş Vice Rector of the Near East University





## **OPENING SPEECHES**

#### Prof. Dr. Ümit HASSAN Rector of Near East University, TRNC

His Excellency, the Prime Minister of the Turkish Republic of Northern Cyprus,

His Excellency Secretary General Organization of the Islamic Conference,

Distinguished guests, colleagues, ladies and gentlemen,

On behalf of the Founding Rector and the Near East University, I take this opportunity to wish you all a warm welcome for a fruitful conference. It is a great pleasure for me to be a participant at this international conference.

The International Conference on Environment, Survival and Sustainability is a new and most important sequel to a chain of international conferences organized by the Near East University. I trust the conference will provide participants with an opportunity to discuss, to show and to express the related problems and share their experiences. I believe that we will have a most beneficial scientific medium taking the battles into consideration between theoretical analysis and experimental observations and studies.

It is evident that this balance of methods and techniques will have to create a high level of scientific contribution. In other words, the conference will strengthen the bridge between theory and practice in meeting environmental threats, and emphasize the urgent need for coordination and integration among all bodies towards a more sustainable environment. I would like to take this opportunity to proudly emphasize and announce the accomplishments of the Near East University in fulfilling the requirements in founding the School of Medicine as a subsequent step following the School of Pharmacology and the School of Dentistry which will start to function properly in this coming academic year. Within this context, I would like to inform you that the technological means and the academic staff needed by such schools are at the highest level at the Near East University. Our conception of the Technopark being different from the practices of other universities is solely aimed at using our efforts and resources in developing the necessary infrastructure for establishing a Medical School which will be in the service of the island. From a social-psychological perspective, I believe this will enhance the perception of people regarding the dimensions on the management of health issues of the islanders, and for us this would be a moral boost. Considering the significant intellectual and moral capacity of the participants, I simply think that we all want to declare that each and every soul on this planet has the right for survival and to be included amongst the fittest.

Thank you, thank you all.



#### Prof. Dr. Hüseyin GÖKÇEKUŞ President of the Conference & Organizing Committee Vice Rector of Near East University

Your Excellency, President of the Turkish Republic of Northern Cyprus, Your Excellencies, Distinguished Scientists and Participants, Ladies and Gentlemen, Members of the World Press

On behalf of the NEU, I would like to welcome you all to the "Environment: Survival and Sustainability" Conference organized by Near East University in LEFKOŞA.

Today, it has been understood that environmental problems with their cumulative characteristics are closely interrelated with many economic, social, cultural, political and administrative parameters, which are naturally interrelated with academic insight.

Near East University was established in 1988 and has since then grown to become one of the fastest developing universities in the region setting itself the strategic goal of joining the "top 500 universities in the world."

Near East University is a member of the European University Association, the International Association of Universities and the Federation of the Universities of the Islamic World. The University has over 3,000 staff, of which 900 are academic personnel. 17,000 students from 44 different countries are attending 12 faculties and 50 departments at the university. There are 14 dormitories with a capacity of 4,000; and several new dormitories are under construction. Nearly 50% of the students receive scholarships. This figure includes full scholarships, partial support given to students who are in need of financial help, and to those students with sportive accomplishments.

The University has to date organized 12 international conferences and congresses and many local and regional conferences, seminars and panel discussions on a variety of subjects.

The Near East University is honored to host this world conference which has surpassed in scope and content the conferences it has organized before.

Around 2,000 participants from more than 100 countries in the world are present here to discuss environmental issues from a variety of perspectives.



Turning back to the cumulative characteristic of the environmental problems, it is clear that ecological deterioration is the most important problem resulting from regional conflicts, demographic outburst, consumption of natural resources, starvation, degradation of the environment, dwindling fresh water supplies, natural mega-disasters like typhoons, earthquakes, and landslides. Hunger and malnutrition are a direct result of a lack of access to/or exclusion from productive resources, such as land, the forests, the seas, water and technology. As such, this problem is gradually gaining weight in international and national environmental politics, because all these are threatening the common future of humanity. This has refocused the world's attention on the urgency of researches and practical steps on environmental issues. These issues require global solutions in accordance with their global characteristics.

In the EU programme called "*Environment 2000: Our Future, Our Choice*" 4 major topics have been selected as priority targets. Climate Change Biological Diversity Environment and Health Management of Natural Resources and Waste Sustainable development is the solution that leads towards a strategy that will consider the environmental problems for future generations.

Most important guidelines for Sustainable Development are:

- -Demographic control.
- -Reforestation.
- -Protection of agricultural areas.
- -Energy saving.
- -Development of renewable energy sources.
- -Improvement in the implementation of existing legislation.
- -Integrating environmental concerns into other policies.
- -Working in cooperation with the business.
- -Educating people to change their unfriendly behaviors towards the environment.

-Environmental accounting in land-use planning and management decisions.

#### Global Environmental strategy is a must.

#### ENVIRONMENT DOES NOT UNDERSTAND POLITICS. IT HAS NO BOUNDARIES OR BORDERS.

The main message of our Conference will contribute to the worldwide debate and create a multidisciplinary discussion forum where experts from various disciplines will be able to discuss environmental issues in 21 fields such as culture, biodiversity, health, education, business and economy, environmental technology, climate change and energy among others.



Dear Guests,

Environment: Survival and Sustainability Conference is going to give you all an opportunity to get to know Near East University. The Grand Library collection has reached to more than 500,000 while 52 million articles are accessible through electronic databases. The Grand Library is fully computerized and linked to many major world libraries and research institutions throughout the world. It is open 24 hours a day, serving not only the university but the whole community. In other words the Grand Library functions as a national library.

It is my pleasure to extend our gratitude to the members of the Scientific Committee and the International Advisory Board whose active role raised the scientific level of this conference and also increased the number of participants. Unfortunately, some of the Scientific Committee members withdrew due to non scientific letters they received.

In my opinion, as pointed above

#### SCIENCE HAS NO BORDERS and NO BOUNDARIES. IT IS OF THE HUMANS and FOR THE HUMANS.

Coming to our SLOGAN: RIO 1992 Johannesburg 2002 Nicosia 2007 **We do not have much time to lose.** 

On behalf of the Organizing Committee, I would like to extend our special and sincere thanks to our Founding Rector Dr. Suat Günsel, whose basic aim is to provide generous support for the improvement of continental lifestyle capabilities of the island.

We extend our gratitude to Islamic Development Bank and to the Secretary General of Islamic Conference Organization, Prof. Ekmeleddin İhsanoğlu for their invaluable contributions.

I would like to convey our thanks to the government of Turkish Republic of Northern Cyprus for their support.

Our special thanks go to the Organizing Committee Members and the students who worked day and night for the success of this conference.

Last but not least, we would also like to extend our gratitude to H.E. Mr. Ban KI-MOON Secretary General of the United Nations, for his kind moral support.

I believe this conference will scientifically contribute to the solutions of environmental problems, and hope you will enjoy your stay in our beautiful country.



#### Rahmi KOÇ Honorary Chairman & Founding Member of TURMEPA, TURKEY

Mr. President, Mr. Prime Minister, Your Excellencies, distinguished guests, Ladies and Gentlemen

I would like to express my gratitude to Mrs. Sidika Atalay for inviting us here for this very important international conference today. As founder of TURMEPA, The Turkish Marine Environmental Protection Association, I would like to share my views with you regarding our activities and accomplishments in Turkey. Why and how did I found TURMEPA? You can call it luck, you can call it coincidence. I was the Chairman of the Turkish-Greek Business Council for six years. During this period, every effort that I made to get the two countries' businessmen to cooperate failed. The Greeks never said no, but they never got their act together either. Again on one occasion in Athens, though I had great enthusiasm to continue to join forces for an interesting project, unfortunately I was very disappointed by their lack of response. At the end of the meeting just before we had lunch, the late shipping Tycoon, George Livanos, who was sitting at the very back of the conference room, called me and said, "Look here, I've been following you and your efforts for sometime and see that you are not getting anywhere and are becoming frustrated. If you really want the Greeks and Turks to cooperate in one area, that will be the environment." He also said, "I founded HELMEPA, Hellenic Marine Environmental Turkish Association, called TURMEPA and let them two cooperate to keep our seas clean. So in 1994, 24 friends believed in the cause and we founded TURMEPA, the first NGO specifically dedicated to keeping the seas clean. At that time, HELMEPA was already eleven years ahead of us and the World Bank had been gathering data on Turkish seas and marine life from HELMEPA. Soon, I found out that this was a long term project and would at least need one generation's commitment. During our efforts, we learned that there are four very important points. Point number one: It's more economical to keep our waters clean than to clean them after polluting them, this was very important. The second important point: the subject is a major undertaking and cannot be done by one association alone and requires a nationwide awareness of the problem. Our third finding was that it needed education; education is most important in achieving our goal. The last important point was international collaboration that is a must as the environment does not have borders, does not have barriers, religion, race or different languages and no politics are involved. With these four points in mind, we first trained teachers in primary schools in coastal areas and then distributed hundreds and thousands of books to these students and pupils. We also held a drawing competition with the subjects of clean seas, we made films for television and cinemas, we used newspaper advertising to get our messages across, and we worked with several universities to test water quality. In the 30 years, from 1960 to 1990 the number of species in the Marmara Sea, believe it or not, came down from 148 to only 14. Now they are coming back. We have started to see dolphins in the Bosphorus and this is good news because when dolphins come, other marine life generates itself. We set up a data room to collect and store information about marine life, our seas, inland waters and currents.



We learned to our surprise again that only 10% of sea pollution comes actually from shipping. The risk comes from domestic and industrial waste; therefore, we set up a system to monitor waste being dumped in our seas. Clean seas are of most importance to tourism which is a major source of revenue for our economy. Therefore to this end, we collaborated with sea side hotels, holiday villages, restaurants and cafes to ensure their compliments with environmental regulations. We then hoisted our TURMEPA flag on their premises. When they did so in the summer months, we put together a team of students to collect garbage from boats and yachts free of charge, we set up garbage containers in coastal areas where garbage can be deposited by banks, businesses, industries and then collected by municipal authorities. Our financing is usually organized on a project basis. With all this said and done, Ladies and Gentlemen, our efforts are still only a drop in the ocean if awareness is not felt by our citizens. Therefore, we are constantly telling the public at large that we have ignited a spark, which we must still help to spread throughout the country.

I am happy to say that the Turkish government and its Ministers, especially the Ministry of Transportation, our Governors, Mayors, academicians and businessmen have realized that clean seas are one of the most important issues we are facing. Clean seas mean life and oxygen. Polluted seas not only kill marine life but also tourism and give third world nation appearance.

I am delighted that I am joined today by our Chairman Eşref Cerrahoğlu, who is himself a ship owner and our Board Member Mr. İbrahim Yazıcı who is himself a sailor, and our General Secretary Levent Ballar who never stops coming up with a new project.

Before I finish, I would like to ask our Chairman, who made contacts yesterday, to give good news to our Cypriot friends.

Thank you for bearing with me.



#### Eşref CERRAHOĞLU Chairman of Executive Board of TURMEPA, TURKEY

Mr. President, Mr. Prime Minister, Ladies and Gentlemen,

My Honorary Chairman addressed TURMEPA's activities. I am very pleased and honored to announce our work carried out in North Cyprus. Today, we will be opening a branch of TURMEPA in Girne, and more importantly, we will open a sea and shore observation center in Girne in partnership with the Municipality of Girne and the Near East University, and before the summer of 2009, our training and education program will start.

I would like to thank Mrs. Sıdıka Atalay for accepting the coordination of TURMEPA activities in North Cyprus, and I am confident that we will have all the backing of our President and our Prime Minister, and the people of Northern Cyprus.



#### Cemal BULUTOĞLULARI Mayor, Turkish Municipality of Lefkoşa, TRNC

Honorable President, Prime Minister, Secretary General of the Islamic Conference and distinguished guests,

Welcome to Lefkoşa.

The habitat mentioned and diversity of living creatures are shrinking everywhere due to an increase in the fragmentation of landscape. The situation in Cyprus is heading towards a formidable shortcoming in terms of environmental resources. In Cyprus, we have already started to see the danger. There is a great need to improve the diversity and human health on the island. Despite the efforts put forward on these specific issues and existing threats, we still need to stress the fact that deeper collaboration is needed amongst the developing nations.

The conclusion that will be reached at the end of ESS 2007 conference will be a torch light for our municipality and we shall consider balanced use of sources in the future services and activities for Lefkoşa. I wish you all a fruitful conference during your stay in Lefkoşa and North Cyprus.



#### Asım VEHBI Minister of Environment and Natural Resources, TRNC

His Excellency, the President of the Turkish Republic of Northern Cyprus, His Excellency, the Secretary General of the Islamic Conference Organization, Honored guests,

I would like to welcome you all to our conference on Environment, Survival and Sustainability here in the Near East University in the Turkish Republic of Northern Cyprus. Northern Cyprus is honored to host you with this international conference. I believe that the conference will be an important recognition of the issue of this week's environmental topics which concern not only Cyprus but also the whole world. This conference is bringing together almost 1,500 academicians from more than 100 different countries and there are 21 major topics that reflect all areas of environment such as business and environment, environment and health, global warming and a lot of others.

With the industrial revolution in the late 18th century, human beings started to change the global environment. Prior to industrialization the only unsustainable loses from human economic activities were forest cover topsoil. Most societies were relatively based on small and simple technologies using limited amounts of energy with limited territorial area, but the industrial revolution in Europe has changed this. After the revolution, large scale exploitation of fossil fuels enabled the human societies to consume natural resources, the potential of which seemed limitless. Most of our environmental problems today have a global dimension precisely because of the process of development initiated by the industrial revolution. After the 2nd World War, the world population increased rapidly. With this increase, the world started to use more fossil fuels, but these human activities effected the world adversely and we started to loose biodiversity in the environment. It is stated that every year we are losing at least 50 different species of live hood and every year a vast coverage of agricultural land has been lost due to unplanned development and soil erosion. The forests of the world are declining every year. Waste management of all kinds of waste is another problem including domestic waste and hazardous waste. Societies are producing more waste and waste amounts are increasing every year. The uncontrolled dumping of waste is still continuing specially in developing countries and polluting the soil, air and water resources.

Water shortage is another important problem. The amount of drinkable and usable water is decreasing while we are polluting these resources. Almost two weeks ago, IPCC released the draft project from its fourth assessment report where it puts forward that our climate is changing mainly because of inter human induced efforts. Global atmospheric concentrations of carbon-dioxide, methane and nitrous-oxide have increased as a result of human activities and now far exceed pre industrial values determined from many thousands of years. The global increases in carbon-dioxide concentration are due to primarily fossil use and land use change while those of methane and nitrous-oxide are primarily due to agriculture. The net result of these effects is a global average temperature rise of  $6^{\circ}$ C in the last century. When we compare its greenhouse gas emissions within those other developed countries, Cyprus as an island may not have significant effects on the global warming but on the other hand, we may be one of the most effected countries



from this problem. According to different United Nations scenarios, the temperature of the island may increase 2 to 4 degrees Celsius in the following century. It is also foreseen that we may have serious water problems and shortages in the near future due to increasing water demand and up to 40% decreases in the precipitation values according to the climate model predictions. Another effect of the climate change expected for Cyprus is an increasing loss of productive land leading to the desertification of the island. We have also been facing serious environmental issues like other developing countries such as problems in waste, waste water management, copper mining related problems such as the CMC and a lot of others. To solve these problems and harmonize with the European Union, the present government of the Turkish Republic of Northern Cyprus has agreed to form a separate ministry for environment: The Ministry of Environment and Natural Resources. The main mission of the ministry is to protect the environment in Northern Cyprus and ensure the sustainable use of its natural resources as well as to preserve its cultural heritage. The role of the ministry is to develop and implement the government's environmental policies in order to achieve its mission in environmental protection, sustainable use of natural resources and preservation of cultural heritage. In particular, our responsibilities include establishing coordination between different ministerial departments internally and with other ministries externally, mainly with Turkey, the European Union and others on issues of sustainability and environmental protection. We have also started to develop necessary policies and legislation. We are reviewing and endorsing different policies and legislation, submitting draft legislations to our Parliament for discussion and approval. We communicate with the media and the public on environmental issues. We provide support for environmental education in all levels of the education system. The environmental policy concerns of the Turkish Republic of Northern Cyprus should be based on economic prosperity and social coherence, taking into consideration the following three key elements.

The first one is sustainable development. Social and economical development will take place in a way that preserves our natural and cultural heritage and resources. The second one is to follow the European Union rules and standards on environmental protection. Our laws will be harmonized with the European Union environmental legislation and policies to protect and preserve our environment and the health and life of our people. The third element will be the establishment of the environmental governments' partnership model among the administration, all sectors of the economy and our people through processes which will both inform about environmental issues and standards and involve people in the associated decision making processes.

Before I finish my words, I would like to express the importance of sustainable development. All of the problems I have mentioned show us that we have to develop in an environmentally sustainable way. We have to protect the environment and preserve our natural and cultural heritage while we are developing.

I would like to thank all of the participants who came from other countries and also I would like to thank the Near East University for this wonderful organization and their great team for their outstanding efforts. I hope that this conference will shed light on most of our regional and global environmental problems. Thank you.



#### Tahsin ERTUĞRULOĞLU Leader of the National Unity Party(UBP), TRNC

Distinguished contributors, participants and honorable guests,

It is indeed an honor for all of us here in the Turkish Republic of Northern Cyprus to welcome you in a country that supposedly does not exist. Your presence here in the name of knowledge and academic freedom, and above all, in the name of service to humanity will hopefully give a valuable lesson to those who tried so desperately to prevent your participation and contributions to this conference.

Dear friends, you shall be subject to further propaganda and will be delivered misinformation about the circumstances here upon your return to your respective countries. The challenging spirit that you have, the spirit of not bothering about those that stand in the way of knowledge, friendship and partnership and service merit will guarantee the success of this most valuable conference.

In closing, I wish to thank the Near East University for working so hard and for so long in making today a reality.

I wish to thank you all for being with us here today. I wish the conference every success.



#### Assoc. Prof. Dr. Turgay AVCI Deputy Prime Minister & Minister of Foreign Affairs of TRNC

Your Excellency, Mr President,

Your Excellency, Prime Minister,

Honorable Secretary General of the Organization of the Islamic Conference Prof. Dr. Ekmeleddin İhsanoğlu,

Your Excellencies, distinguished participants, Ladies and Gentlemen,

Today is the day. It is the day of pride and success, the day of international victory. It gives me great pleasure and honor to address a conference of which timing is very important, and welcome you all to the Turkish Republic of Northern Cyprus.

I also would like to thank the Near East University, particularly to its Founder Rector and Honorary President, Dr. Suat I. Günsel, and the Rector, Prof. Dr. Hüseyin Gökçekuş, and many others who have patiently and continuously carried out efforts to bring this very important conference into life. A thousand papers from over 100 countries are going to be presented today. I, myself being an academician for 15 years before being a politician, know the importance of presenting a paper in such a conference. I know the excitement, the feeling, the success of presenting, asking questions and the feeling of success at the end of such a conference. I have participated in many conferences internationally. I have presented many papers in many countries. It is a great feeling; it is a great pleasure. I know your feelings and I know the success and pleasure that you will get at the end of the conference. Even under normal circumstances, conferences and organizing conferences would have been a drowning task, but in a country like this which is under an inhuman political, economical and cultural isolation and embargoes due to Greek Cypriot's political blackmail and pressure, it is much more difficult to organize such events. It is very much appreciated that you have stood up against these immoral efforts by putting science and survival of global environment first in the line rather than politics. The future of our world and of our children needs courageous scientists, thinkers and writers like you who are able to transit between politics and political pressures wherever they are fighting for the survival of humanity and the global environment. The bounties and rich resources of our planet have given their best to civilizations throughout the past, but we have reached a point in time and technology that our activities have exceeded the life saving abilities of the earth. The global challenges and the level of distraction we have caused are too great now.

The issue of globalization of environment and conservation is the most crucial and urgent issue that the whole of mankind face today. The survival and sustenance of our environment and biodiversity has importance for our future, and just opened our commitment to fight and fight hard for our world. Businessmen, scientists, intellectuals, artists, politicians, indeed the whole of humanity, must stand and strengthen our struggle in this issue. The results of this conference must provide us with the strategies of sustainable environmental management through the development



of environment friendly technologies and legislation. We must also show the way for social survival to all global citizens, local governments and non-governmental organizations, and because of this, we have a very challenging but at the same time a noble task. In this context, we also strongly believe that institutions from primary schools to universities throughout the world should make in learning the most important attempts to teach about the environment and to train about the protection of environment. I am pleased to inform you that we have a coalition government in the Turkish Republic of Northern Cyprus and we have a Ministry called the Ministry of Environment and Natural Resources. My friend who spoke a few minutes ago is in charge of this ministry. With these thoughts in mind, I would once more like to take this opportunity to thank Near East University and its Honorary President Dr. Suat İ. Günsel for organizing and hosting the Environment, Survival and Sustainability Conference and wish you success in your deliberations.

I thank you for being here in the Turkish Republic of Northern Cyprus and I am sure you will enjoy your stay here and you will remember us and tell the rest of the world the Turkish Republic of Northern Cyprus is a place to be, a place to visit and a place to enjoy.



#### Türkekul KURTTEKIN Turkish Ambassador to Lefkoşa, TRNC

Mr. President, Mr. General Secretary of the Organization of the Islamic Conference, Ministers, Members of the Parliament, Distinguished Party Members, Members of the Organizing Committee, Members of the Media,

Let me first comment on the Near East University for organizing this conference and express my pleasure that I have the opportunity to say a few words about the conference.

From my perspective, the conference is significant for a variety of reasons. Firstly, a very important topic will be addressed throughout the conference. It reminds me the 1972 United Nations Conference on the Human Environment held in Stockholm, the 1992 Earth Summit or the United Nations Conference on Environment and Development held in Rio, and the 2002 World Summit on Sustainable Development held in Johannesburg.

The world constituted combined efforts by the international Community to face a common challenge, that is, the protection and preservation of the environment while achieving developmental objectives in the rapidly changing world. In spite of these efforts, the challenge stays pretty much alive. We, the human beings, have disturbed the balances of nature and the environment. However, we have no luxury for skepticism. A few minutes ago, we heard about the cooperation between TURMEPA and HELMEPA from Mr. Rahmi Koç which proved to us that if there is a will this challenge will be gradually met. You, experts from various disciplines, from academy, various policy makers and executives responsible for the implementation in many countries will be discussing ways to overcome this challenge. Major topics of discussion in the conference show the multi dimensional character and the magnitude of that, and the outcome of your discussions and your deliberations will contribute to the efforts to increase world awareness on this important challenge, and I hope it provides useful material for the decision makers by strengthening the bridge between theory and science.

Secondly, the meaning of this conference in my opinion reflects the severity faced by the Turkish Republic of Northern Cyprus with its people and its institutions. Environment, the problems, economic and industrial development are interrelated issues. The importance of minimizing the environmental damage while achieving sustainable development is widely realized in the Turkish Republic of Northern Cyprus, which is a country going through a remarkable development in the recent year with a growth rate approaching 14% in 2005 and with an increase of 7% in 2006. The increasing public awareness in the Turkish Republic of Northern Cyprus about institutional measures such as the establishment of the Ministry of Environment and Natural Resources constitutes a good, encouraging example. Thirdly, this international conference, which we were told is the 12th of its type organized by Near East University, demonstrates the important role of universities in the Turkish Republic of Northern Cyprus. As many of you have mentioned, education was amongst the fields falling within the problems of the community in the 1960's. The progress achieved by the Turkish Cypriots in this field is commendable and demonstrates the



unacceptability of the isolation the Turkish Cypriot people have been subjected to for many years. Even in such circumstances, the Turkish Cypriots have been demonstrating their will and determination to move ahead and to combine forces with the international community to face the common challenges to humanity.

Let me conclude by hoping that this conference will create more awareness around the world and in this respect, the recognition of the Turkish Cypriot People will no more remain unattended. Let me also wish all the distinguished participants of this conference every success and express my sincere hope that your deliberations will contribute to the combined efforts to give a better world to the next generations.



#### Ferdi Sabit SOYER Prime Minister of TRNC

His Excellency, Mr. President,

His Excellency, General Secretary of the Organization of the Islamic Conference, His Excellency, Minister and Members of Parliament and the very important scholars who have came to our country for this conference,

I would like to greet and welcome you all.

Today is the beginning of a meaningful conference where very important environmental issues will be discussed in this conference hall. As you can see, all the flags in this hall symbolize a different color and a different history of all the nations, and as we also know, the colors of nature are reflected by these flags in this beautiful atmosphere. If nature had been just one color, just yellow or just green, the richness and beauty of living would not be seen and people would not have even been able to fall in love. This colorful atmosphere reflects also the dynamism of human beings. Also, this dynamism provides the humans with the ability to find and change everything in nature which they need. It is because of this developing dynamism that human beings take what already exists in nature and turn it to their benefit. Although there are many differences among all nations we should still cooperate together to protect nature. I strongly believe that this conference will bring very important conclusions. I also believe that although the Turkish Republic of Northern Cyprus and Turkish Cypriot society have been isolated both politically and economically, this conference will have very important outcomes. We want to be recognized in the world with our nation, with our national identity. This conference also gives out this message to the world.

I would like to thank the Near East University, the valuable Rectors, and Scholars for participating in such a conference. I would also like to thank and welcome once again the valuable scientists for coming to our country.



#### Prof. Dr. Ekmeleddin İHSANOĞLU OIC Secretary General

Your Excellency Mr. President, Mr. Prime Minister, distinguished scholars, Ladies and Gentlemen,

I sincerely greet you all. It gives me great pleasure to be with you here. It is a great pleasure to be at the opening ceremony of this important event: The International Conference on Environment, Survival and Sustainability organized by the Near East University. I am grateful to Near East University for their kind invitation which has enabled me to address such a distinguished gathering. I would also like to thank you all who have worked hard, took part in preparation and realization of this project.

Let me share with you my honest feelings. I am not a newcomer to this island and I have heard a lot about Near East University and I have also heard of its good reputation. Some of my friends' sons and daughters were here as students. I have heard all the facts and data about the universities. I am really impressed.

#### His Excellencies, Ladies and Gentlemen,

I am not an expert on environment issues but the convening of this important conference is very timely as the subject matter has become a very serious global matter. We read all the reports on a daily basis about the dangers of climate change. Climate change and environmental degradation affect the whole world. Meanwhile we hear the frequent comments of the world leaders about the lack understanding and cooperation on environmental issues which might lead us towards the destruction of our planet and humanity. Global pandemics, deforestation and natural disasters are only a few of the issues that presently affect the globe. All these problems are at the heart of sustainable development that we all need to achieve. We find ourselves helpless today when we see rich nations of the world continuing to load the atmosphere with carbon-dioxide; compromising the well being of human race and pushing our planet to an unknown future. It is obvious that these acts have contributed to a rapid change of climate which has caused global warming, rising sea levels, extreme droughts, erosion of soil, loss of the forests and extinction of the species. Sadly, most of the environment degradation is severely affecting the developing world. Its population is facing severe droughts and dry rivers, while some other areas are facing excess floods, rainfalls, mud slides and loss of properties. I am just back from a long trip to Indonesia and I have seen the negative side of the phenomena there. Ladies and Gentlemen, the catastrophes have also negatively affected ecological imbalance. Hence, they have been posing a serious threat to the genetic pool with ramped out breaks of disasters and leading to more poverty in the undeveloped parts of the world. Recognizing the important role played by the environment in the development and in the progress of its member states, the OIC ten year plan of action, a joined action development for the Muslim world to face the challenges of the 21st century, was developed by the 3<sup>rd</sup> Extraordinary Summit convened in Mecca in 2005 and attended by all heads of state from 57 OIC countries.



In this context, I would like to bring to your attention the fact that the heads of state present in this Summit in December 2005 made a very strong appeal to all OIC member states and their institutions on the issue and were able to coordinate their environmental policies and positions in the international environmental issues so as to prevent any adverse effects of such policies on their economical development.

Following the adoption of the OIC ten year plan of action, I have organized several meetings with the OIC institutions and stakeholders in the framework of the implementation of the OIC ten year plan of action. The OIC General Secretariat itself is committed to the world capacity and policies to contribute to the global efforts to counter the environmental challenges. The OIC also notes with pleasure that the majority of its many initiatives and activities reflect the facts of important organizations such as UNEP and our parties to various international conventions on environment in particular to the protocol. Joining such conventions reflect the fact that the OIC member states are giving their attention to the international laws and requirements. Such devotion shall certainly provide us with a solid basis for our future efforts suggested by the OIC ten year activity program.

I would like to praise the Near East University for providing the opportunity for the conference participants to address a wide range of crucial issues such as redefining the business of conservation and management of biodiversity, culture heritage and environmental factors, economics, development and sustainability, energy and development, environment and health, the threat of global warming, ecological balance and sustainable environment and social and psychological dimensions of the environmental issues.

Mr. President, Your excellencies, Ladies and Gentlemen,

I am of the view that the environment issue can be viewed from at least two major perspectives: The perspective of science and technology and the perspective of effects and impacts of environment on economic development. The important contributions and inputs from science and technology to ensure sustainable development cannot be denied. However, environmental challenges that we are talking about are mostly trans-boundary ones and cannot be faced with individual efforts of the nations. The very nature of these challenges require that these states should combine their efforts and facilities together. In this context, the OIC member states are called upon by the conclusions of various OIC gatherings and decisions to join hands to collaborate and to synergize their efforts in performing and undertaking research and development to reduce some of the environmental effects and challenges faced by them. Assessing the effects of environmental challenges on economical development also requires regional and global cooperation and coordination. In the domain of sustainable development perspective, one should address the quality and sustainability of our natural resources, the threat of global environmental changes on ecosystems, quality of life in our cities, impact of the use of energy which is essential to our economies and to the way of life. We should be making use of the technologies available with the view of reconciling economical development with environmental sustainability. The achievements of all mentioned goals require coordination, harmonization and synergizing of our entire actions. In other words, we need to follow up very closely all our activities to monitor their progress, to evaluate and assess the impacts and to take recognition of all possible shortcomings.


Naturally, addressing you today in one of the heavenly parts of the world, I cannot emphasize as much as I would like to the importance of environmental studies and undertakings aimed at the protection of the Mediterranean Sea and its ecological diversity.

Ladies and Gentlemen, as I value the timely initiative of organizing this conference on an issue of great relevance for my organization and for our member states considering the excellent academics and research qualities and standards of the Turkish Cypriot Universities, I would also like to mark an appeal from this platform to the universities and scientific institutions around the world particularly those based in the OIC.

Thank you.



### Mehmet Ali TALAT President of TRNC

Distinguished guests, dear participants,

As you may have expected, I will not make many remarks about environment or raise much concern about the environment. My remarks will be mainly political but in the concerns of the environment. Possibly you can claim that environmental concerns should cause an impact to unify humanity because the solutions to environmental problems can only be found by cooperation. So, this unifying factor must be a point of consideration, and we, the Turkish Cypriots know the importance of this fact. We know the importance of being unified with the international community because we are under severe isolation on all aspects of life including environmental issues. My Prime Minister mentioned about the lack of cooperation between the two sides. We are under continuous pressure from our neighbors. Everywhere in the world, we are in a struggle against this isolation issue and try to be unified with the world, and I wish that this conference will give fruitful results to the scientific life and to humanity.

Thank you for your participation and I wish you all success.



# FINAL REPORT OF THE INTERNATIONAL CONFERENCE ON ENVIRONMENT: SURVIVAL AND SUSTAINABILITY

Environment is a subject that must be brought to the top of international agendas if the threats to sustainability and survival are to be countered. It cannot continue to be seen as something to be added on to the plans of commercial enterprises or as a minor component of poverty-alleviation programs. Economic development cannot eliminate poverty without conserving natural resources and maintaining ecosystem services. Nor can productive activity ignore the significant effects of resource extraction and waste generation. Environment must be the central focus of national and international programs at all levels.

The International Conference on Environment: Survival and Sustainability, held at the Near East University, Nicosia, Northern Cyprus 19-24 February 2007, dealt with environmental threats and proposed solutions at all scales. The 21 themes addressed by the conference fell into four broad categories:

1. Threats to Survival and Sustainability

Global warming and other climate changes pose a major threat to natural and human systems throughout the world. Major impacts addressed ranged from dieback of tropical forests to altered ecosystem functions in temperate and boreal systems, changes in sea level and in polar and alpine systems, as well as impact on water supply, agriculture and extreme weather events. Pesticides threaten natural ecosystems and human health. Health is also threatened by diseases, pollution and many forms of environmental degradation. Natural and human-made disasters interact to threaten societies in many ways.

2. Technological Advances towards Survival and Sustainability

Environmental science and technology are advancing rapidly, but are not in themselves sufficient to counter the growing threats to environment. Important areas include integrated water management, new and renewable energy sources, and conservation and management of biodiversity.

3. Activities and Tools for Social Change

Activities and tools that can be applied to move society towards greater sustainability were emphasized at the conference. These included environmental law and ethics, environmental knowledge and information systems, media, environmental awareness, education and lifelong learning, the use of literature for environmental awareness, the green factor in politics, international relations and environmental organizations.



### 4.Defining Goals for Sustainable Societies

The new directions that societies must take include considerations of economics, development and sustainability, redefinition of the interests of business, incorporating cultural heritage, the seas, ecological balance and sustainable environment, and the social and psychological dimensions of environmental issues.

The breadth of the issues addressed at the conference made clear the need for greatly increased interdisciplinary and international collaboration if survival and sustainability are to be achieved. The exchanges at the conference represent a step in this direction.

Cyprus is getting an equal share from these developments and 51 species are under a threat of extinction. Out of 10 regional mini-hotspots within the principal foci in the Mediterranean, and also considering that Cyprus is island number two with a rich plant diversity and narrow endemism, there is a need for protection of its biodiversity.

The matter of global sustainable development actually has a connotation for change of life styles. This calls for

-interactions and understanding of people the world over,

-fair and equitable distribution of benefits derived from

resources,

-conservation of biodiversity and protection of our resources,

-the water use efficiency is very important as the availability of water is becoming scarce,

-we need more international collaboration and research for wider and reliable speculation,

-management of plans and their implementation to save the critical aspects of our heritage and environment,

-cooperation of scientific disciplines is necessary to address the situation,

-countries must work together and minimize the impact of

borders on science and maximize the benefit for all mankind,

-in order to obtain global sustainability, the curses of overconsumerism should be overcome by an appeal to social and spiritual values,

-for making the world a happy home for everyone, transfer of knowledge has to take place across nations,

-environment and sustainability have to be treated globally, not just locally, before time runs out.

About 2,052 participants from 108 countries from all around the world joined us to make 1,413 presentations and discuss environmental issues from a variety of perspectives.



Global Environmental Strategy is a Must. As I mentioned on the first day of the conference, "ENVIRONMENT DOES NOT UNDERSTAND POLITICS". "IT HAS NO BOUNDARIES OR BORDERS".

This Conference has contributed to the worldwide debate and tried to create a multi-disciplinary discussion forum where experts from various disciplines were able to discuss environmental issues in 21 different fields.

Thanks to the 2,052 participants from all over the world for making this interdisciplinary conference a success. Their active role raised the scientific level of this conference.

I believe this conference has scientifically contributed to the solutions of environmental problems, and hope you have enjoyed your stay in our beautiful country.

Thank you

Prof. Dr. Hüseyin Gökçekuş





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PROCEEDINGS Edited by Prof.Dr. Hüseyin Gökçekuş

# Papers & Posters

## **VOLUME 3**

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International Conference on 19-24 February 2007 Nicosia-Turkish Republic of Northern Cyprus Environment: Survival and Sustainability Organized by NEAR EAST UNIVERSITY

PROCEEDINGS Edited by Prof.Dr. Hüseyin Gökçekuş

## MT-3: Cultural Heritage and Environmental Factors



International Conference on 19-24 February 2007 Nicosia-Turkish Republic of Northern Cyprus Environment: Survival and Sustainability Organized by NEAR EAST UNIVERSITY



#### THE VERNACULAR TARSUS HOUSES AS A SAMPLE FOR CULTURAL HERITAGE

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Tarsus is located within the Mediterranean region in Türkiye. The city is in between Mersin and Adana, the most ancient settlements in Tarsus date back to the Neolithic era as proved by the excavations. Tarsus is placed upon the highway of Antakya where the oldest Christian church is placed and attracts the attention of many tourists every year. Vernacular Tarsus Houses; considered as the good and early examples of ecological design, still resume their original characteristics and acquainted as crucial examples of architectural heritage. These vernacular houses will be examined in this article.

The interior organization of vernacular Tarsus houses is done according to the topographic and climatic conditions of the region. As Tarsus is very hot and dry during summer, the use of stone provides a natural coolness needed during hot summer days and nights. Eaves that arrange a building's roof help to preserve facades from sun rays. By this way, the heating and cooling problems of houses are solved. The use of thick walls, local materials and many special details help this climatization. The common space called as "sofa" -a local name-is located on the upper floors and is used for daily activities in traditional houses. There are wide window openings on the two sides of the sofa which provides daylight to the interior space of sofa and to the other rooms surrounding the sofa. Houses were constructed by thick solid walls. This thickness also provides the interior space to be hot in winter and cool during summer. The partition walls of upper level constructed by local timber and stone materials which called "himis" in local language. We can see the progressive examples of stone workmanship on entrance facades of traditional Tarsus Houses. The stone that is used in these houses are soft and easy to form. On the upper floors the stone and wood are used together. It can be said that the vernacular Tarsus houses are good examples of ecological design as the local materials are chosen according to the climatic conditions and used as construction materials.

To conclude; the findings after the excavations of Gözlükule Hill and Cumhuriyet Square are provided important knowledge about the ancient settlements around the Tarsus Area. It is very important to preserve and keep alive these rich cultural heritages of Old City of Tarsus in order to be able to transfer them to the next generations. This conservation can be done in two ways; either by the reuse of these vernacular houses for different functions or by reconsidering their previous functions according to current changes of the time. By this way; we can talk about existence and the sustainability of these Houses. It is very important to find contemporary solutions for the preservation and reuse of these traditional Tarsus Houses. The authorities should develop new solutions for providing the continuation of the unique pattern of these vernacular houses. The arrangements for vernacular houses in micro and macro levels provide the preservation of the cultural heritage at the same time.

#### Key Words: *İnterior architecture, Traditional houses, Tarsus, Cultural heritage*



#### 1.Introduction

Among our most valuable assets of cultural heritage, vernacular houses are outcomes of a culture accumulated for thousands of years. These houses have, for long, adopted and survived the day's conditions, remaining live and influential. This liveliness and influence of theirs shows how sound decisions their planning and construction were based on. Best use of the construction technique it was built with, supply of construction materials from resources in nearby locations, easy maintenances when worn out or damaged and reusability of the same material after demolition ensured the sustainability of buildings. House plan system has been designed to make best use of favorable weather conditions in consideration of climatic factors and then situated on the land. Vernacular houses successfully survived for centuries thanks to structural elements suitable to user's habits in interiors. This study focuses on Tarsus region, which houses vernacular houses reflecting rich Anatolian cultural heritage, as a sample. The study will first probe into the concept of culture with regards its reflection on living spaces, and then emphasis will be made on the influence of this culture on the vernacular houses in Tarsus.

#### 2. The Concept of Culture and Reflections of Our Cultures in the House

"Culture covers phenomena like symbolism (meaning); tools and equipment; technology; built environment; religion; magic and myths; religious ceremonies and feasts; art, music and dance" (Rapoport, 2004). For Tylor, "culture" is a complex integral structure encompassing knowledge, art, tradition, customs, etc. skills, abilities and habits that mankind has learnt (gained) as a member of a society. And for Güvenç; culture is a learnable, historical and continuous, social, ideal or idealized system of rules. It covers or satisfies needs, it changes, it unifies, and it is an abstraction (Güvenç, 1984).

Rapoport (2004), suggests that family structure is the most influential factor in house construction. He claims that the dwelling, the first residence of family life, has to be consistent with the number and organization of households. There is a mutual interaction between the family and the dwelling. While the family type influences the formation of houses, the space organization arising there for continues to influence family life style. Life style leads us to certain actions and action systems. These are the most concrete expressions of culture. Life style and action systems are priority design factors in the designing of spaces. Life style and action systems are a part of our culture. Therefore, culture is in fact not an 2 object, it cannot be seen, however we are able to see its symbolic meanings and reflections in space as it is a factor of formation of our houses. Rapoport's work "Culture, Architecture, Design" probes the reflections of life style on the house, shown to be the first place where family living reflects itself on the space. Whereas, Küçükerman (1995) compares the room-sofa relationship in the vernacular Turkish house plan system to the tent used by Turks in their nomadic life styles, and sofa to the common space between these tents. Multifunctional (sleeping, sitting, eating, preparing dishes etc.) use of tents continued in rooms when they adopted the established order. Thus, life style has reflected itself directly to the space as stated by Rapoport and furniture and accessories in the interiors were formed in this direction. Reflections of culture embodying our social traditions on the space organizations of vernacular Tarsus houses that are the subjects of this paper may be summarized as below: (Table: 1)



Table 1: Reflections	of our	social	traditions	on	the	space	organization	of	vernacular	Tarsus
houses										

Social traditions	<b>Reflections on space</b>
Family privacy	High ground floor and courtyard walls
	overlooking the street and placement of
	cages and shutters on upper floor windows,
Conduct of private affairs out of social	Separation of rooms by separating structural
spaces	elements on the upper floor, putting room
	entries into cabinet order and making them
	more controllable, hiding of washing spaces
	in cabinets,
Putting emphasis on social status	Difference in ceiling decorations of guest
	entertaining rooms, selection of divan fabrics
	from more careful textile and organizing
	them in the most valuable part of the house,
Cultural attributes of families with different	Opening of sofa to the street with a balcony
beliefs	or single-floor building entrances opening
	directly to the street in houses of non-Muslim
	residents, separation of sofa's connection
	with the street in houses of Muslim families.
"multifunctional using" habit and tradition	Continuation, without any changes, of these
implemented in the nomadic life style	habits and traditions within the room in
	established order

#### Social traditions Reflections on space

Family privacy High ground floor and courtyard walls overlooking the street and placement of cages and shutters on upper floor windows, Conduct of private affairs out of social spaces Separation of rooms by separating structural elements on the upper floor, putting room entries into cabinet order and making them more controllable, hiding of washing spaces in cabinets, Putting emphasis on social status Difference in ceiling decorations of guest entertaining rooms, selection of divan fabrics from more careful textile and organizing them in the most valuable part of the house, Cultural attributes of families with different beliefs Opening of sofa to the street with a balcony or single-floor building entrances opening directly to the street in houses of non-Muslim residents, separation of sofa's connection with the street in houses of Muslim families. "multifunctional using" habit and tradition implemented in the nomadic life style Continuation, without any changes, of these habits and traditions within the room in established order As one will understand from the above table, actions like sleeping, eating, sitting etc. Seeming simple at first gives information about cultural, religious and ideological properties of user's identity. As a result, comes out the special dwelling we name as "house". Rapoport (2004) makes emphasis on this saying "Unseen parts of actions that have seemingly simple life styles at first look is revealed and established due to organization reasons of built environments and these may be easily associated with design. This, no matter how simple it seems, is applicable for all actions." To illustrate; eating action in the Turkish culture is an important ritual where family members come together as in many cultures.



Therefore, the divan is placed separate to the room walls and the emptied middle area is a space for meals eaten altogether. 3 The upper floor where social traditions, family structure, status plays an important role has always been considered superior to other floors. Despite variations is lower floors, upper floors are mostly similar or very slightly different.

Vernacular houses are mostly built influenced by the region's culture, in addition to the different styles of that day. These form the Eclectic style. Generally made in the 19th century, these houses are considered in the sofa plan system with regards their interior formation, whereas the facades accommodate all of the architectural styles of the period or of earlier periods. To illustrate, Greek-head columns emphasize the structure's entrance, and the decorations on the building's façade are influenced by the period's architectural styles. It is not only styles, but also the changes and innovations caused by changes that transform our life style. Thus, the changes in our life style, as suggested by Bozkurt (1961), weaken our traditions-customs and identity. To revitalize them will be possible by organizing and designing our closer environment in an appropriate character. "Changes in our life style gave rise to the decrease...and splitting... of families that have unique characters and ways of life and groups established among these families. However, these characters are valuable for our social life. We should seek for chances to ensure their revival. And this will only be possible through the formation of our closed environment in a suitable character" (Bozkurt, 1961). Examples of our cultural heritage, vernacular Tarsus houses may also be revived with solutions suitable to the requirements of the age.

#### 3. An Outlook on Tarsus covered in this Study

Tarsus is located within the Mediterranean region in Turkey. The city is settled on a plain land surrounded with Taurus Mountains in the North and the Mediterranean Sea in the south. Most ancient settlements in Tarsus date back to the Neolithic era as proved by excavations in Gözlükule Hill (Goldman, 1957). Following a period under the control of the Hittite Empire and Assyrians, the city became the central city of the Persians in Cilicia in the 6th century B.C. and an important intellectual center during Hellenistic Period. In the Roman period, Tarsus was one of the richest and most important centers of culture, knowledge and commerce in the Empire.

The city had many philosophers, intellectuals and, St. Paul, an Apostle of Christ, was one of the most important ones. When Paulus was removed from Jerusalem following his acceptance of Christianity, his coreligionists took him to Tarsus for security reasons, and he lived here until he was taken to Antiocheia. Tarsus, during that period, was in the Syrian state. During Paulus' time, Tarsus was the region's largest site and metropolis of Cilicia (Wallace, Williams, 1999). Every year, many Christian tourists visit the traditional housed region of the city where the foundations of St. Paulus' house lies. Having a historically rich culture, Tarsus attracts attention not only with its architectural features but for religious tourism as well. Tarsus being on important trade routes and being a port city in ancient ages have affected the city's economic and cultural development (Fig: 1). In the 7th century A.D., the city was occupied by Arabs and Byzantines, Seljuk Turks, Crusaders and Armenians. The city was captured by Ottoman Turks in the 15th century. In 1927, Tarsus joined the Republic of Turkey. 4





Figure: 1 . St. Paulus's house in Kızılmurat district. (Photo: Yesim Gurani)

#### 4. The Chracteristics of Traditional Tarsus Houses

The population in Tarsus was composed of Muslims and a small number of non-Muslims who were Armenians, Arabs, Greeks and immigrants from Crete and Cyprus. After the War of Independence, Armenians, who were in collaboration with the French army of occupation, left the city and Greeks were exchanged with Turkish immigrants from Greece. It seems that the architectural characteristics of the traditional Tarsus houses reflect different cultures. Despite its cultural features, geographical and climatic conditions play an important role in defining the architectural character of Tarsus. The planning scheme of the dwellings, their relationship with nature, construction materials and interior fittings can be considered sustainable as they are used today. The features of the planning schemes of vernacular houses of Tarsus preserve their original characteristics with regards their environment. These buildings are built from local sustainable materials, which can provide basic requirements. Vernacular houses are built using the technological means and local materials of the time. Building forms and layouts reflect the cultural values of nearest environment. For example, stones used in Tarsus dwellings are brought from a nearby stone quarry. Also, wooden materials are obtained from nearby forests. Tarsus is very hot and dry during summer season, so use of stone provides a natural freshness needed during hot summer days. Eaves that arrange a building's roof help to preserve facades from sunlight. This helps to solve the heating and cooling problems of traditional houses. Use of thick walls, local materials and many special details help this climatization. For instance, ceilings are generally 3.50- 4.00 m. high and this ceiling height helps natural air transition. Heights of the windows increase with the increase of ceiling height. In addition to this attribute, high windows provide more natural and effective daylight. High windows admit horizontal sunlight inside the room during winter season.



Traditional materials used in Tarsus Houses such as stone and wood are local, recycled and ecological materials for this region. These materials can be obtained from the nearby locations. Use of ancient construction elements (such as Greek columns, block hewn stone) and systems is seen in these vernacular buildings. Use of thick stone walls provides heating insulation, healthy buildings and good structural performance. 5 Iron is used especially to bear the bay windows. This building material is also seen in balustrades, door arches and window bars. These materials can be used not only for functional purposes but also in an aesthetic manner. Use of such local materials gives a peculiar characteristic to Vernacular Tarsus Houses. Progressive examples of stone workmanship in entrance facades of traditional Tarsus Houses can be seen. Stone used in these houses are soft and easy to form. On the upper floors, stone and wood are used together (Fig: 2). Houses were constructed by solid walls. So, wall thicknesses are approximately 60 cm in the ground floors and 30 cm thick in upper floors. This thickness also ensures that interior spaces remain warm in winter and cool in summer time. Partition walls of upper floor made of timber and stone materials are called "himiş" "studwork" (Gürani,1999).



## Figure: 2 . Generaly, stone and wood are used together on the upper floors, (Photos: Yesim Gurani)

Thick walls and hipped roofs are suitable for warm climatic conditions. Hipped roofs are covered with tiles. Houses with flat roofs are covered with beaten earth. This wood material is also used in building structures and window frames, window shutters, doors, floors, ceilings and fitting furniture.



#### 4.1.Ground Floor and Coutyard

Tarsus city had been a significant agricultural and commercial center in the Çukurova region in 19th century. Tarsus was one of the most important centers for the production of cotton cloth in Anatolia (Faroqhi, 1979). The city had an economic structure based mainly on cotton production and trade. Cotton was cleaned by modern carding machines and stored on ground floor of vernacular houses. Storage areas on ground floors require higher ceilings. In vernacular houses, socio-economic and cultural life is directly reflected on the space. Based the family's mainstay, yields collected from the farm are again kept in these houses storage areas named as "mağaza" (stores) on the ground floor. The mağaza's door opening to the street is high and wide. The reason for this is the transportation of products from farms to houses on camels. Camels enter from the high door of the magaza and unload the yields to the interior space. The mağaza is also accessible from the house on the ground floor. Main entrance is usually called "taşlık" and it is a semi-open space. This space connects to the street and courtyard in ground floor. A staircase which is located in the entrance (taşlık) 6 connects the ground floor to the upper floor. These open courtyards surrounded by high walls and houses make cool spaces during the hot days of summer. The courtyard is used for functions requiring a wide space such as washing clothes, preparing dough, boiling and pounding wheat, preparing grape molasses, and cotton combing. The courtyard also houses a space where wood and coal is stored for the oven. In another corner of the courtyard is a facility space used as toilet and bathroom. With the courtyard space hidden behind high walls, traditional Turkish families live in their privacy abstracted from the external world, with an external world created inside (Fig: 3).



Figure: 3 . Main doors in Traditional Tarsus Houses (Photos: Yesim Gurani)



#### 4.2.Upper Floor and Sofa

The actual living quarters of the family in vernacular houses is at the upper floor. The stairs going to the upper floor is located at the taşlık where the street entrance is located. Being mostly wooden and sometimes stone, this stairs is connected to the sofa on the upper floor. Sofa is a space interconnecting rooms, where both daily activities are carried out and where the transition is made. Outer or central sofa plan types are created in vernacular Tarsus houses generally based on the locations of rooms. Such location of the sofa compared to the rooms is established according to environmental conditions such as direction of dominant wind, street etc. Being generally open in early period structures, sofas are covered with glass-separating elements in the late period. Thus, sofa has transformed into an interior space while being a semi-open space. The reason of this transformation is that sofa has stopped being a transition area and became a place where the family entertained its guests as a result of the user's requirement in time. In other words, a new function in addition to its existing function was given to the sofa.

7 In Vernacular houses, ceiling height of the lower floor is much in order to be able to benefit more from daylight on the upper floor. With such an organization, houses look like they intend to raise their heads to the sky (Fig: 4).





Figure: 4. Upper Floors (Photos: Yesim Gurani)

In Tarsus area, winds typically come from southwest and northeast directions. Local people generally build their houses to face these winds. During winter season, effective direction of the wind is northeast. The sofas facing this direction break the velocity of this local wind. Location of sofas prevents rooms from facing these winds.



#### 4.3.Rooms

As in the Traditional Turkish house concept, rooms are multifunctional spaces in vernacular Tarsus houses too. Divans serve as stationary sitting elements stand by walls, leaving an empty space in the middle. This empty space is used for functions like eating, quilt making etc. during the day. Meals are served on round metal trays put on the ground. Beds are spread and they are reserved for sleeping during nighttime. Storage areas and the bathing space covering one surface of the room are placed behind a wooden wall surface. Whereas in houses owned by high-income residents, bathing is done in hamams on the ground floor. As for the houses built during the late period, additional volumes out of the general plan system on the upper floor are built for this purpose (Fig: 5). Due to climatic conditions, heating made by ovens with social status roles and put in every room in Anatolian houses leave their place to mobile and portable grills in Tarsus houses. In this region, the oven is where the meal is cooked and extrudes to the interior on one of the walls of the room. As the oven is in the kitchen, the structure has a very basic format, with decorations being refrained.



Figure: 5 .Traditional Tarsus House Plan and interior (Photo: Yesim Gurani)

#### 4.4.Streets

The traditional houses have two or three stories, with high ceilings settled on the street side of the plot with courtyards or large gardens at the back. Traditional storage buildings buil originally for cotton storage are one-storey structures made up of stone masonry to give a characteristic identity to the streets. The projections over narrow streets, repeating typical arched doors and monumental storage doors on facades and garden walls are the main architectural elements giving a characteristic feature to the streets. Roads are usually paved with hewn stone. Houses are ordered in accordance with the organic street form. When one examines the traditional city pattern, it gives the effect that streets are formed by themselves (Fig: 6).







Figure: 6 . Streets (Photos: Yesim Gurani)

9 In neighborhoods with traditional housing patterns, despite houses look interlocked, their users respect each other; they had opened no windows overlooking the neighbour opposite their extrusion. However, today, windows overlook each other on multi-storey buildings, making their users uneasy, and lacking to provide the required privacy. In vernacular houses, open spaces (courtyards) are created for actions such as washing clothes, combing cotton, cooking bread etc. on the ground floor, ensuring the required privacy by high surrounding walls. High walls ensuring privacy play a dominating role in forming the silhouette of vernacular Tarsus streets.

#### **5.**Conclusion

The spaces we live in are shaped by climate, topography, technology and to a great extent culture. The form of structures is affected by interior space formation, our attitudes in our daily lives, and traditions and habits. Reflecting our cultural characteristics, vernacular houses are our heritage from the past. However, we should preserve these houses and take examples when designing new houses. Designs ignoring these characteristics are prone to becoming identity-free spaces not belonging to *us*. Therefore, best preservation of vernacular houses, which are the examples of our cultural heritage, and to carry them to future generations is only possible by making changes at a level that will ensure they adopt to current conditions and at the same time without getting away from our traditions. Aiming to compromise our cultural values with new elements and create modern living spaces, designers has to pay particular attention to the physiological, social and psychological aspect of culture. To conclude; the findings after the excavations of the traditional settlements are provided important knowledge about the ancient settlements around the Tarsus Area. It is very important to preserve and keep alive these rich cultural heritages of Old City of Tarsus in order to be able to transfer them to the next generations.



This conservation can be done in two ways; either by the reuse of these vernacular houses for different functions or by reconsidering their previous functions according to current changes of the time. It is very important to find contemporary solutions for the preservation and reuse of these traditional Tarsus Houses. The authorities should develop new solutions for providing the continuation of the unique pattern of these vernacular houses.

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#### ASSESSMENT OF WOOD AS A BUILDING MATERIAL IN TURKEY IN TERMS OF ENVIRONMENTAL SUSTAINABILITY

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Regarding the enormous threat to ecology, construction materials –both sustainable and environmentally friendly- have been among the most important points of concern in the recent years. Recognizing sustainable development as the main target, use of wood as a construction material has been encouraged in the western countries and in the US as a strategy to contribute to the concept of "sustainable forests". Unfortunately, this material seems to lose its widespread utilization in Turkey due to some social and economical changes that started from the very early years of the proclamation of the Republic and directly affected upon construction preferences.

Wood has many superior characteristics when compared to reinforced concrete and steel, which are the more commonly used structural materials in Turkey. Besides its higher capacity both for insulation and to sustain fire, it is the only material that is capable of renewing itself. Within the concept of sustainable environment, it absorbs  $CO_2$  and helps to reverse the threat of global warming. As a traditional material, utilization of wood would also contribute to preserve and sustain cultural tradition as well. On the other hand, it covers higher expense due to its impracticability to construct multi-storey blocks, which has become an indispensable need for Turkey in the recent decades. Within this context, utilization of wood in Turkey is explored with a focus on its long-term environmental, social and economic considerations.

**Keywords:** Sustainable environment, Wood construction in Turkey, Sustainable development

#### 1. Introduction:

It is a very well known fact that construction material industry has the largest portion in consumption of the natural energy resources. Production and utilization of construction materials such as reinforced concrete, steel, wood and plastics result as creating tones of greenhouse gases, air and water pollution. In order to decrease these harmful effects to minimum, a radical change in the preferences from artificial construction materials towards more environment-friendly ones is seen as an emergence.

In the recent years, priorities have started to shift from commonly encountered features such as cost, time, strength, availability, transportation, resistance against fire, earthquake, and weathering conditions, to environmental-based preferences such as recycling, flexibility in design, and embodied energy for selection of building materials. Regarding the enormous threat to ecology, sustainable and environmental-friendly building materials have been among the most important points of concern in the recent years. Recognizing sustainable development as the main target, use of wood as a construction material has been encouraged in the western countries and in the US as a strategy to contribute to the concept of "sustainable forests".



Besides many positive effects on health, both physically and psychologically, wood has many superior characteristics when compared to reinforced concrete and steel, which are the more commonly used structural materials in Turkey. Besides its higher capacity both for insulation and to sustain fire, it is the only material that is capable of renewing itself. Within the concept of sustainable environment, it absorbs  $CO_2$  and helps to reverse the threat of global warming. As a traditional material, utilization of wood would also contribute to preserve and sustain cultural tradition as well. On the other hand, it covers higher expense due to its impracticability to construct multi-storey blocks, which has become an indispensable need for Turkey in the recent decades. Under these circumstances, this material seems to lose its widespread utilization in Turkey due to some social and economical changes that started from the very early years of the proclamation of the Republic and directly affected upon construction preferences.

This study aims to explore the reasons why wood has been abandoned in construction sector in Turkey in the recent decades despite its superior characteristics and widespread utilization in the past. Traditional timber framed buildings constituted the majority of the built environment until the second half of the 20<sup>th</sup> century. In addition, it was observed that timber framed buildings performed a sound behavior in the recent earthquakes that Turkey has been suffering in the recent decades. Nevertheless, today it is seen that the majority of the built environment shifted from timber framed low-rise buildings to multi-storey reinforced concrete and steel structures. There are several reasons for this radical change in the characteristic of the built environment. One and the most important reason could be seen as the urgent need for accommodation due to sudden change in the balance of the rural-urban population. Therefore, uncontrolled increase has been observed in residential units without the supervision of central or even local administrations. This brought a rapid and unhealthy urbanization especially in the second half of the 20<sup>th</sup> century. Reinforced concrete apartment buildings with western plan types, which was very unusual for the way of life of a traditional Turkish family, replaced the timber framed lowrise houses, and consequently the characteristics of the built environment. This study aims to explore the characteristics of wood as traditional building material superior to reinforced concrete and steel as the contemporary building materials in order to maintain sustainability, both physically and morally.

#### 2. Wood as a Sustainable Construction Material

Utilization of wood dates back to almost 8000 years before. It is possible to see the examples of houses that belong to 300 years before and mosques with wooden posts of 600-700 years old around the country although it is very rarely used in Turkey in the recent years. On the contrary wood is the most commonly used building material in USA for house construction due to many advantages, most of which are related to environmental aspects. In general, wood houses constitute the 90 % of the total number. This percentage goes up to almost 99 in California because of many reasons listed below [1, 2]:



- Ease in construction: It is possible to construct a house of about 50 m<sup>2</sup> in 5 hours with only two people, where the overall construction takes only one week of time. This provides a great economy of time and labor.
- Low operational cost in the long run: It is a well-known fact that timber buildings do not require much maintenance after construction provided that the material is protected against termites.
- High isolative characteristics: Heat and sound permeability of wood is very low; in other words, it is a very good insulating material. The insulation capacity of a 1 cm thick wooden panel equals to that of concrete of about 16 cm.
- Fire resistance: Because of its nature, it takes a considerable amount of time for timber to collapse due to fire. This provides enough time to abandon the building in case of fire.
- Flexible design: The lightweight characteristic of wood provides cost-effective and flexible design than the massive solutions and materials.
- Low environmental impacts: Since it is a renewable material, it could be reused, deconstructed, and recycled. It provides the maximum use of itself and helps mitigating global warming. Besides, it could be said that timber construction itself creates very low greenhouse gas emissions.

Beside these features, wood has a moral value for Turkey as well. When sustainability is in question, environmental factors constitute only one issue in the overall appearance. When moral values are considered for cultural sustainability, wood has an important place in Turkish architecture. Timber framed buildings constituted the major part of traditional Turkish houses until the second half of the last century. However, rapid urbanization in Turkey led to replacement of timber by reinforced concrete and steel in the recent decades. This period brought the western plan type of houses as apartment blocks, which means one living room and a corridor with bedrooms aligned. Traditional Turkish houses, in which more than one generation could live together with a special arrangement of rooms, were replaced by these multistory apartment blocks. As a result, it could be said that it was not only the plan that changed; cultural values and traditions have started to lose their identity. Thus, revival of timber construction would also help to sustain cultural heritage, which would help bridging the gap between the past and the future.

#### **2.1.** Wood for sustainable forestry in Turkey

The basic principals of sustainable forestry could be stated as to maintain adequate and varied natural trees while preserving the quality of air, water, soil and the wildlife habitats. This approach has gained importance in the recent decades especially in United States and in some of the European countries because of environmental dangers that threaten the future of the world. The concept of sustainably managed forests aims to enlarge the surface area covered by the forests by using the old trees for construction and replacing them with the younger while preserving the natural biodiversity [3].

It is misbelieved that consumption of wood as a construction material would diminish the forests. With conscious attempts about planting rapid growing trees with high termite resistance, it is possible to maintain ecological balance more quickly since the young trees filter  $CO_2$  more quickly than the older ones do. The Green Peace Organization suggests and supports utilization of wood as construction material due to the reasons listed above.



With the means of sustainably managed forests concept, the area of forests increase day by day in countries where timber is the chief construction material. In the United States, the number of growing trees increase 23 % a year, which roughly means 10 % increase in the surface area covered by the forests. On the other hand, in Turkey, wood is consumed as fuel rather than construction material although red pine, which is the one of the most suitable wood type for construction, constitutes almost one third of the forests in Turkey. The researches show that it is possible to double the surface area covered by the forests in 14 years with a smart policy of wood and industry even with 5 % growth rate, which is half the rate in the US [1].

#### 2.3. Wood for earthquake resistant building design in Turkey

The recent earthquakes in Turkey brought many questions about the safety of buildings to minds. Nearly 92 % of Turkey is on seismic zone, which means this natural hazard threatens about 95 % of the population. On the other hand, since the majority of the built environment in Turkey is of reinforced concrete, it might be suggested to change preferences towards another construction material, which performs better in earthquakes. Although many researches by means of revisions on Earthquake Codes every several years are carried out to increase seismic resistance of reinforced concrete buildings, these buildings continue to serve as tombs for people in high magnitude earthquakes. This is mostly due to the fact that the weight of the building directly affects the amount of earthquake energy that is to be dispensed within the building. In earthquake, the ground shakes, and these shakings are transferred to the building, which consequently, lead to the movement of the building. If the building is not capable of resisting these forces, it collapses. The heavier the building, the more the forces that are transferred to the building during the shaking of the ground.

However, this should not mean that light buildings always perform better. What is desired is a material with high ratio of strength to its weight. The strength of wood, when compared to its weight is seen to be very high, which means a sound performance in earthquakes. When compared, it is seen that reinforced concrete is about 5 times the weight of wood [1, 4]. On the other hand, it is not only the weight but also the configuration of structural frame that affects the performance of the buildings. The traditional "bagdadi" type of timber frame is known to be among the most effective structural layouts in terms of earthquake performance. The high performance of this structural configuration is related to the power of diagonal bracings that provide the structure with lateral stability.

#### 3. Comparison of Wood with Reinforced Concrete and Steel

In this section of the study, it is aimed to compare wood with the so-called "contemporary" building materials, the most common of which are reinforced concrete and steel in Turkey. Various aspects are taken into consideration and examples are chosen from the literature. The comparisons are made in terms of cost-time relationship, flexibility in design, ease in construction, earthquake behavior, operation costs in the long run, environmental sensitivity and ecological balance, lifetime, supervision of construction, etc.



*Cost-time relationship:* The speed of construction is among the very important determinants in the cost. Transportation is one of the issues that affect the speed of construction. Wood is generally easy to transport since it is a lightweight material. Transportation of the members that are used for large spans increase cost. However, large span is not desired very frequently especially in the design of residential units.

Utilization of prefabricated elements is important to speed up the construction. Contemporary wooden buildings compose of prefabricated members that are easy to transport. Construction of this type of residential units is possible within a very short period.

In addition, construction does not depend on climatic conditions and weather for wood, where time and period may be limited by weathering conditions for reinforced concrete. This might end up with a requirement for longer period for construction, which inevitably increase cost [5].

Construction of the rough construction work of a residential unit of about  $100 \text{ m}^2$  is approximately 30 % cheaper than that of a reinforced concrete [1]. It is much cheaper than steel, since steel is rather a costly material for Turkey yet.

*Flexibility in design and construction:* Besides its lightweight characteristic, wood has considerable tensile strength and bending moment capacity when compared to its weight. These features enable to span large distances. Opposed to reinforced concrete and steel, this construction material could be used for structural, nonstructural and decorative purposes. Prefabrication, which means easy and standard solutions for detailing and production, allows this wide range of application. In addition, these applications do not require specific and distinct tools, equipments or machinery.

*Ease in construction:* The lightweight characteristic of wood makes it possible to handle and transport the members with even very little labor. In other words, no heavy machinery is required for mantling.

*Earthquake behavior:* Earthquake behavior is among the most important issues to be considered especially for the buildings to be built on earthquake prone areas. As mentioned before, the seismic performance of a building is strictly dependent on structural configuration and the weight of the building. The load transfer mechanism in the reinforced concrete buildings is provided by means of stirrups, which are the transverse reinforcing bars along the entire length of the longitudinal members. It is the diagonal bracings that provide the structure with lateral stability. Diagonal bracings are commonly used also in the steel structures.

The weight of the structure also affects the seismic performance of building. The weight of a  $100 \text{ m}^2$  wood building varies in between 2.5-4 tones where this number goes up to 75 tones in reinforced concrete structure. This means an increase of about 20-30 times greater load on the foundations, which is among the very important criteria on earthquake behavior.



*Operation costs in the long run:* Provided that it is periodically maintained, wood construction does not require considerable operational costs during its lifetime. It is possible to see very old examples of wooden structures that date back to the very early times. On the other hand, although it was stated to be infinite before, it has been understood in the recent years that reinforced concrete buildings end up with their lives within almost 60 years due to corrosion. Corrosion is the most important danger for steel structures as well.

*Environmental sensitivity and ecological balance:* The wood is the only renewable and recycled construction material. Wood requires less energy for production when compared to reinforced concrete and steel. The energy consumption required for construction of a 120 m<sup>2</sup> residential building of reinforced concrete and steel is respectively 2.2 and 1.5 times the energy required for construction of a wooden structure of the same dimensions. Steel produces 1.22 times gas emissions, where reinforced concrete is seen to be more harmful in this aspect with 1.5 times. Steel leads to 3.47 times more water pollution than wood does. This scale is seen as 2.15 when reinforced concrete is compared to wood. When environment pollution is in question, it is seen that steel affects the environment 1.7 times wood does. In this aspect, reinforced concrete, again, is seen as the most detrimental material with 2.15, which is seen to create more than twice the effect that wood does. Thus, it could be stated that wood is the material with the least environmental impact [6, 7].

Wood has superior characteristics in terms of insulation when compared to reinforced concrete and steel. Owing to its superior energy efficient nature, it covers an important portion of insulation requirements. This also helps to decrease environmental impacts.

*Fire resistance:* The time for a steel building to collapse due to fire is about 15 minutes, which is seen as the time required for the material to reach up to almost  $600^{\circ}$  C, and lose its strength. This period goes up to 60 minutes for wood to catch fire and provides a considerable amount of time to abandon the building and provide safety of human life.

*Supervision of construction:* It is possible to construct structurally safe reinforced concrete and/or steel buildings. However, the safety of these buildings require precise workmanship and careful supervision, which sometimes may not be possible due to uncontrollable items, such as the percentage of components, precise workmanship, etc. On the other hand, supervision of wood structures is easier since the material to be used is standardized before construction [4].

#### 4. Conclusions

Utilization of wood in the recent decades in Turkey has been very limited despite its very well known superior characteristics. These characteristics provided the material with increasing popularity in the US and European countries. It would be misleading to relate this popularity only to the mechanical properties of the material. The environment-friendly nature of wood could be seen as its most outstanding characteristics in terms of sustainability, which has been the topic of many researches and discussions in the recent decades.



The concept of sustainability could be handled in different aspects. This study covers the topic both in the architectural, constructional and environmental viewpoints. The architectural viewpoint is mostly seen to be related with moral values. The sharp change in the material preferences from timber to reinforced concrete changed not only architectural and structural layout of the buildings, and consequently the overall appearance of the built environment, but also the way of life and traditions. Having been replaced by massive reinforced concrete apartment blocks in a considerably short period, typical timber framed Turkish houses started to disappear one by one. Moreover, the recent earthquakes showed the poor performance of reinforced concrete buildings. It is for sure that it would be misleading to relate these deficiencies only to the material characteristics of reinforced concrete. On the other hand, the revival of timber framed structures in Turkey should be taken into consideration when earthquake resistant building design is in question, since the very few examples of typical timber framed buildings proved their sound seismic performance in the recent earthquakes.

Reassessment of wood would also help to maintain environmental balance and sustainability by means of the concept of sustainable forests as a precaution against global warming. When compared to reinforced concrete and steel from the viewpoint of sustainability, it is seen that wood produces the least environmental impact. Under these circumstances, it would be beneficial to reassess wood as the potentially chief material in Turkey at least for the construction of low-rise structures.

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#### NEIGHBOURHOOD SUSTAINABILITY: A COMPARATIVE ANALYSIS IN THE NORTHERN AND SOUTHERN SECTORS OF NICOSIA

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In most cities, newly developed urban environments reveal an extensive neglect and devastation of local values. In such cases, urban development was influenced by rapid, onedirectional, unbalanced and unplanned urbanization. In this existing picture, most housing environments, particularly those that were produced on the basis of mass-production system, are missing vital aspects of sustainability and lacking environmental and humane qualities both at urban and architectural level.

As was previously researched and highlighted by Oktay (1999/2001/2002/2004), current urban and architectural development practice in Cyprus cannot be considered sustainable owing to the professional attitudes excluding environment and tradition. Historically, Cypriot cities' fortunes have been closely associated with the political and socio-economic facts of the island of Cyprus, where many different civilizations ruling the island have both created a cultural richness and lead to ethnic conflicts. Nicosia, in this context, has reflected the negative effects of the island's division as the city was split into two separate urban sections in 1974, as the northern Turkish and southern Greek sectors, a prevailing situation which has caused the city and its parts to suffer from years of neglect and inertia.

This paper based on the theoretical discussions on the concept of neighbourhood, firstly focuses on what sustainability means concerning neighbourhoods in Cypriot towns and what dimensions should be safeguarded. Secondly, it provides a critical evaluation of three neighbourhoods in the northern and southern sectors of Nicosia, namely Arabahmet, Köşkluçiftlik, and Kermiya in the north, and Chrysaliniotissa, Ayios Dhometios and Platy in the south. The analysis will reveal urban and architectural characteristics of different periods, and conclusions will be drawn concerning the sustainable and non-sustainable patterns in order to guide the future developments in the city.

#### 1. Introduction

Today's planning agenda is substantially different from the concepts developed after the industrialization. In this context, we have to deal with urban wasteland, urban sprawl and proliferation of cars in the cities. As for the housing areas, most housing environments, particularly those that were produced on the basis of mass-production system, are missing vital aspects of sustainability and lacking environmental and humane qualities both at urban and architectural level. One of the most serious expenses of these negative changes has been the loss of neighbourhood spirit in housing environments.

Before proceeding, we should make clear what 'neighbourhood' means, and what dimensions does the neighbourhood design has. In fact, there has been much discussion of what a neighbourhood is. In this context, three interrelated strands of thinking seem to have informed neighbourhood design:



- providing identity and character, creating or enhancing a sense of place
- providing a relatively pragmatic way of planning urban areas
- creating areas of greater social interaction.

Since 1915, when Robert E. Park introduced the idea of neighbourhood as an ecological concept with planning implications, physical planners and designers have dealt with the idea of neighbourhood in a rather simply manner: in particular, they have considered the physical aspects without giving much thought to the social aspects of a neighbourhood. Blowers (1973), considering the diversity of approaches to the idea of neighbourhood, with reference to the fallacy of conflating the idea of 'physical neighbourhoods' (defined by territory or boundaries) with 'social' communities (defined by relationships, associations, etc.), identified five types of neighbourhood.

- 'arbitrary neighbourhoods, where the only common future is spatial proximity
- 'ecological' and/or 'ethnological' neighbourhoods, with a common environment and identity
- 'homogeneous' neighbourhoods, inhabited by particular socio-economic or ethnic groups
- 'functional' neighbourhoods, derived from the geographical mapping of service provision
- 'community neighbourhooods' in which a close-knit, socially homogeneous group engages in primary contacts.

Since housing areas are the places where the problems of the environment touch most people's quality of life, the planning and design of a neighbourhood requires a sensitive approach promoting sustainability, and therefore, none of these types alone is sufficient. Difficult to define precisely, sustainability generally means living with in our means in a way that allows future generations a good and decent life. The concept of urban sustainability is generally linked to eco-efficiency. However, sustainability goes beyond the environmental to include social and economic elements, and solutions are best tailored to time and place. In this context, there is the need for everything to be connected to the nature, for society to be a part of a community, for architecture to be related to the community and the environment, in order to enhance the concept of sustainability. As stated by Oktay (2005), it is quite reasonable to assume that in developing countries, the reality of urban dynamics i.e. rapid urban development, as an outcome of the great increase in population, has resulted in destroyed habits, customs, functions, interests, and has unavoidably changed the form and use of old city patterns. However, in Cyprus, where no dramatic changes happen, we are still faced with the deterioration of the architectural and urban environment due to the changes in sociodemographic and environmental landscapes and the lack of sufficient information about the environmental resources and inherent characteristics of the island communities, conventional and traditional planning approaches instead of proper master and physical plans, old legal frameworks and inefficient institutional departments, and unbalanced and unplanned urban management ignoring local urban and architectural characteristics (Oktay 2005). This is more clearly observed in housing developments, which constitute the great majority of the Cypriot towns and the most significant settings, and the most central environmental setting encountered by individuals during their daily routines.



This paper, based on the recent theories on sustainable housing environments, Oktay's model (2001) of qualitative assessment in particular, will assess the traditional and new districts in Nicosia and look for the clues towards creating sustainable neighbourhoods.

#### 2. Background Information about Nicosia

The parts cannot be evaluated independent from the entity they belong. Therefore, a brief review of the urban position and problems of the city of Nicosia would be helpful here.

Nicosia, known locally as Lefkosia (<u>Greek</u>) or Lefkoşa (<u>Turkish</u>), is the <u>capital</u> of Cyprus and the country's largest <u>city</u>, and currently the last of Europe's divided cities, with the northern (<u>Turkish</u>) and southern (<u>Greek</u>) halves divided by a buffer zone. The city is located roughly in the centre of the island of Cyprus, at the geographical intersection of the two most important plains and at the junction of the entire territorial road networks.

Nicosia has reflected the negative effects of the island's division as the city was divided into two sectors in 1974, as the northern Turkish and southern Greek sectors, due to the conflicts between Greek Cypriots and Turkish Cypriots. The division splits the town into two separate urban sections, which have been developing independently of each other thus causing the disintegration of its entity.

Owing to the political struggles between the two communities, the city was divided by the 'Green Line' in 1963, and the Buffer Zone has been established after 1974. Along with political, demographic, and socio-economic changes, development of the town out of the Walled City of Nicosia accelerated and its local inhabitants started to move out, through which the Walled City lost its appeal as a place of living, and obsolescence begun. The left residences were occupied by the foreign immigrants of lower income whose life styles and traditions did not fit with the area, and the inappropriate new functions prevailed. All these negative changes speeded up the environmental deterioration in the area, in terms of physical decay, population decline, social marginalization, the loss of economic vitality, and wasteful land use, as was first highlighted by Zetter (1985, 28).

In the northern sector, the organic form and character and the general silhouette of the buildings were largely preserved in the old cores with the existing legislation regulating the urban development in the main cities, although the quality of buildings and open spaces are inadequate. In the newer urban districts that surrounded the old cores, on the other hand, neither a logical development system nor a locally appropriate urban pattern can be observed. In all areas, the incompatible land use created by the random sprawl of commercial, recreational, industrial, and service functions in the main streets and residential districts pervades in a disruptive fashion. Furthermore, the commercial and recreational units (shops, restaurants, and so forth) that are located on these major streets foster traffic congestion and increase the need for parking facilities and infrastructure. In addition to these inappropriate types of development, the urban fabric in these areas faces a serious problem created by the unused building plots (Oktay 2005).



The rapid development of the urban areas, as stated in the National Report of the Republic of Cyprus presented to the Habitat Conference (Republic of Cyprus/DTPH, 1996), has caused deformation and change in the character of both urban and rural settlements in the south. The central parts of the towns suffer from their haphazard and crowded layout, which, in turn, gives rise to traffic congestion and general difficulties of circulation, servicing, and so forth. In addition, the most noticeable circumstance of the last two decades has been the rapid growth of the suburbs into what was previously open country. In this context, urban sprawl has been the predominant form of urban development since 1960 (Constantinides, 2001, in Oktay 2005). Taking into account the areas identified in the Nicosia Master Plan as well as in more recent

- planning documents, the urban structure of Nicosia can be defined in four parts: The Walled City, an area of some 190-200 ha, including the area of the Buffer Zone;
  - The Buffer Zone, that runs right across the Walled City in an east-west direction, covering an area of some 18-20 ha;
  - The Core Business Area that extends to the North and the South of the Walled City.
  - Residential areas around the CBDs developed in different periods.

The Walled city is an outstanding example of the urban cultural and social heritage of Nicosia, symbolizing the geographical and historical significance of Nicosia and Cyprus as a whole. The Buffer Zone cuts across the heart of the Walled City forming a lifeless corridor, disrupting the city's cohesion and continuity. Within the Walled City, the Buffer Zone runs approximately 1,5 km in length and passes through several old neighbourhoods, such as Paphos Gate (Porta Domenica), Arabahmet, Karamanzade, Ayios Andreas, Phaneromeni, Selimiye (Ayia Sophia), Arasta (Lokmacı Point), Omeriye, Chrysaliniotissa and Ayios Kassianos. Within the Core Business Area that extends to the North and the South of the Walled City, the 'CBD - North' comprises the area located north of Kyrenia Gate, where four high schools, a Library, several public buildings, and the residential area of Yenisehir (Neapolis) are located, extending towards the Nicosia Bus Terminal to the west. On the other side, the 'CBD - South' consists of Makarios Avenue, Stasikratous Street and the surrounding areas. Makarios Avenue is the main shopping and business precinct outside the Walled City of Nicosia. Köşklüçiftlik, Yenisehir and Caglayan in the north, and Ayios Dhometios, Ayios Constantinos and Ayios Nikoladis in the south, built before 1974, are the districts surrounding the central core of both sides, and reflecting some established character. In the last 20 years, some new housing areas, such as Metehan, Kermiya, Metropol and various social housing areas in the north, and Stovolos and Platy in the south were added and the city's boundaries were widened significantly.

#### 3. A Brief Review of the Older Settlements in Cyprus

Traditional urban and architectural environments were often good examples of sustainable design in their time, representing good uses of local resources matched with local skills, and in combination, produced a built environment which met people's needs, a new appreciation of these traditional environments is greatly needed. As the previous research and analysis by Oktay (2001/2002a/2002b) and Oktay and Pontikis (2005) prove, Cypriot towns prove this hypothesis. According to these studies, the following qualities were determined:



In Cypriot settlements, owing to a high density in two dimensional layout, urban fabric was a cohesive entity, being like lacework, comprising adjacent courtyard houses, and the streets being defined by the houses. The ratio of building height to street width created a protected space, made walking comfortable and allowed the neighbours, especially women, to sit in the street. The cumba (bay window) houses lined along the Nicosia streets create a pleasant unity.

#### Climatic consideration

The Cypriot settlements responded to the hot and humid climate perfectly. The houses were grouped close together to shade each other from the midday sun. The well-defined courtyards and the rich variety of semi-open spaces, such as veranda, the open hall as the core of the house, and sundurma (sündürme in local language), a semi-open space at the back of the rich people's house, formed climatically comfortable spaces for the dwellers. The courtyard was particularly very functional as it trapped the dense, cool air in the centre of the house, helping air circulation and bringing down the general temperature inside during the hot summer months.

#### Direct access to nature

With its trees, flowers and small vegetable plot, the courtyard (avlı in local language) is the closest relation the house has to nature; and thus it also provides the inhabitant with direct access to nature. On the other hand, fruit gardens and vine yards make an important part of of the Cypriot town. The gardens were not only the most important areas of production, but also places for socialization and refreshment for local people. Tall date-palm trees outstanding between the houses positively contribute to the general image of the city of Nicosia.

#### Hierarchy of streets and open spaces

In the traditional Cypriot town, the street system in residential areas was mostly pedestrian and had a hierarchical order: from the main streets spread out narrower streets that had dead-end branches leading to individual houses. The town was traditionally well-known for its fruit gardens, and these gardens were an important component of the hierarchy of exterior spaces, extending from public square to semi-public street, semi-private courtyard and/or private garden.

#### Sense of place and community: 'mahalle' as a unifying context

In the older settlements of Cyprus, the concept of neighbourhood, similar to mahalle of the traditional Anatolian town, was of great importance before the traditional life began to deteriorate. The neighbourhood was not only a physical entity within the city but also a social unit providing social and economic cooperation among neighbours. The street, as a three-dimensionally defined space that has a direct link with houses, has become the communal meeting place for neighbours, particularly for women and children. On the other hand, the courtyard served a variety of uses including social and celebratory events.



## 4. Assessment of Neighbourhood Sustainability in Northern and Southern Sectors of Nicosia

In line with their identifiable characteristics representing different periods, the following districts will be assessed here in line with above information and the qualities of the older settlements in Cyprus (Figure 1). Arabahmet, Köşklüçiftlik, and Kermiya in the north, and Chrysaliniotissa, Ayios Dhometios, and Platy in the south.

#### 4.1. Arabahmet Case Study

Arabahmet quarter, the most important district of Nicosia since the Ottoman times, is located in the north-western part of the Walled City in Northern Nicosia. It has long been an area of historic, architectural and multi-cultural merit. It is traditionally a residential area, built in low to moderate density and has identifiable qualities.

In Arabahmet quarter, currently, the urban texture reveals a cohesive texture that contains welldefined outdoor spaces and unity despite the negative changes and additions in some parts. Narrow streets, which are derived hierarchically from the main streets and cul-de-sacs are the characteristic features of this area. The high density in the two-dimensional framework creates a walkable environment in the Walled City, which is very important to meet the criteria for sustainable urbanism.

The land use analysis in the area represents residential uses dominantly. However, in some places, non-residential functions such as sport grounds, leisure, governmental offices and community services prevail. This mix-used land was combined with unique monumental and historical buildings such as the Armenian Church, Dervish Pasha Mansion, Boghcalian Restaurant or Arabahmet Cultural Centre, the symbols of the historical and cultural heritage of Nicosia.

The location of the area is not too close to public transportation routes and bus stops. Therefore, residents need to walk to commercial areas such as bazaar or food market or bound to drive to reach them. Nevertheless, due to the diverse land uses in the Walled City and walking or cycling is a good alternative instead of using a car. Even though the Walled City has many facilities, certain functions such as hospitals or high schools do not exist and this is a lack of opportunity for the inhabitants of the area in terms of accessibility.

Buildings in Arabahmet quarter, like the other traditional environments in Cyprus, were built within adjacent system to protect each other with shading from midday sun. The ratio of building height to street width created a protected space (especially in summer), made walking comfortable and allowed the neighbours, especially women, to sit in the street. Moreover, well-defined courtyards behind the houses form climatically comfortable spaces for the dwellers, and include diverse functions. During the hot summer months, the courtyard traps the dense, cool air in the centre of the house, facilitating ventilation and bringing down the general temperature inside. Furthermore, the semi-open spaces such as sofa, the open hall as the core of the house, and sundurma (sündürme in local language), a semi-open space at the back of the rich people's house, were perfectly appropriate for the climate and extensively used by their residents. This human-scaled environment and perceivable quality make people feel comfortable.



These are characteristic features in terms of increasing socialization and creating a sense of place (Oktay 2001/2002). The biggest challenge in today's developments is the quantity, nature and location of green spaces within those environments. Green spaces in a city contribute to human activity, climate amelioration and ecological diversity without separating and isolating the close proximity of pedestrians to each other, which is necessary for human interaction and community development (Oktay 1998)

In Arabahmet Quarter, there are no landscape elements such as trees or vegetations that appear on the streets due to the lack of sufficient distance between buildings. The private spaces are generally provided behind of the houses. There is a rich variety of open and semi-open spaces such as open-to-sky courtyard, veranda at the front and sundurma at the back. In these areas, fruit trees, flowers and small vegetables are planted. Obviously, these courtyard houses offer unique opportunities for landscape design and provide direct access to nature.

Greenery is especially desirable for the shade it provides, the heat gains that it prevents and the relief it gives to the eye. As described by Dixon (1879) in the past, every family in Nicosia had a courtyard with a date palm, a pomegranate, a lemon tree and water. They also had a fruit garden located in their neighbourhood (Oktay 1998/2001).

As highlighted by Oktay (2001/2002/2004) in the traditional Cypriot settlements, the neighbourhood was not only a physical entity within the city but also a social unit providing social and economic cooperation among neighbours. In those cities, due to the characteristics of a very compact community, neighbourhood cohesion has always been very strong and widespread; families are related to their neighbours and neighbourhoods. Arabahmet district has been a good example to these both in the older times and today, It has many important spatial and physical elements stated above which help the area to be integrated and compact with its social components. The results of our recently held interviews with the inhabitants of Arabahmet district also support that view. They like living in that area because they know each other well. Even though some of them came from the rural parts of Turkey and their life styles are not in harmony with the local Cypriot people, they have positive relationships with each other in the Walled city. In other words, they have become a small integrated social group due to the effects of the unifying urban spatial structure.

The review and research on the social and spatial aspects of the private and semi-private residential outdoor spaces in the traditional areas of the cities in North Cyprus support the view that certain social values and conditions affect the formation and use of the spaces (Oktay & Önal 1998). It can be easily seen that residents of Arabahmet, particularly women and children, meet to communicate each other in front of their houses. This is so typical and common in the traditional settlements of Cyprus, as the streets are not only defined and used as transitional elements, but also they provide a sense of place as a semi-private space.



CASE	* ARABAHMET AREA	* POOR	* FAIR	* GOOD
	RELATION WITH WIDER	•	• •	•
	URBAN CONTEXT			
	ENTITY/COHESION	•	•	• •
	GRAIN OF STREETS AND	•	• •	•
	PUBLIC ROUTES			
	IDENTIY OF SETTLEMENT	•	•	• •
	AND SENSE OF PLACE			
	• QUALITY OF PUBLIC SPACE	•	•	• •
EXT	(DESIGN, SHAPE, SCALE)			
ITN	• THE SUCCESS OF PUBLIC	•	•	• •
r CC	REALM (USE OF STREETS,			
ry &	SQUARES ETC)			
NSI	FOCAL POINTS AND PUBLIC	•	•	• •
DE	BUILDINGS			
	INTEGRATION WITH	•	• •	٠
	EXISTING			
	TRANSPORTATION ROUTES			
	LOCATION OF PUBLIC	• •	•	٠
	TRANSPORTATION			
	FACILITIES			
	INTEGRATION BETWEEN	•	• •	•
	DIFFERENT MOVEMENT			
	MODES (FOOT, CYCLE, CAR)			
	ACCESSIBILITY OF HEALTH	• •	•	•
SN	SERVICES			
NT PATTERN	ACCESSIBILITY OF FOOD	•	•	• •
	SERVICES BY EASY			
	MOVEMENT MODES			
EME	CAR PARKING STANDARDS	•	•	• •
OVF	AND LOCATION OF CAR			
Μ	PARKING SPACES			

### Table 1: Assessment of Arabahmet District


#### Table 1: Cont.

•	CAR PARKING     SUFFICIENCY	•	• •	•
	TRAFFIC CALMING     MEASURES	•	•	• •
	PEDESTRIAN SAFETY	•	•	• •
	BIKE CYCYLING PATH	• •	•	•
	DISABLED ACCESS	•	• •	•
	MIX USE FOR OWN	•	• •	•
	CONVEINENCE			
	(HOUSING/COMMERCIAL)			
	MIX USE RATIO	•	• •	•
	DIVERSITY OF HOUSING	•	•	• •
	UNITS			
	• PUBLIC-PRIVATE	•	• •	•
	INTERFACE			
Ш	SETTLEMENT DENSITY IN	•	•	• •
SU	TWO-DIMENSION			
AND	• SETTLEMENT DENSITY IN	•	•	• •
Γ <i>י</i>	THREE DIMENSION			
	BUILDING ORIENTATION	•	• •	•
	AND MASSING			
	• EXPOSURE TO UNWANTED	•	• •	•
IGN	SUN			
DES	CROSS-VENTILATION IN	•	•	• •
TIC	OUTDOOR SPACE			
IMA	CROSS-VENTILATION IN	•	•	• •
CLI	INDOOR UNITS			



#### Table 1: Cont.

	ACCESS TO NATURE	•	•	• •
	ACCESS TO EDIBLE	•	• •	•
	LANDSCAPE			
	PROVISION AND USE OF	•	•	• •
	COMMON OUTDOOR SPACE			
IGN	USE OF EXTERIOR SPACE	•	•	• •
DES	HIERARCHY OF OPEN	• •	•	•
I UN	SPACES			
LAJ	TREE PLANTING	• •	•	•
	GROUP IDENTITY AND	•	•	• •
	SENSE OF BELONGINGNESS			
	PLAY AREAS	•	• •	•
	AVAILABILITY OF	•	• •	•
	COMMUNITY FACILITIES			
	AVAILABILITY OF SEMI-	•	• •	•
	PRIVATE SPACES FOR			
	NEIGHBOURLY CONTACTS			
UES	AVAILABILITY OF SPORTS	•	• •	•
TY ISSI	AND CHILDCARE			
	FACILITIES			
IUNI	HOUSING AFFORDABILITY	•	•	• •
MM	PERCEPTION OF SAFETY	•	• •	•
CC	SOCIAL NETWORK	•	•	• •

# 4.2. Köşklüçiftlik Case Study

Köşklüçiftlik was a prestigious neighbourhood of Northern Nicosia which was settled as one of one of the first residential developments outside the Walled city, established around 1910s. Generally, it is a vibrant area that has modern-spatial urban pattern based on orthogonal structure. In terms of building characteristics, buildings in Köşklüçiftlik are dominantly one or two storey height with large or medium-size parcels with beautiful landscape including orchards and fruit trees. Because of these features, the area has been favoured by the well fare citizens. However, as the city grows, being a favourite district caused some problems and deterioration in terms of building shape, scale and townscape. Today, owing to the development of Osmanpaşa Street as an activity spine by widened commercial uses, Köşklüçiftlik has been divided into two parts as northern and southern areas.



In the north part, the apartments have been densely increased comparing to south part. Generally four-storey apartment buildings give an opportunity to non-residential uses to be located here. On the other hand, southern part has spread on a wide area with houses in large parcels. It has a more pleasant urban environment and greenery.

According to the land use analysis, commercial uses, offices and some leisure activities such as prestigious restaurants are located on the main corridors which encircle the neighbourhood. Due to the location of the area that is close to the city centre and activity spines, the land use scheme has dramatically changed to non-residential functions reflecting the effect of a subcentre. This feature generally decreases the identical character of the neighbourhood and the sense of belonging, which was strong in the past. On the other hand, the accessibility through these transformations to the facilities such as public services, community services, offices and etc. is increased.

Another important issue for the area is the limited public transportation opportunity and busstops. This encourages car-dependency. However, in some places, one-way traffic circulation system and some traffic calming measures reduce the noise and decrease the traffic congestion.

In the southern part of the Köşklüçiftlik district, one and two storey houses built in 1960s and 70s are properly designed examples of Modernist architecture. They are naturally well-lit and provide cross-ventilation due to the logical placement of openings. Semi-open spaces such as verandas are also very functional both in terms of climatic and social qualities. Mature trees lining the house parcels provide shade and a soft effect. However, in the northern part of the district, four-story apartments laid out as individual structures create a monotonous effect and do not respect to climatic characteristics. Neither in their plan layouts nor in landscape, due to the lack of a cohesion in the area, the sense of place is weaker than in the southern part of the district.

Streets in Köşklüçiftlik are generally used as vehicular channels rather than places defined by the buildings. This doesn't provide any shading opportunities comparing to the traditional residential areas such as Arabahmet or Chrysaliniotissa districts. Therefore, walking in hot seasons may not be comfortable for people.

Köşklüçiftlik reveals a pleasant combination of houses and beautiful gardens where mature trees (Cyprus trees, citrus and orange trees, pomagranate trees, etc) provide self-sufficiency and a barrier between the private and public realms. The general texture here is cohesive through the positive use of landscape elements through which the unity is enhanced. However, in the northern part, where four storey apartments dominate over existing trees and vegetation have been eliminated for the purpose of creating space for car parking. This is a major issue in terms of sustaining the local qualities.

Köşklüçiftlik has no public or semi-public places for communal gathering or social interactions. Even through the district is one of the most popular areas in Nicosia; it does not sound strong social interaction opportunities for the community. On the other hand, daily commercial needs and leisure activities are easily accessible for the inhabitants. These functions bring an attraction into the area and also improve the social dynamism in terms of passive contact with the visitors of the area. However, the traffic congestion and noise pollution



are greatly enhanced because of this transformation. In the northern part of the district in particular where the major activity spines are in close vicinity, the residents have highlighted this problem of noise and air pollution during the interviews. They even expressed their wishes to move to a quieter part of the city if they have the chance, and some of the residents have already left the districts. On the other hand, the inhabitants of the southern part of Köşklüçiftlik are generally happy to live there as the mentioned problems do not affect this part.

It is a pity that, residents of the area generally do not have very good contacts as they used to have in the past and they do not have an idea who is living in the next house. This causes alienation and individualism in the community

## Table 2: Assessment of Köşklüçiftlik District

CASE	• KÖŞKLÜ CİFTLİK	•	•	•
	RELATION BETWEEN DEVELOPMENT AND WIDER URBAN CONTEXT	٠	٠	•
ΥŢ	ENTITY/COHESION	•	٠	•
VTEX	GRAIN OF STREETS AND PUBLIC ROUTES	•	•	•
CON	IDENTIY OF SETTLEMENT AND SENSE OF PLACE	•	•	•
Y &	• QUALITY OF PUBLIC SPACE (DESIGN, SHAPE, SCALE)	٠	٠	•
DENSIT	• THE SUCCESS OF PUBLIC REALM (USE OF STREETS, SQUARES ETC)	٠	•	•
	FOCAL POINTS AND PUBLIC BUILDINGS	٠	٠	•
	INTEGRATION WITH EXISTING TRANSPORTATION ROUTES	•	•	•
SN	LOCATION OF PUBLIC TRANSPORTATION FACILITIES	٠	٠	•
ATTERN	• INTEGRATION BETWEEN DIFFERENT MOVEMENT MODES (FOOT, CYCLE, CAR)	•	•	•
T F	ACCESSIBILITY OF HEALTH SERVICES	•	•	٠
MOVEMEN	ACCESSIBILITY OF FOOD SERVICES BY EASY MOVEMENT MODES	٠	•	•
	CAR PARKING STANDARDS AND LOCATION OF CAR     PARKING SPACES	•	•	•



#### Table 2: Cont.

•	CAR PARKING SUFFICIENCY	•	•	•
	TRAFFIC CALMING MEASURES	•	•	•
	PEDESTRIAN SAFETY	•	•	•
	BIKE CYCYLING PATH	•	•	•
	DISABLED ACCESS FOR USERS	•	•	•
	MIX USE FOR OWN CONVEINENCE	•	٠	•
	(HOUSING/COMMERCIAL)			
ш	MIX USE RATIO	•	•	٠
ISU 0	DIVERSITY HOUSING UNITS	•	•	٠
AND	PUBLIC-PRIVATE INTERFACE	•	•	٠
Ĺ	SETTLEMENT DENSITY IN TWO-DIMENSION	•	•	•
	SETTLEMENT DENSITY IN THREE DIMENSION	•	٠	•
	BUILDING ORIENTATION AND MASSING	•	•	•
ATC	EXPOSURE TO UNWANTED SUN	•	•	•
JLIM DESI	CROSS-VENTILATION IN OUTDOOR SPACE	•	•	٠
	CROSS-VENTILATION IN INDOOR UNITS	•	•	٠
	ACCESS TO NATURE	•	•	٠
	ACCESS TO EDIBLE LANDSCAPE	•	•	٠
	PROVISION AND USE OF COMMON OUTDOOR SPACE	•	•	•
G ND	USE OF EXTERIOR SPACE	•	•	•
LAN	HIERARCHY OF OPEN SPACES	•	•	•
	• TREE PLANTING	•	٠	•
	GROUP IDENTITY AND SENSE OF BELONGINGNESS	•	•	٠
	PLAY AREAS	•	•	٠
UES	AVAILABILITY OF COMMUNITY FACILITIES	•	٠	٠
ISS	AVAILABILITY OF SEMI-PRIVATE SPACES FOR	•	٠	•
ITY	NEIGHBOURLY CONTACTS			
IUN	AVAILABILITY OF SPORTS AND CHILDCARE FACILITIES	•	•	٠
NMC	HOUSING AFFORDABILITY	•	٠	٠
ŭ	PERCEPTION OF SAFETY	•	•	•
	SOCIAL NETWORK	•	•	•





#### 4.3. Kermiya Case Study

Kermiya neighbourhood is one of the newly established suburban housing areas in Northern Nicosia which was developed after 1974, based on a social housing scheme introduced by the government for low and middle income citizens. It is located in the Kermiya region that is close to Metehan Gate, one of the access points to the south of the island, but relatively far from the city centre. The urban layout is grid structure with some deformations in certain areas.

The urban texture is formed with four and five-storey apartments which do not create a coherent entity. According to the land use analysis, ground floors of the apartments are generally occupied by non-residential functions such as commercial, office, and leisure uses for daily needs. On the other hand, most of the upper floors are residential. This mix-use pattern meets the basic needs of the inhabitants within a close distance. This condition not only increases the pedestrian activity within reasonable distance, but also, it gives an opportunity for social interactions between the residents that is basic element for community development. Moreover, it saves energy and time for the inhabitants, which is so important for sustainable resource consumption in urban areas.

The accessibility of the district is very weak due to the direct connection from the main road leading to Metehan Gate. This makes the neighbourhood isolated from other parts of the city. All streets lack a spatial definition and they are connected to the main road. Even though car dependency is very high in the area the traffic congestion is low in compare to Köşklüçiftlik. The lack of strong connection to the city is the reason for the low traffic circulation. However, although many car parking plots were provided in some places, on-street car parking is a problem.

It is clear that positive qualities of Arabahmet district are not present Kermiya like in other new settlements. These settlements have appeared as an assembly of isolated buildings which cannot define positive urban spaces, but rather left over spaces. These undefined spaces around housing units are not used by the dwellers at all, and cause the very negative effect of a dead area (Oktay 2001/2002). Moreover, these areas with individual dwellings seem to be attractive to the middle classes, but they increase social segregation, break the traditional attitudes and in the long run are a threat to social sustainability.

Considering the dwelling units and their relationships with the exterior spaces, sun orientation is a great problem in housing units. For example, the living rooms and balconies of the buildings on one side of the street face the west, which is the worst direction in terms of sun orientation in Northern Cyprus. The residents of such units can not use their indoor and outdoor spaces comfortably in the afternoons in the overheated period.

In Kermiya, the dull effect of the randomly composed concrete buildings dominates the whole area. Streets are not defined by the walls of the buildings but rather laid out as two dimensional vehicular channels lacking greenery and supportive functions on the edges. They can not provide any shading opportunities and makes walking arduous in the hot days, and do not provide sense of place either.



Similar to other new developments, Kermiya district totally lack the natural elements. The buildings are situated on a flat land with no trees, and stand as isolated towers missing the opportunity of creating some unity through the use of landscaping. It is also unfortunate that there are no conscious efforts to green the surroundings of such blocks.

As stated by Oktay (2001), the positive social-spatial qualities pertaining to the older settlements are never reflected in new housing developments. These environments lack any local social and traditional values both in new individual houses and multi-storey apartments. The most negative design aspects that cause social segregation in these settlements are the formation of buildings creating a 'no man's land' around buildings, and the lack of positive transition and interaction between indoor and outdoor spaces within a hierarchy of semi-public, semi-private and private spaces. This criticism is totally valid for the Kermiya district.

The lack of public places, play and sport areas and open spaces for community gathering is another critical problem in terms of social interaction among the residents and sustaining the social cohesion. Moreover, living in multi-storey apartments lacking any semi-private spaces for the neighbours to meet make people isolated from each other, and promotes social segregation. All these failures are resulted in the loss of a community sprit among the residents.

CASE	• KERMIYA	• POOR	• FAIR	• GOOD
	RELATION WITHEN URBAN	•	• •	•
	CONTEXT			
	ENTITY/COHESION	• •	•	•
	GRAIN OF STREETS AND	• •	•	•
	PUBLIC ROUTES			
	IDENTIY OF SETTLEMENT	• •	•	•
	AND SENSE OF PLACE			
	QUALITY OF PUBLIC SPACE	• •	•	•
	(DESIGN, SHAPE, SCALE)			
	• THE SUCCESS OF PUBLIC	• •	•	•
EXT	REALM (USE OF STREETS,			
HLN	SQUARES ETC)			
CO	FOCAL POINTS AND PUBLIC	• •	•	•
DENSITY &	BUILDINGS			
	• INTEGRATION WITH	•	• •	•
	EXISTING			
	TRANSPORTATION ROUTES			

#### Table 3: Assessment of Kermiya District



Table 3: Cont.

•			• •	•	•
		LOCATION OF BUBLIC			
	•	TDANSPORTATION FACILITIES			
		TRANSPORTATION FACILITIES			
	•	INTEGRATION BETWEEN	•	•	• •
		DIFFERENT MOVEMENT			
		MODES (FOOT, CYCLE, CAR)			
	•	ACCESSIBILITY OF HEALTH	• •	•	•
		SERVICES			
RNS	•	ACCESSIBILITY OF FOOD	•	•	• •
(TE)		SERVICES BY EASY			
LPA1		MOVEMENT MODES			
ENT	•	CAR PARKING STANDARDS	•	• •	•
EM		AND LOCATION OF CAR			
10V		PARKING SPACES			
2	•	CAR PARKING SUFFICIENCY	•	• •	•
	•	TRAFFIC CALMING	•	• •	•
		MEASURES			
	•	PEDESTRIAN SAFETY	•	•	• •
	•	BICYCLE PATHS	• •	•	•
	•	DISABLED ACCESS	•	• •	•
	•	MIX FOR OWN CONVEINENCE	•	• •	•
		(HOUSING/COMMERCIAL)			
	•	MIX USE RATIO	• •	•	•
ISE	•	HOUSING MIX OR DIVERSITY	• •	•	•
LAND U	•	PUBLIC-PRIVATE INTERFACE	• •	•	•
	•	SETTLEMENT DENSITY IN	•	• •	•
		TWO-DIMENSION			
	•	SETTLEMENT DENSITY IN	• •	•	•
		THREE DIMENSION			



# Table 3: Cont.

	•	BUILDING ORIENTATION AND	• •	•		٠	
		MASSING					
	•	EXPOSURE TO UNWANTED	• •	•		•	
U _		SUN					
IATI	•	CROSS-VENTILATION IN	•	•	•	•	
JLIM DE		OUTDOOR SPACE					
0	•	CROSS-VENTILATION IN	• •	•		٠	
		INDOOR UNITS					
	•	ACCESS TO NATURE	• •	•		٠	
	٠	ACCESS TO EDIBLE	• •	•		٠	
		LANDSCAPE					
	٠	PROVISION AND USE OF	• •	•		٠	
IGN		COMMON OUTDOOR SPACE					
DES	•	USE OF EXTERIOR SPACE	•	•	•	•	
UND	•	HIERARCHY OF OPEN SPACES	• •	•		٠	
$L^{ m A}$	•	TREE PLANTING	• •	•		٠	
	٠	GROUP IDENTITY AND SENSE	• •	•		٠	
		OF BELONGING					
	•	PLAY AREAS	• •	•		•	
S	•	AVAILABILITY OF	• •	•		٠	
SUE		COMMUNITY FACILITIES					
Y IS	•	AVAILABILITY OF SEMI-	• •	•		٠	
LIN		PRIVATE SPACES FOR					
MUM		NEIGHBOURLY CONTACTS					
MO	٠	AVAILABILITY OF SPORTS	• •	•		٠	
-		AND CHILDCARE FACILITIES					
	٠	HOUSING AFFORDABILITY	•	•	•	٠	
	•	PERCEPTION OF SAFETY	•	•		• •	
	•	SOCIAL NETWORK	•	•	•	•	



# 4.4. Chrysaliniotissa Case Study

Chrysaliniotissa district is located to the south-east part of the Walled City in Southern Nicosia. In general, it has many similarities with Arabahmet neighbourhood, and is one of the most identifiable districts in the Walled City.

Chrysaliniotissa, like Arabahmet, is an urban vernacular settlement with low to moderate dense residential texture. In this district, some public functions are combined with unique monumental and historical buildings. These architectural examples are the symbol of the historical and cultural heritage in Nicosia and they promote Chrysaliniotissa as an important social centre which hosts many attractions and enhance its identity.

Moreover, the area has similar narrow street patterns, cul-de-sacs where one-way traffic orientations are preferred. As such, the area is protected from heavy traffic flow.

Chrysaliniotissa, has some features that differ from those in Arabahmet area. This district is predominantly residential, but, in some places, it has non-residential functions such as industrial workshops for crafting, crafts centre for organization crafting activity, kindergarden for children care, some leisure, and some community services. This availability of the work spaces in close vicinity supports the communal life in terms of economic viability and sustainability.

In general, the district reveals similar peculiarities with Arabahmet quarter in terms of climatically responsive design and a sense of place. The organization of the buildings, the ratio of the building to the street, indoor and outdoor spaces, well-defined courtyards, and various types of semi-open spaces are similar features. The area is a cohesive urban environment which provides a sense of place.

Land design characteristics are also in tune with Arabahmet district. However, as a different element, the flower pots are located on the sides of the streets. This increases street attractiveness and enables the street to be used as semi-public place. Moreover, twining or climbing plants are dominantly used as decorative and shading elements which improve which improve aesthetic quality.

It is clear that, within all these spatial elements mentioned above, social interaction between the residents and community development can strongly be maintained by keeping and reemphasizing the physical characteristics of the area. Moreover, rehabilitation projects that have recently made from government are important supporter for community development also. These project examples also the symbol of participation of the community with government and other non-governmental organizations. Interviews in the area prove that the community sprit still exists. They like to live and work in the same area; so their attachment to the neighbourhood and sense of place is strong. From this point of view it can be stated that community development is better than in Arabahmet.



CASE	•	CHRYSALINIOTISSA AREA	• POOR	•	FAIR	•	GOOD
	•	RELATION BETWEEN	•	•	•	•	
		DEVELOPMENT AND					
		WIDER URBAN					
		CONTEXT					
	•	ENTITY/COHESION	•	•		•	•
	•	GRAIN OF STREETS	•	•		•	•
		AND PUBLIC ROUTES					
	•	IDENTIY OF	•	•		•	•
		SETTLEMENT AND					
		SENSE OF PLACE					
	•	QUALITY OF PUBLIC	•	•		•	•
		SPACE (DESIGN,					
		SHAPE, SCALE)					
	•	THE SUCCESS OF	•	•		•	•
		PUBLIC REALM (USE OF					
F		STREETS, SQUARES					
LE)		ETC)					
NO2	٠	FOCAL POINTS AND	•	•	•	•	
8		PUBLIC BUILDINGS					
SIT	•	INTEGRATION WITH	•	•	•	•	
DENS		EXISTING					
		TRANSPORTATION					
		ROUTES					
	•	LOCATION OF PUBLIC	• •	•		•	
		TRANSPORTATION					
		FACILITIES					



## Table 4: Cont.

	•	INTEGRATION BETWEEN	•	•	•	•	
		DIFFERENT MOVEMENT					
		MODES (FOOT, CYCLE,					
		CAR)					
	•	ACCESSIBILITY OF	•	•	•	•	
		HEALTH SERVCES					
	•	ACCESSIBILITY OF FOOD	•	•	•	•	
		SERVCES BY EASY					
		MOVEMENT MODES					
	•	CAR PARKING	• •	•		•	
		STANDARTS AND LOATION					
		OF CAR PARKING SPACES					
(0	•	CAR PARKING	• •	•		•	
RN		SUFFICIENCY					
TTE	٠	TRAFFIC CALMING	•	•	•	•	
r pa		MEASURES					
IENJ	•	PEDESTRIAN SAFETY	•	•	•	•	
VEN	•	BIKE CYCYLING PATH	• •	•		•	
MO	•	DISABLED ACCESS	•	•	•	•	
	٠	MIX FOR OWN	•	•	•	•	
		CONVEINENCE					
		(HOUSING/COMMERCIAL)					
	•	MIX USE RATIO	•	•		•	•
	٠	HOUSING MIX OR	•	•		•	•
		DIVERSITY					
	•	PUBLIC-PRIVATE	•	•	•	•	
		INTERFACE					
	٠	SETTLEMENT DENSITY IN	•	•	•	•	
щ		TWO-DIMENSION					
SU (			•	•		•	•
ANC	•	SETTLEMENT DENSITY IN					
Ľ		THREE DIMENSION					



#### Table 4: Cont.

	•	BUILDING ORIENTATION	•	•	• •
GN		AND MASSING			
	•	EXPOSURE TO	•	•	• •
DES		UNWANTED SUN			
U U	•	CROSS-VENTILATION IN	•	•	• •
IATI		OUTDOOR SPACE			
	•	CROSS-VENTILATION IN	•	•	• •
0		INDOOR UNITS			
	•	ACCESS TO NATURE	• •	•	•
	•	ACCESS TO EDIBLE	٠	• •	•
		LANDSCAPE			
	•	PROVISION AND USE OF	•	• •	•
		COMMON OUTDOOR			
		SPACE			
lGN	•	USE OF EXTERIOR SPACE	•	• •	•
DES	•	HIERARCHY OF OPEN	• •	•	•
D D		SPACES			
LAI	•	TREE PLANTING	•	• •	•
	•	GROUP IDENTITY AND	•	•	• •
		SENSE OF			
		BELONGINGNESS			
	•	PLAY AREAS	• •	•	•
	•	AVAILABILITY OF	•	•	• •
		COMMUNITY FACILITIES			
	•	AVAILABILITY OF SEMI-	•	•	• •
		PRIVATE SPACES FOR			
ល		NEIGHBOURLY CONTACTS			
SUE	•	AVAILABLITY OF SPORTS	•	• •	•
S S		AND CHILDCARE			
L F		FACILITIES			
MUN	•	HOUSING AFFORDABILITY	•	•	• •
MOX	٠	PERCEPTION OF SAFETY	•	• •	•
0	•	SOCIAL NETWORK	•	•	• •



# 4.5. Ayios Dhometios Case Study

The area is located in the west of the Walled City in Southern Nicosia. It is a district that corresponds to the Köşklüçiftlik area on the other side of the buffer zone. Because of being one of the most important residential areas which were established before 1974, it is very similar to Köşklüçiftlik and Çağlayan districts. It generally has modern-spatial pattern with orthogonal street structure. In terms of building characteristics, it comprises has one or two storey residential buildings with large or medium-size parcels ornamented with beautiful landscape elements. Therefore the density can be considered low like in Köşklüçiftlik. Moreover, due to the appealing building characteristics, it has always been a favourite area for the welfare citizens of southern Nicosia.

Land use features are typically the same as those in Köşklüçiftlik district. It is mainly residential and there are some non-residential functions only on the main strips (activity spines). Community services, public utilities, leisure units, parks, schools and health centres, are closely located on the main street. However, this accessibility is car dependent and other type of circulation modes such as walking and cycling do not exists either. No hierarchy of streets is available in the area. Transportation has formed for the area. Another similarity with Köşklüçiftlik is that, sidewalk applications are implemented on the main activity spines only.

Ayios Dhometios, as a whole, doesn't give any sense of place or create identical character. On the other hand, well-designed architectural examples are the main elements that improve the sense of place within the area. Moreover, building orientation was affected from grid street pattern.

General land design characteristics are the same as in Köşklüçiftlik. However, gardening in the parcels is strongly enhanced by many flowers and other plants. In summer days, trees and other plants almost cover the entire plot and create a very comfortable environment for the inhabitants.

Privacy of the housing units within the plots through the surroundings mature trees prevents the residents to socialize. Social interactions can be observed in planned occasions and established within the parcels, due to the lack of public or semi-public open places within the neighbourhood. Social interactions among the residents are therefore so limited and they do not know each other well according to the interviews. There is no doubt these characteristics are similar to in Köşklüçiftlik but, privacy and alienation are higher than Ayios Dhometios.



• AYIOS DHOMETIOS	POOR	FAIR	GOOD
RELATION BETWEEN	•	٠	• •
DEVELOPMENT AND			
WIDER URBAN			
CONTEXT			
ENTITY/COHESION	•	• •	•
GRAIN OF STREETS AND	• •	•	•
PUBLIC ROUTES			
IDENTIY OF	•	• •	•
SETTLEMENT AND			
SENSE OF PLACE			
QUALITY OF PUBLIC	• •	•	•
SPACE (DESIGN, SHAPE,			
SCALE)			
THE SUCCESS OF	• •	•	•
PUBLIC REALM (USE OF			
STREETS, SQUARES ETC)			
FOCAL POINTS AND	•	• •	•
PUBLIC BUILDINGS			
INTEGRATION WITH	•	•	• •
EXISTING			
TRANSPORTATION			
ROUTES			
LOCATION OF PUBLIC	•	• •	•
TRANSPORTATION			
FACILITIES			
	<ul> <li>AYIOS DHOMETIOS</li> <li>RELATION BETWEEN DEVELOPMENT AND WIDER URBAN CONTEXT</li> <li>ENTITY/COHESION</li> <li>GRAIN OF STREETS AND PUBLIC ROUTES</li> <li>IDENTIY OF SETTLEMENT AND SENSE OF PLACE</li> <li>QUALITY OF PUBLIC SPACE (DESIGN, SHAPE, SCALE)</li> <li>THE SUCCESS OF PUBLIC REALM (USE OF STREETS, SQUARES ETC)</li> <li>FOCAL POINTS AND PUBLIC BUILDINGS</li> <li>INTEGRATION WITH EXISTING TRANSPORTATION ROUTES</li> <li>LOCATION OF PUBLIC TRANSPORTATION FACILITIES</li> </ul>	<ul> <li>AYIOS DHOMETIOS</li> <li>RELATION BETWEEN         <ul> <li>DEVELOPMENT AND</li> <li>WIDER URBAN</li> <li>CONTEXT</li> <li>ENTITY/COHESION</li> <li>GRAIN OF STREETS AND</li> <li>PUBLIC ROUTES</li> <li>IDENTIY OF</li> <li>SETTLEMENT AND</li> <li>SENSE OF PLACE</li> <li>QUALITY OF PUBLIC</li> <li>SPACE (DESIGN, SHAPE, SCALE)</li> <li>THE SUCCESS OF</li> <li>PUBLIC REALM (USE OF PUBLIC REALM (USE OF STREETS, SQUARES ETC)</li> <li>FOCAL POINTS AND</li> <li>PUBLIC BUILDINGS</li> <li>INTEGRATION WITH</li> <li>EXISTING</li> <li>TRANSPORTATION</li> <li>FACILITIES</li> <li>LOCATION OF PUBLIC</li> <li>TRANSPORTATION</li> <li>FACILITIES</li> <li>INTEGRATION</li> <li>FACILITIES</li> </ul> </li> </ul>	<ul> <li>AYIOS DHOMETIOS</li> <li>RELATION BETWEEN DEVELOPMENT AND WIDER URBAN CONTEXT</li> <li>ENTITY/COHESION</li> <li>ENTITY/COHESION</li> <li>GRAIN OF STREETS AND PUBLIC ROUTES</li> <li>IDENTIY OF SETTLEMENT AND SENSE OF PLACE</li> <li>QUALITY OF PUBLIC SPACE (DESIGN, SHAPE, SCALE)</li> <li>THE SUCCESS OF PUBLIC REALM (USE OF STREETS, SQUARES ETC)</li> <li>FOCAL POINTS AND PUBLIC BUILDINGS</li> <li>FOCAL POINTS AND PUBLIC BUILDINGS</li> <li>INTEGRATION WITH EXISTING TRANSPORTATION ROUTES</li> <li>LOCATION OF PUBLIC TRANSPORTATION FACILITIES</li> </ul>

# Table 5: Assessment of Ayios Dhometios District



### Table 5: Cont.

	INTEGRATION BETWEEN	• •	•	•
	DIFFERENT MOVEMENT			
	MODES (FOOT, CYCLE,			
	CAR)			
	ACCESSIBILITY OF	•	•	• •
	HEALTH SERVCES			
	ACCESSIBILITY OF FOOD	•	• •	•
SNS	SERVCES BY EASY			
TER	MOVEMENT MODES			
PAT	CAR PARKING STANDARTS	• •	•	•
TNT	AND LOATION OF CAR			
EME	PARKING SPACES			
IVO	CAR PARKING	• •	•	•
Z	SUFFICIENCY			
	TRAFFIC CALMING	•	•	• •
	MEASURES			
	PEDESTRIAN SAFETY	• •	•	•
	BIKE CYCYLING PATH	• •	•	•
	DISABLED ACCESS	• •	•	•
	MIX FOR OWN	•	• •	•
	CONVEINENCE			
	(HOUSING/COMMERCIAL)			
	MIX USE RATIO	•	• •	•
LAND USE	HOUSING MIX OR	•	• •	•
	DIVERSITY			
	PUBLIC-PRIVATE	• •	•	•
	INTERFACE			
	SETTLEMENT DENSITY IN	•	• •	•
	TWO-DIMENSION			
	SETTLEMENT DENSITY IN	•	•	• •
	THREE DIMENSION			



#### Table 5: Cont.

MATIC SIGN	BUILDING ORIENTATION	•	• •	•
	AND MASSING			
	EXPOSURE TO UNWANTED	•	• •	•
	SUN			
	CROSS-VENTILATION IN	•	•	• •
DE	OUTDOOR SPACE			
	CROSS-VENTILATION IN	•	•	• •
	INDOOR UNITS			
	ACCESS TO NATURE	• •	٠	•
	ACCESS TO EDIBLE	•	•	• •
	LANDSCAPE			
	PROVISION AND USE OF	•	• •	•
	COMMON OUTDOOR			
	SPACE			
Z	• USE OF EXTERIOR SPACE	•	•	• •
ESIC	HIERARCHY OF OPEN	• •	•	•
DD	SPACES			
IAN	TREE PLANTING	•	•	• •
	GROUP IDENTITY AND	• •	•	•
	SENSE OF			
	BELONGINGNESS			
	PLAY AREAS	•	• •	•
	AVAILABILITY OF	•	•	• •
	COMMUNITY FACILITIES			
AU. ISSUES	AVAILABILITY OF SEMI-	• •	•	•
	PRIVATE SPACES FOR			
	NEIGHBOURLY CONTACTS			
MMO	AVAILABLITY OF SPORTS	•	•	• •
GC	AND CHILDCARE			
	FACILITIES			
	HOUSING AFFORDABILITY	• •	•	•
	PERCEPTION OF SAFETY	•	•	• •
	SOCIAL NETWORK	• •	•	•



## 4.6. Platy Case Study

Platy neighbourhood is one of the suburban housing areas of Southern Nicosia which was developed after 1974. It was built and prepared by the government as a social housing complex for low or middle-income group citizens migrated from foreign countries. Generally it is a distant residential area, located in the eastern part of Aglanca region, which has modern-spatial pattern similar Kermiya. This pattern comprises apartments, row-houses and semi-detached dwelling units surrounded car parking spaces, small parks and also green areas.

In the neighbourhood, there are three types of housing units. These include four storey apartments, two storey row-houses and one storey row and semi-detached houses. This condition shows that housing units has a proper diversity and low density.

Platy mainly includes residential functions mainly. Only a few small grocery shops and other domestic shops are located for the convenience of the inhabitants. This quality of walkability along with the provision of well-organized pavements and bike paths decreases the car usage and therefore makes a positive element in terms of sustainable living.

In platy district, cluster of housing units seems to be designed in line with climatic conditions as they shade each other from the sun. In addition, tree planting, twining plants, flowers and other vegetation in the parcels on parks, create an aesthetic quality and contribute to climatic conditions especially in summer days, Pedestrian paths, are also enriched and sheltered by green elements and therefore create a comfortable walking space in hot and rainy days.

Concerning the site layout, unlike other areas, Platy reveals an organized system of pedestrian paths, car parking and green areas. The pedestrian paths are projected to be separated from the traffic roads and increase the accessibility and comfortable walking opportunities within the area, which is so important to meet people with each other.

In terms of landscape elements, tree planting and vegetation are major concerns. Not only in private gardens but also in common open spaces there are some fruit trees and other vegetation and therefore, the district could be considered a positive example as a newly developed district.

Platy has different subcultures from foreign countries. As the district received immigrants from many different countries after 1974, a cultural diversity is reflected in the community. This is a positive element in terms of variety of meanings attached to the neighbourhood. Moreover, as Cypriot citizens reside in close vicinity of the existing urban pattern of platy, they are able to increase their social integration with a wider social group.

The neighbourhood comprises both modest housing blocks and attractive houses used by different income level groups. This is one of the most significant peculiarities which cause cultural and physical richness. Although the neighbourhood is a social housing complex that is located in a suburban development, it is more integrated with other communities comparing to Kermiya.



# Table 6: Assessment of Platy Area

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•
•
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• •
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Table	6:	Cont.

	INTEGRATION	•	•	• •
	BETWEEN DIFFERENT			
	MOVEMENT MODES			
	(FOOT, CYCLE, CAR)			
	ACCESSIBILITY OF	•	• •	•
	HEALTH SERVCES			
	ACCESSIBILITY OF	•	•	• •
	FOOD SERVICES BY			
S	EASY MOVEMENT			
BRN	MODES			
HTTV				
T P/	CAR PARKING	•	•	• •
MEN	STANDARTS AND			
VEN	LOATION OF CAR			
MO	PARKING SPACES			
	CAR PARKING	•	•	• •
	SUFFICIENCY			
	TRAFFIC CALMING	•	•	• •
	MEASURES			
	PEDESTRIAN SAFETY	•	•	• •
	BIKE CYCYLING PATH	•	•	• •
	DISABLED ACCESS	•	• •	•
	MIX FOR OWN	•	• •	•
	CONVEINENCE			
	(HOUSING/COMMERCI			
	AL)			
USE	MIX USE RATIO	• •	•	•
Q	HOUSING MIX OR	•	•	• •
LA	DIVERSITY			
	PUBLIC-PRIVATE	•	• •	•
	INTERFACE			



Table 6:

	SETTLEMENT	•	•	• •
	DENSITY IN TWO-			
	DIMENSION			
	SETTLEMENT	•	•	• •
	DENSITY IN THREE			
	DIMENSION			
	BUILDING	•	• •	•
	ORIENTATION AND			
	MASSING			
	EXPOSURE TO	•	• •	•
GN	UNWANTED SUN			
DESI	CROSS-VENTILATION	•	•	• •
	IN OUTDOOR SPACE			
	CROSS-VENTILATION	•	• •	•
	IN INDOOR UNITS			
	ACCESS TO NATURE	• •	•	•
	ACCESS TO EDIBLE	•	• •	•
	LANDSCAPE			
	PROVISION AND USE	•	• •	•
GN	OF COMMON			
DESI	OUTDOOR SPACE			
	USE OF EXTERIOR	•	• •	•
LAN	SPACE			
	HIERARCHY OF OPEN	•	• •	•
	SPACES			
	TREE PLANTING	•	•	• •



Table 6:

	GROUP IDENTITY     AND SENSE OF     BEL ONGINGNESS	•	• •	•
	PLAY AREAS	•	• •	•
	AVAILABILITY OF	• •	•	•
	COMMUNITY			
	FACILITIES			
	AVAILABILITY OF	•	• •	•
	SEMI-PRIVATE			
	SPACES FOR			
MU.	NEIGHBOURLY			
ISSI	CONTACTS			
	AVAILABILITY OF	• •	•	•
	SPORTS AND			
	CHILDCARE			
	FACILITIES			
	HOUSING	•	٠	• •
	AFFORDABILITY			
	PERCEPTION OF	•	٠	• •
	SAFETY			
	SOCIAL NETWORK	•	• •	•

# 5. Conclusion

Our observations in line with the previous studies on traditional and new settlements (Oktay 1999/2001/2002) proved that older neighbourhoods namely Arabahmet and Chrysaliniotissa, like other traditional settlements, have positive qualities in terms of sustainability. First of all, both districts reveal a cohesive texture due to their high density in two dimensional frameworks, an important characteristic to develop a strong image of the settlement. The two settlements are also positive in terms of walkability and access to commercial stores for daily needs for inhabitants. This quality of walkability together with the integration of transportation with land use planing, is the key to sustainable urban development, as it helps to decrease air pollution, resource depletion and energy consumption. In these districts the well-defined street and the residential courtyard, together with the other forms of exterior spaces, provide useful places for today's environment in terms of creating shade and cooling the trapped air and reflecting on to the house. The use of landscape (fruit trees and vegetables) in the courtyards of houses is another asset that should be sustained and reinterpreted in new housing schemes



In Arabahmet and Chrysaliniotissa neighbourhood sprit is still strong due to the characteristics of a compact community and a social cohesion is observed. There is no doubt that, within all these spatial elements mentioned here, social interaction between the residents and community development can strongly be maintained by keeping and re-emphasizing the physical characteristics of the area. Moreover, rehabilitation projects that have recently made from local governments and other organizations are important supporters for community development also. New community facilities and different activities for the inhabitants also gave an opportunity for the community development. The neighbourhoods developed before 1974, namely Ayios Dhometios and Köşklüçiftlik, reveal that there is a move towards non-sustainable development which results from excluding environment and tradition. Today, these districts, to a great extent do not reflect a unique identity as they used to have in the past, owing to the deformation of existing qualities, and therefore, the least sustainable features of these areas are alienation and car dependency which are so critical for community development and energy saving.

Kermiya and Platy, two social housing schemes developed after 1974, are the worst in terms of cohesion and land design, climatic design and community development. Both areas reveal the negative qualities of suburban developments as they are not integrated with the city. However, platy housing complex has some positive features such as safe movement patterns, sufficient parking standards and integration between different movement modes (walking, cycling and driving) in comparison to other districts. The lack of climatic consideration is particularly obvious in these schemes, like in all other social housing schemes of government, both in row-type and multi storey apartment developments.

As explored in previous papers by Oktay (1995/2002) these schemes firstly lack the sensitivity to regional characteristics and accordingly create problems in terms of natural climatisation, beyond generating problems in the local environmental identity and sense of place. Secondly in the design of buildings and their grouping, there is no appropriateness with local climatic conditions. In none of these settlements, there are places that foster special rituals where all residents come together in common pursuit and observance as used to be done in the street and courtyards. The districts do not have clear boundaries either to establish community identity. In addition, there are no hierarchies of public spaces which relate to buildings and their entrances and to encourage a sense of safety and community.

Concerning housing environments in Nicosia and other Cypriot towns, what is important is whether there is a perceived neighbourhood spirit responsive to local environment, identity, and social cultural values, or they just arbitrary neighbourhoods created randomly on the basis of spatial proximity. These discussions recall as well another important factor in achieving sustainable communities, neighbourhood identity, in a place where many different civilizations ruling the island have both created a cultural richness and lead to ethnic conflicts. As multi-storey housing was comprehensively introduced in North Cyprus only seventeen years ago, it has not been adopted in the deeply rooted patterns of social life. Therefore, it causes social problems (Oktay, 2001).

Finally, it is clear that urban development trends of Nicosia neighbourhoods are moving away from sustainability in many aspects. From that point urgent policies and action plans immediately need to be established in order to form better development practices and also increase quality or urban life in the city of Nicosia.



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# VISUAL POLLUTION DUE TO FUNCTIONAL TRANSFORMATIONS AT EKINCILER STREET IN DIYARBAKIR, TURKEY

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Diyarbakır, a province at Southeastern region of Turkey, is one of the oldest civilization place and has important trade background. It consists of two parts; the old city which is enclosed by a city wall (Sur içi) and new settlement areas which have showed a rapid development due to dense immigration and insufficient capacity of the old city. Especially after 1950s, the new part has been shaped by cooperatives which made up high buildings then trade activities naturally moved in. These activities mostly take place on a street called Ekinciler and all old buildings around it replaced by new ones. Recently, many buildings in the street have been transformed into shops for commercial purposes. This new situation has created many problems such as unpleasant for the residents, deteriorations of buildings with functional and physical changes and visual pollution. These problems were investigated by a comprehensive questionnaire and detail studies about buildings in this study. Consequently, some recommendations and analyses were presented for a better situation.

Key Words: Ekinciler Street, Functional changes, visual pollution.

# **1. INTRODUCTION**

The functional changes on the streets, buildings, and flats, especially the transforming houses area into the commercial areas cause many problems in cities. Environmental and visual pollutions, structural risks in the building body, unpleased residents, dense population, and functional problems in the commercial facilities (which are transformed from houses) are only a few problems faced due to these transformations. On the other hand, changes or decreases in child-parks, car park, traffic, water supply and drainage, electricity, natural gas, and any other system requirements are other serious problems. Today, many cities (Istanbul, Ankara, Izmir, Adana, Bursa, G. Antep, and Diyarbakir) in Turkey are affected by these problems just like cities in developed countries. [1]. However, these problems are not serious in cities have slow change and transformation period.

# 2. DESCRIPTION OF DIYARBAKIR

Diyarbakir city is located in <u>Southeastern region of Turkey</u> and many civilizations, some are <u>Hurri</u>-Mithani, <u>Hittites</u>, <u>Assyrians</u>, Arami Bit-Zamani Kingdom, Meds, Persians, Macedonians, Seleukos, Romans, Ilkhanide and the Akkoyunlu <u>Seljuks</u> have lived there throughout history. The city composed of two parts; the old city is surrounded by a wall which is 12 m. high and 5.5 km. long and new settlement areas outside of the old city. It has a rich historical heritage which contains many fortress, mosques, churches, tombs, palaces, inns, official and educational buildings, caravanserai, museums etc [2]. Diyarbakır is one of the most crowded city, approximately 1.5 million population, has continental climate, important geographical condition which is on historical trade way and industrial centre of the Southeastern region of Turkey



# 3. THE HISTORICAL BACKGROUND OF THE STUDY AREA

Since 1950s the new city has extensively been established by various house-building cooperatives at the out side of the city wall as illustrated in Figures 1a. These buildings were two or three floors and there were not any commercial areas. The outside of the city wall was used only for housing. Then, commercial activities moved similarly to these new settlement areas as well as housing. The old small houses have been replaced by high apartments with commercial facilities (Figure 1b).



Figure 1. The past and present of the outside of the city wall: a) 1960 [4], b) 2006

This situation could be clearly seen in the Ekinciler Street which is the most important of the new settlement area. A historical development of the street was given in Figure 2. Additionally Figure 2 shows that there are not any significant differences in construction between 1970's and 2006's in the street except only a few buildings have more than five flats such Tansel Apartment



Figure 2. Two views of the Ekinciler street: a) 1970, b) 2004



This apartment demolished and instead of it a new and commercially functional building namely Kalender Business Center has been built in 2005 (Figure 3).



Figure 3. a) Tansel Apartment (2003) was demolished and instead of the apartment, b)Kalender Business Center was built in 2005.

However, transformations of buildings to commercial facilities have showed a rapid development after 1970s. The reason of this condition is explained by a questionnaire conducted at the street that shows: high income (29%), commercial areas (29%) and Centrum of the city (42%) [5]. In addition, Figures 4-7 show the changes and transformation in the buildings only in last three years in the street. Approximately 50% of the commercial facilities have been open last year and 94% of the owners do not want to move elsewhere [5].





Figure 4 a) Güldamlası and Külüm Apartments June, 2003 b) Güldamlası and Külüm Apartments March, 2006 c) Laleli Apartment June, 2003 d) Laleli Apartment March, 2006



Figure 5. a) Işık 1 Apartments June, 2003 b) Işık 1 Apartments March, 2006 c) Işık 2 Apartment June, 2003 d) Işık 2 Apartment March, 2006



Figure 6. a) Devran Apartments June, 2003 b) Devran Apartments March, 2006 c) Nurlan Apartment June, 2003 d) Nurlan Apartment March, 2006



Figure 7. a) Osman Bey Apartments June, 2003 b) Osman Bey Apartments March, 2006 c) Erbay Apartment June, 2003 d) Erbay Apartment March, 2006



# 4. RESULTS

The whole buildings in the Ekinciler Street have been built formerly as residences. After 1970s, the transformations into commercial facilities have been started. This situation leads to the following problems:

- 1. Some functional changes resulted with structural changes like made in the flats like removing of some walls, opening new doors and windows, stairs, or opening any holes. The questionnaire indicated 62% of the owners have made changes on outside walls and 69 % of them have made changes on inside walls due to the security (33%), opening new areas (17%), and other functional needs (50%). These structural changes could create great risks for the construction of the buildings.
- 2. It can be easily understood from the signboards in the Figures 4-7 that many buildings or flats have been transformed completely or partially into the commercial facilities such as business offices, shops, private schools and their classrooms. However, the buildings were designed originally for residences so these structurally changes create high risks.
- 3. Functional transformations in the street have caused to environmental and visual pollutions as can be seen in Figures 4-7.
- 4. The questionnaire was conducted in this study revealed the following conclusions;
  - 64% of families live there are unhappy due to these functional transformations.
  - 71% of the families have problems like crowded population at the entrance of the building (40%), high living cost (30%) and dirty environment (30%).
  - Most of the families have parking problem and use the main street (14%), garden (30%), and other streets far from their houses (14%). Only 21% of the families use their own parking places.
  - Insufficient children park and play areas creates unhealthy environment for children live there. They are playing on the main street (21%), at home (21%), at the garden (44%) or at the playground (0%).
  - The owners of the commercial facilities are also unhappy due to they are small (23%), not functional (14%), structural problems (26%), high floor (5%), wrong direction (18%), car park (15%), noise pollution (23%), lack of green areas (24%) and visual problem (14%).
- 5. 71% of the families would like to move from the street to any other settlement areas where there are no commercial activities.

#### **5. CONCLUSIONS**

Transformation from settlement areas to commercial facilities leads to serious urbanization problems as well as social and structural problems. These areas should be differentiated from each other during city planning and any necessary transformations should be done for suitable cases. The housing areas in the plan should also be conserved. Partial transformations always create problems therefore; complete transformations of the areas must be taking into consideration. In case of compulsory transformations, modifications on some flats or building elements are not sufficient. Transformations decisions should contain some rules in order to avoid problems like visual, environmental, noise, social and etc.



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# AN ANALYSIS OF THE URBAN METAMORPHOSIS IN TARLABASI DISTRICT AND ITS IMPACTS ON THE CULTURAL FORMATION

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Tarlabaşı district –possessing many interesting yet problematic late 19<sup>th</sup> and 20<sup>th</sup> century buildings that reflect Istanbul's architectural history, its fundamental characteristics and the development progress of its infrastructure– is determined as the sample research area in this paper.

Tarlabaşı route/axis is of great importance for İstanbul's transportation network. In addition, Tarlabaşı zone plays a crucial role in the Beyoğlu Vitalization Project. Thus, the Tarlabaşı problem is not just a matter of land usage and transportation planning. It should be perceived as a means to improve the social and economic structure of the district as well. Major transformations in regions with historical affluence must be realized through inter-disciplinary studies rather than spontaneous decisions. Arrangements made on a small scale may lead to unexpected results when applied on a broader scale.

As a result of this study, it is concluded that a well-arranged infrastructure is an indispensability that must be considered as one of the fundamental issues within an urban planning process. Dealing with the urban problems on a platform formed of inter-disciplinary professionals rather than providing temporary solutions would lead to more sound solutions. The superstructure characteristics of a district should be addressed as the second step within the urban planning. The concept of superstructure includes street furniture as well as analyses of the existent architectural patterns.

#### **INTRODUCTION**

The city is a living organism. The changes in space, as a reflection of the social changes from past to future, are adopted for the cultural continuity as well. The changes in space should include a plan with an objective, an accurate study and understandings to meet the necessities of the time. The change due to cultural continuity should be adopted in the dwellings of developed countries. The changing needs are met by the advanced technology while the cultures are absorbed. In developed countries, however, though cultural continuity is desired, there are lapses in practice. The practices in Turkey are based on cultural consciousness partially, yet mostly they are results of personal interests and short-term solutions.

As a layer of cultures, Turkey reflects the architectural traces of lives in the past to future in its cities. Particularly in the historical cities, architectural structures between past and future make us question the shift between two different cultures (the historical monuments and today's structures).



Historical monuments, with socio-economic data and their different physical setting, reflecting the past cultures, are abandoned under the changing living conditions of today and exposed to the interaction of pincers of chaos in the whole city. The sharp lines of shifting periods and today's urban structure which can be expressed as the traces of a colorful culture at this point (both in social life and today's architecture which does not reflect the cultural wealth of the past do not provide us with a planning understanding based on cultural continuity.

This study analyzes the district of Tarlabaşı, which is a mosaic dwelling area including buildings of 19th and 20th century in Istanbul, which bear traces from different cultures in Turkey and searches for solutions for the concerns expressed.

# SCOPE AND METHOD OF THE STUDY

The communiqué for the Tarlabaşı district is handles on two steps. The first step analyzes the socio-economic characteristics of the dwellers from past to present and the physical condition of the buildings. In the second step, the arrangements of the public institutions with aims of urban development to the dwelling areas and buildings and their role in the cultural continuity is debated to establish a platform for discussion.

As one of the primary public arrangements, the reflections of the space of Tarlabaşı of the road expansion works to relieve the urban transport are an important part of this communiqué. Therefore, the aim of the study is to contribute to continuity of our historical inheritance influenced by the changing criteria all around the country, via planned objectives on the regions. The scope of the study covers geographically the Tarlabaşı district. The socio-economic characteristic of the region from past to present, as well as the physical structure, will be discussed for contribution to solutions.

As a method, the study benefits from the written sources which quote the studies on the district. The studies previously performed and ideas on a project scale are clashed and interpreted to find solutions. The author, who knows the district due to using it as a transit road and who is born and living in the city, mentions the sustainable-feasible suggestions for the district.

#### **GENERAL CHARACTERISTICS OF THE TARLABASI DISTRICT**

Tarlabaşı district is bounded by Dolapdere Street on the north, Tarlabaşı Avenue on the south, Talimhane on the east and Kasımpaşa on the west. The district is established on the skirts on both sides of the Tarlabaşı Avenue which is located, on the west side of Istanbul, on the northeast of the Golden Horn, starting at the intersection of Taksim Square and Cumhuriyet Street and extending to the United Kingdom Embassy and is bound to the Beyoğlu province.

Today, the district is known as a sinking area consisting of the street extending in parallel to the Dolapdere and İstiklal Avenues, between Taksim and Kasımpaşa, which was expanded after 1986, and of the nearby quarters. The walking distance from the district to Taksim is 5 minutes, while it seems like miles away in socio-cultural terms.

According to the study by A. Ünlü, Alkışer, Edgü in 2000, the district addresses to the group of low income. Tarlabaşı has taken migrates from the east of the country and therefore, there is a tense relationship between the dwellers who are influenced by different cultures.





<u>Figure 1:</u> Taksim Square – Historical Peninsula



Figure 2: Tarlabaşı District

# PHYSICAL AND SOCIO CULTURAL TRANSFORMATION IN TARLABAŞI

#### Setting in Tarlabaşı District Before the Expansion of Tarlabaşı Avenue

In the early  $17^{th}$  century, the area where today Tarlabaşı is located was totally occupied by Moslem cemeteries. However, from the early  $18^{th}$  century the population of the Pera district begin to increase and the dwelling expanded to Tarlabaşı, Tepebaşı and then to Dolapdere (**Çelik, Z.**).

The importance of Tarlabaşı results from its prestige as the first place where first western urbanization practice in Istanbul was applied. Particularly after the fires in Beyoğlu and the Tanzimat Declaration in 1839, the structural and urban order has become more systematic. After the fire in Pera in 1870, the project of "New City" (Nouvelle Ville) including avenues, squares, theaters and hotels was put into practice here. During 1870's, both sides of the Tarlabaşı Avenue was being occupied by mostly trade offices belonging to the majorities at the time. During 1870's, Pera was the dwelling for upper classes, while Tarlabaşı was for the middle and lower classes. The same architectural movement prevailed on both districts, yet the houses were built more humbly than those in Pera. ( $\mathbf{F}$ ).

Following the Republic establishment, Turkish families began to settle in the district in rented or sold houses during 1930s. (F)



During the 1940s, there were changes in the ownership of real estates all around the country, as well as in Tarlabaşı, due to the burden on the minorities with the Wealth Tax. Particularly many working places were sold and bought by the Turkish people. The period when the Anatolian Greeks sold their real estates was the year of 1955, which witnessed the "6-7 September Incidents". The real estates left behind for some lawyers for attorney of sales were rented to newcomers to the city for real low prices ( $\mathbf{F}$ ).

The migration wave of the 1960s which influenced the whole country was reflected on the metropolises in 2 different ways. Firstly, many shanty towns were established on the state lands without permission, and secondly, the historical dwelling areas in metropolises were occupied. Tarlabaşı was one of the most influences areas in İstanbul. The one-family houses which were evacuated after the previous incidents were separated or rented to bachelors for very low rents or were occupied (A).

Tarlabaşı became one of the most preferred areas for migration, due to its closeness to city center and to entertainment places and the abundance of abandoned buildings which were easy to occupy. Therefore, the stock of historical buildings was abused and the wrecked buildings became even more wretched with their changing dwellers.

In brief, Tarlabaşı district, which housed the minorities during the time of Ottoman Empire was changed after the Republic. Today, the population of the district is approximately 31 thousand, with 78% migrants. Tarlabaşı became a district for the poorest in the society, with no social security and denied by the society, after 1940s (**B**).

To list the chronological development of Tarlabaşı and the events influencing the district from the Ottoman Empire until today:

**<u>1956</u>**: The Tarlabaşı district became an area for dwelling after the opening of first embassy building of United Kingdom there. **<u>1850</u>**: Quarters were established in the district. **<u>1910</u>**: Number of apartment buildings was increasing. **<u>1930</u>**: Almost all of the residents of Tarlabaşı belong to minority (Armenians-Anatolian Greeks). Following these years, Moslem families began to settle in the district. **<u>1940</u>**: The district underwent drastic changes due to the burden on the minorities by the Wealth Tax. 1955: The minorities began to leave the country as a result of the 6-7 September Incident. **<u>1960</u>**: Domestic migration and changes in the ownership of real estates in the region led to settlement of low income groups.

<u>1977</u>: In the construction plan of the municipality, Tarlabaşı Avenue was projected to expand as a 20 meter-wide road with 4 lines. <u>1978</u>: Higher Board of Monument found the plan unfeasible and the region was declared as a sire area. <u>1984</u>: The Ministry of Tourism established a protection plan for the Tarlabaşı district. <u>1985</u>: The Be-Sam project for İstanbul or Essen plan intended to expand the road in the Tarlabaşı Avenue once again (Akıncı, N. F., Şenyiğit, Ö., 2003).


## Setting of Tarlabaşı District after the Expansion of Tarlabaşı Avenue

After the year 1955, the district became a resident for the first migrants from Anatolia, especially of the single men. However, the real physical change in Tarlabaşı was realized in the second half of 1980s. During the decade, 370 buildings on both sides of the Tarlabaşı Avenue were expropriated and demolished. The fact that 167 of these buildings were registered caused great discussions among the public. The demolition which began in April 1986 lasted until 1988, and as a result, the Tarlabaşı Avenue, which links Taksim to Tepebaşı, was established. This attempt spoiled the historical relation between Beyoğlu and Tepebaşı and the structure of the district (Akıncı, N. F., Şenyiğit, Ö., 2003).

The alleged reasons for the project were establishing a transportation network in the city and solving the traffic problems. However, the demolition started in 1986 was aimed at eliminating the slum view of the area. Despite all these, Tarlabaşı is still a district which seems slum today  $(\mathbf{F})$ .

The sinking area witnessed establishment of production facilities in time, with small production workshops spreading on the side streets and hence the sinking in Tarlabaşı was accelerated (F).



Figure 3: Aerial Photo of Tarlabaşı District

#### (Kerem Arslanlı)

#### **Physical Change**

Tarlabaşı was established in 1535 as the residence for the senior executives of the embassies in Beyoğlu, as a result of the interstates embassy system initiated by the French, and as the workplace and residence of the Levantines and non-Moslems who lived in Beyoğlu. The architecture of the area is like a small copy of the houses on the Cadde-i Kebir (İstiklal Avenue). The Demolished Buildings, which could not compete with the İstiklal Avenue in terms of façades and molding, was the small and humble residence of lower income groups.

Today, nearly 90% of the buildings in Tarlabaşı are almost 100 years old, with balconies and high ceilings and walls of 70 cm thickness. Almost all of the buildings have a small yard at the backside. The area of the houses is between 35 and 100 m2. In general, the buildings are 5 storeys but there are also those relatively lower or heightened with unregistered storey, though rare. The streets are narrow.





Figure 4: All Demolished Buildings

(Kerem Arslanlı)

## Socio-Cultural Change

From the mid  $19^{\text{th}}$  century, Armenians and Anatolian Greeks began to settle in Tarlabaşı and after the republic, Turkish families came to live in the district during 1930s (**Çelik**, **Z. 1986**). After 1950s, the area absorbed great migrations from eastern and southeastern Turkey. Today, the Roman people living in the district try to continue with their traditions, yet tired of the criminal incidents (**F**).

350 qualified buildings on the Tarlabaşı Avenue were demolished without permission in the second half of the 1980s and the Tarlabaşı Avenue was opened, which led the district to be isolated from Taksim and become a closed area. After the opening of the Tarlabaşı Avenue, the Beyoğlu province was isolated from the sub-dwelling area of Tarlabaşı via a wide transportation axis and the integrity of the historical building islands in the district was spoiled with the demolitions (**F**).

The concept of "urban wreckage" was referred as "dark areas" and "slum" in the history of urbanization and was dealt with the concept of "ghetto" in socio-cultural terms. The concept of "urban wreckage" has emerged as a result of lacking preservation policies for the quarters in the city center that were spoiled in parallel to post-industrial development of the cities, especially after 1960 ( $\mathbf{E}$ ).

Tarlabaşı, which has become "urban wreckage", has a social profile which houses urban poor, besides physical wearing out. This social group is the sector of the society which lives in the city center and works in the lower service sectors and even in the marginal sector. The district which has become an isolated area of wreckage where marginal sector workers and migrates live in group is a part of the identity of marginality and criminality today.



#### <u>SUGGESTIONS OF SOLUTIONS FOR ARRANGEMENT OF TARLABAŞI AVENUE</u> <u>CONNECTIONS IN COMPLIANCE WITH THE SETTING OF TEPEBAŞI</u>

At the end of 1980s, a contest titled "Project for Preservation and Arrangement of Tarlabaşı" was held by the İstanbul Municipality, to relieve the consciences and to bring a new air to the district, which was changed drastically with the opening of Tarlabaşı Avenue. However, today the district tells us that the project has not been applied.

On 16 May 2005, Tarlabaşı as well as some other districts in İstanbul were declared the area of renovation under the Law of Renovation of Cities no. 5366 on "Renovation and Preservation of the Frayed Immovable Cultural and Historical Assets." In this framework, a project was established to renovate the historical buildings in compliance with their original status and to expand the used area of the small buildings. The objective is to renovate the interior side of the buildings freely provided that the façades are preserved. Therefore, the project aims to transform the historical buildings of Tarlabaşı into cultural and touristic areas.

The primary objective is stated as elimination of industrial production places and providing more space for dwelling of the people, with hotels, restaurants, entertainment places and areas of cultural and artistic activities. It is also reported that the construction works on the İstiklal Avenue, near Talimhane, basically aim at the abovementioned objectives and that shall trigger the social and commercial life (**D**).

On the other hand, the problematic of Tarlabaşı has been dealt on an academic basis as well. Prof. Dr. Alper Ünlü reports that 28 building areas will be preserved the same, 113 buildings will be restored, 37 will be demolished and rebuilt as the original and 78 will be demolished and utilized for specified functions, with the "Project for Rehabilitation of Wreckage Areas of Beyoğlu" (C).

The project aiming for rehabilitation of Tarlabaşı aims to make the district a center for tourism with cultural activities and accommodation opportunities for the students, just like Talimhane which is nearby. However, some architects agree that "Rehabilitation of Tarlabaşı means killing the district." The idea defends that infrastructural problems should be solved, yet the cultural diversity should be preserved (uia İstanbul Congress, 2005).

## **CONCLUSION AND SUGGESTIONS**

The route / axis of Tarlabaşı are very important for the transportation network of İstanbul. On the other hand, the axis of Tarlabaşı is an important input in the reviving project for Beyoğlu. The problem of Tarlabaşı is not only one of land usage and transportation planning. The area should be considered as a tool for development of social and economic structure of the region. In the dwellings with a historical wealth, the changes and transformations should be based on projects established by interdisciplinary studies, rather than instant decisions. Applications with narrow scale may lead to unpredictable results on a wide scale, and thus to irretrievable traces.



This process, referred as "spoiling and wrecking" concentrating in the center is closely related to the concept of "urban quality." Planners have long been studying the relations between the size of cities and the life quality of the dwellers. However, despite all the studies, Tarlabaşı has insisted as a slum area until today.

The expansion of the road has not helped to solve the problem. The district which establishes a bridge between the historical peninsula and Taksim requires a primary work plan for urgent intervention, as it is a wrecked area. The problems of the area should be solved with a diverse interdisciplinary study, for the sake of continuity of our historical heritage which is acknowledged worldwide.

The area is close to the urban dynamics due to its location. Taksim, which is a strong and dynamic area, is the intersection of important dwelling areas such as Şişli and Nişantaşı. It is also close to the center of the historical peninsula, which is in strong interaction with the region. Hence, the avenue of the Tarlabaşı district is intensely trafficked. This reminds the possibility of alternative transportation vehicles, such as subway. The load should not be on the highways and the intermediate pay-pass roads should be established for connection. These pay-pass roads should be diverse including motorways, seaways and light rail systems. The roads shall inevitably be shaped to maintain the integrity of the city. Therefore, use of the district as a dwelling area seems more appropriate due to intense traffic, as explained above. The tourists wandering about the streets will be satisfied with the visual effect of historical buildings.



Figure 5: Circulation Diagram of Tarlabasi Avenue

On the other hand, the dynamism of the dwelling should be considered as well, because every action included in the area will contribute to the intensity of the district. This means rising problems, which is not desired. The area should be revived. The people who accept their living place as temporary should regard themselves as permanent residents. Therefore, decorating the buildings exterior like a cake would be in vain. The district should be approached as a décor of theater stage. The first steps should be "courses of reading and writing, vocational courses, artistic activities" to enhance the social structure of the district. Today, many courses are held in the district, such as "Beyoğlu 75<sup>th</sup> Year Children and Youth Center", to contribute to education of the young population of the region and to provide social activities. The aim is to help the young population of the district to develop their energy positively in the right place.



It is believed that the ideas defended above cannot be realized by personal attempts, that they require teamwork and that such a project can only be applied with participation of the local administration, professional institutions, universities and non-governmental organizations, through and interdisciplinary study. Therefore, the renovation project for Tarlabaşı is one of long-term and requiring serious teamwork.

The demands of the participants under the law of "Renovation of Urban Structures" should be considered by the local administrations and interpreted for application. The studies under this law should not be transformed into an attempt of "image architecture".

In brief, the region should be considered in an integrated plan including infrastructure, property, transportation, social change and economic conditions and determining examples of civil architecture on a serious level. Therefore, the change influencing the whole city should not offer a solution to damage cultural continuity.

The problems in dwelling should be resolved on a platform where different experts are involved, instead of instant solutions. Consequently, the plan for development of the country should eliminate the "puzzle" understanding and should highlight the preliminary project studies.

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# THE DETERIORATION REASONS AND REHABILITATION SUGGESTIONS OF DIYARBAKIR HISTORICAL HOUSES IN THE CONCEPT OF CULTURAL HERITAGE

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This study is about the ancient, historical houses of Diyarbakır Sur Ici. The aim of the study is examining the deterioration of these houses with their reasons; producing the rehabilitation programme suggestions with their environment for reusing.

In the paper, emphasis on examining the reasons for the deteriorations, along side some ideas for rehabilitation and suggestions were applied.

The scope of the study was limited to cover only a part of Diyarbakır Sur Ici. This study was carried out on ten different historical houses which are located in the Southwest district of the Sur ici area, where the original structures have not yet been destroyed over time and modernization.

For this purpose of the survey, it has been aimed to determine the relation of the inhabitants to the comfort with in their homes. A questionnaire was completed by each of the residents of these 10 houses.

Firstly, taken into account were their social degrees, income, main habitation, number of the family and education was determined. This was followed by their required use of these houses being observed and proved of conservation.

As a result of this questionnaire, the reasons of deterioration were classified into two subtitles. These are functional deteriorations, physical deteriorations.

The rehabilitation suggestions for Diyarbakır historical houses were examined with the result data collected from this research.

Consequently, this study is so important in determining the historical cultural structure and also has an importance in the scope of the history of architecture for defining development and variation periods. The study shows the great importance in the concept of sustainability.

Key Words: Functional Deterioration, Physical Deterioration, Historical House



#### 1. Introduction

The city Dıyarbakır is situated in the middle district of Southeast of Turkey. From ancient times, the district of Dıyarbakır has been situated on the intersection of the roads, which connects Black sea to Mesopotamia and also reaches to Azerbaijan and Iran. Therefore, the city has a great importance in every period of history [1]. The habitation of Dıyarbakır Sur Icı had been located on basalt plateau. It is on the west side of Tigris River with the height of 650 m. from the river. On the South west of the district, the inactivated Karacadağ Volcano with its black lava is located [1]. Dıyarbakır has a subtropical climate because of its location. The summer time is hot and dry because of the effects of low pressure that comes from Persian Gulf. The hot days begin in the middle of June and continue till the end of September. The hottest days are in July and August. The wintertime is very cold. The prevailing wind direction is northwest in Dıyarbakır [2]. From the ancient periods of the history, Dıyarbakır, has the necessity of habitation and preservation together. Therefore, city was surrounded by walls. This is one of the best examples of the boundary of open an area. The necessity of living with in the boundary of city walls, brought limits to the city and therefore the city was developed along these boundaries (Figure 1,2) [3].



Figure 1: The view of Diyarbakır



Figure 2: The walls of Diyarbakır

#### 2. Diyarbakır Historical Houses

The houses are generally in east-west and north-south direction. In this way, the most inconvenient parcel of land could be placed perpendicular or close to each other. In the houses there are open, half open, half closed and closed parts according to the user needs. The parts such as room, main room, back room, chest room, and kitchen are closed parts. Eyvan<sup>3</sup> is half open and courtyard is open. In the houses that belong to rich people, it can be seen that the number of rooms increase, the courtyard widens, a new room "selamlık"<sup>4</sup> which is only for male guests is added, main doors are in different sizes. Additionally, larders and kitchens can also be seen [4]. High walls curtain the connection between the street and the house. Because of discretion, the lives in the courtyard are hidden from the street and the neighbors. The idea of discretion privacy the formation of the building fronts, too. The fronts that face the streets generally have no windows. In the ones open, the windows are either closed by wood shutters or by bay window. They are built in a way over eye level. The windows that oriented through the courtyards in various sizes also have various arches. So the plan typology was developed with the concept of climate and discretion[5].

<sup>&</sup>lt;sup>3</sup> Eyvan: An open space of historical Diyarbakır houses that has arches in front of the area

<sup>&</sup>lt;sup>4</sup> Selamlık: The part of large Muslim house reserved for the men



## 3. The Deterioration Reasons in the Dıyarbakır Historical Houses

Diyarbakır has various cultural inheritances with its historical richness and geographical location. But this cultural inheritance, which has various historical and traditional importance has been subjected too much deterioration until these days. These deteriorations can be seen in different types for every building. It causes the loss of the buildings originality either partially or completely. It's possible to examine the deterioration reasons in the Diyarbakır historical houses into two major headlines [6]. These are functional deteriorations and physical deteriorations.

#### 3.1. Functional Deteriorations

The social, economical and technological properties that occur in every society show differentiations according to the changes about the needs in time. These differentiations cause usage and functional changes in buildings. Generally, the function which can be described as the sustainability in usage, face to face with the deteriorations when the building become inadequate for users needs or can not respond the needs of the comfort in time[6]. The deteriorations that occur on the available function, plan and façade of the historical buildings, change the originality of these buildings. This kind of deterioration is called as "functional deterioration".

In recent years, the increasing of the migration of people from rural areas to the city, caused a disorderly and rapid urbanization. With the forming of new habitation areas in Diyarbakır, some families, who have high-income level left these historical buildings, and moved to these new habitation areas [7]. They let the historical houses to the low income level families. This caused the beginning of functional deteriorations in these houses.

The reasons, which occurs the functional deteriorations, are so many. These include subjects that are from the areas in the build up, plans sanitary installations, horizontal and vertical circulation elements, quality to the particularity of materials color, size, structure and form that are used in the buildings.

The functional deteriorations that are occurred in many historical houses of Diyarbakır can be seen in different types for each building. The functional deteriorations that occur in these houses are mostly seen in the "eyvans". Generally in summer these are the places which provide conformability to these buildings used as balcony and terrace, but the existent functions of eyvans had been changed by closing with different types in order to form a room or a hall. These changes cause, the loss of the originality of historical houses completely(Figure 3,4).



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Figure 3, 4: The Deterioration of Eyvans in Diyarbakır Houses

The result of the unconscious usage of buildings like this, many houses that have historical values are destroyed and loss its originality. It is possible to give more examples about the functional deteriorations that occur in Diyarbakır historical houses. Also the closing or changing the dimensions of doors and the windows with different functions and form that are existent in the houses can be given as the examples of functional deteriorations.

In Diyarbakır historical houses, it has been seen that, range of walls and window partitions in façades, were done in a careful design. Except this range, making any differences on these façades can cause the loose of the originality of the houses.

## 3.2. Physical Deteriorations

Physical deteriorations are deterioration or worn out of the whole buildings system or components that occur in course of time because of the external effects of the buildings. It can be also called as the deterioration of the materials and structures in the buildings [6].

The physical deteriorations that are made inside, outside or whole of the historical building which affects their originality occur as the result of physical interventions. It's possible to examine physical deteriorations in two subtitles. These are structural deteriorations and material deteriorations.

#### 3.2.1. Structural Deteriorations

Structural deteriorations which occur as a result of interior or exterior interventions to these buildings by expensing or reducing some spaces. The structural deteriorations in Diyarbakır houses generally occur making an extension with concrete or any material that is not suitable for the buildings or using the spaces for different aims [8]. The users choose this way because some parts of Diyarbakır historical houses, are being worn out and can not be arranged according to the modern life standards. The users have great trouble with the usage of the toilet, bathroom and kitchen in these houses because these spaces were designed apart from the building. Because of this, extension inside or outside of these mentioned spaces to the parts that considered as living spaces, are the main reasons of the structural deteriorations.



In course of time these houses meet with the deteriorations by dividing into the parts for living of different families together or by changing according to the own needs of these families. In these houses the service spaces especially kitchen, bathroom and toilet are created difficulties because of the usage of more than one family. These difficulties because of the division of historical houses cause to form new service spaces by changing or messing up the existing spaces. Almost all of the formed service spaces are weak and in increase the quality of deteriorations.

The factors that cause structural deteriorations can examine in two headlines. These are interior Factors, exterior Factors [8].

\* Interior Factors

These deteriorations occur because of the interior arrangements of the buildings. If these are examined;

The maintenance can not be done continuously because the buildings are old and worn out,

More than one family live in these houses, and use the service spaces (kitchen, bathroom and toilet) commonly and not being utilizeded to expected the modern life standards. This is the most important factors that has increased the structural deteriorations.

The transforming of some existing spaces as rooms into service spaces (kitchen, bathroom, toilet), and not being laid to available installation which is not suitable to the building, increase the usage life of the historical buildings.

The transferring of ownership, more than one owner and variations which are done out of the preservation rules of historical buildings, increase the structural deterioration for the usage of more than one family.

As the result of the physical operations, especially added parts done by owners or mentors without any rules are the reason of cracks and also effects the load bearing system of the building negatively.

Abandoning some of the buildings by their owners with any reason and becoming free to outside be the factors, increasing the building deterioration.

Diyarbakır historical houses have been designed for different living styles and patriarchy family structure. Because of that they couldn't be adapted to modern living standards with their existing situations and they are used either too low or too high levels of their structural potential. So these increased the structural deterioration in a big scale.



#### \* Exterior factors

The external factors are the structural deteriorations occurred in the buildings with the environment of the building. External factors can be divided in to several groups. These are; User's effects, Natural disasters, Fires, Climate condition, Insufficient Foundation, Traffic etc.

**User's Effects**; One the most important effect of the user's that increases the deterioration of the buildings is unable to protect their originality or abandon the building.

As the result of renting these buildings, causes extra deteriorations, also absence of the conscious of the preventing the originality of the buildings is the important effect that are triggering the deteriorations.

**Natural Disasters**; Disasters like flood, earthquake causes especially deteriorations of a part of traditional buildings and also destruction of the buildings. One of the usage defects in Diyarbakır historical houses is, placing the toilet, bathroom and the kitchen that takes place in the courtyard, inside the building. Kitchen, bathroom and toilet have been placed in the courtyard of the Diyarbakır historical houses. Therefore replacing them unsuitable another places in the building causes on unhealthy spaces.

**Fire**; Traditional structure components i.e. wooden ceiling, wooden floor used in the buildings have the risks of vanishing after a fire. Unconscious use of the buildings have great role for these disasters in some circumstances.

**Climate Conditions**; the continental climatic conditions of the region, increases further the deterioration in these buildings. Unrepairing the destructions that have occurred previously or trying to repair them with unsuitable materials causes the buildings to be worn out more.

**Inadequacy of Infrastructure**; Diyarbakır historical houses are located in the Sur içi site, surrounded by the city walls. This place is the original habitation area of Diyarbakır. The results of rapid population growth have carried out the problems of foundations. Designing the water and sewer systems according to the old structure, causes a lot of problems in this region. Especially the problems occurred in the service system, effects the buildings importantly and becomes accelerating effect of the deteriorations.

**Traffic**; Traffic is one of the most important deteriorations reasons occurred due to the external factors. Due to the fact that the streets are narrow and also have been designed according to the pass of a phaeton, create difficulties in the operations against disasters or deteriorations. Insufficient of the streets according to today's traffic and not being able to expend the streets with respect to protecting aim planning forms a big handicap in the repairing, restoration and restitution phases of the buildings.

3.2.2. Material Deterioration



# There had been many deterioration reasons because of the usage of materials as blocks of clay, stone, wood etc. in traditional houses.

#### These are;

In historical houses of Diyarbakır, building components are stone, block of clay and wooden materials that provide traditionality, increase the cost during the restoration period. Decrease in the number of crafters, experienced about the traditional building technology and expensive fees of the worker's pay owners to employ few work and cheap materials.

Not having periodical restoration; difficulties in usage of service places as bathrooms, toilets and kitchens in these buildings, forms some new spaces with the same function of service places. This situation forms discordance among the materials and increases the deteriorations from the viewpoint of materials.

The insufficiency of the foundation, usage difficulties because of foundation and unconscious damages to these buildings, increase material deterioration.

The weather in Diyarbakır is very hot in summer and very cold in winter. As the result of not having restoration, there are deteriorations on the top cover and façades of the buildings due to raining and snowing. The basalt stones which were most used in Diyarbakır houses, broke off the beds and leaked the rainwater inside them cause material deterioration.

While roof cover is damaged or unrepaired, rainwater leaks and increases material deteriorations especially in wooden ceiling beams.

#### 4. Rehabilitation Suggestions

The historical areas that had been protected with some protection rules just 1970's, has been destroyed by rapid urbanization, the immigrants who migrate from rural to cities with low income. They choose these areas because they are the cheapest habitations for them. It should be the case that the structure containing cultural history of community had to be protected and saved for future.

It is also noticed that the historical Diyarbakır house architecture has to be protected and rehabilitated.

For this aim, the rehabilitation of historical house sites has been examined under two groups. These are rehabilitation recommendation in environmental scale and rehabilitation recommendations in house scale [8].



## 4.1. Rehabilitation Suggestions in Environmental Scale

The house that are used for living, gives an identity where they are located. Therefore it reflects the structure of the located environment. Rehabilitation should be begun from environment instead of the house itself.

#### \* The Suggestions about Infrastructure

The region of the historical Diyarbakır house structure is in the first settlement place of the city. The increasing settlement population, changing user requirements and needs put pressure on the infrastructure of the city, and more in historical region. The structure destroyed by water and canalization systems, modern traffic arrangements, green land needs etc.

To solve problems mentioned above, the water and canalization systems have to be upgraded to cover today's requirements. The land of demolished houses should be reorganized in the city center. To obtain better approaches to those problems, the municipality and the state divisions have to work together. It is too important that the people at the city put more effort helping institutions for more environmental friendly city.

#### \*The Suggestions about Maintenance and Restoration of Streets and Roads

The most important peculiarity of Diyarbakir historical house structure was the roads are crosssectioned. This road structure helped better air circulation in settlement. Today this peculiarity has been lost because of new houses.

First of all, the new building constructions which were not built in the historical environment. If this is necessary, the building has to be compatible with environment and strictly controlled by municipality according to urban plan.

Roads covers were originally made of basalts in historical sites. Canalization canals were made with low declination and the canals were 2m. under the road. Nowadays, the original roads have almost been destroyed; some road covers were taken off. The result was that the originality of the roads was lost, that was because of maintenance.

The roads should have been properly maintained according to their uniqueness and originality. The canalization system, which was used for a long time, should have been repaired and upgraded for reusability.

Making new roads or extending old roads had also effect the historical environment. The scenery and physical structure were destroyed.

Advertisement boards on buildings had dirtied the historical scenery. Uncovered telephone and television antennas wires, huge electrical poles and untidy streetlights seem not convertible with the environment.



Covering the historical houses has created the extra load on the construction. Thus the structure of the house could be affected badly. These kinds of the unattended loads should be removed from the building so their destruction effects can be minimized. To regain an original view of the street, the wires of all kinds should be removed. Telephone wires and television antennas wire should be centralized for common use.

#### \* The Suggestions about the Interfering of the Contradict Buildings in the Structure

To protect or rehabilitate the historical houses is not compatible with unearned income economy. Rapid and untidy growing and renewed cities create high land prices, which are increasing steadily. It is also observed that the destroyed or demolished buildings in historical environment are occurred for constructing new buildings. This ruins the historical structure. Legal demolishing of historical houses and high cost of maintenance and repair put pressure on the owner of the house to sell the property.

It is also noticed that the unconscious users of historical houses also have bad effects on historical houses. All these problems have resulted that the building, which is in bad condition, is demolished. So new land can be used for other options such as Greenland or building a historical house again.

The observation results; the new construction of the houses is not compatible with historical environment. This result has to be stopped.

To prevent any new settlements in the historical site, it has to be strict legal legislations. Right planning policy and commitments will prevent new building constructions. It is also necessary that the land which is the result of demolished the old houses should be used as green lands. Even the constructed buildings that are not original in historical manner should be demolished and the land should be used as green land.

#### 4.2. The Rehabilitation Suggestions in Structural Scale

The construction technology has been dramatically changed over a period. Thus the maintenance and requirement of the historical houses became difficult. It is also well known point that the requirement is always an expensive procedure. The owners of the historical houses are mainly middle and low-income classes. The owners cannot be economically available to repair the house; therefore, the owners could not provide enough money for house repair. Financial problems and unconscious users ruin the usable historical house structure. It is noticed that it is better to demolish the house if it need 50% and more repair cost [8].

#### \*Material Suggestions

The historical house materials such as adobe, wood and basalt are difficult to obtain nowadays. This causes some problems on the repair of historical houses.

During the rehabilitation process historical houses, new usable materials could be compatible with old ones but the selection and application of new materials have to be done by experts.



#### \* Structural Suggestions

It is observed that the upper parts of the Diyarbakır historical houses deteriorated as can be seen in other historical houses everywhere. As a result the users have solved this problem one way to the other, but the result is not good. This is because of using materials with incompatible with the house and inexpert.

It is noticed that the deteriorated upper part of the historical house was concreted. This is not the original structure. Therefore, the concrete top should be removed from the house roof and replaced by wood as traditional material and structure. Replacement has to be completed carefully without giving any damage to the house. If the damage is unavoidable, the concrete roof can be covered by wood.

This may be the ideal solution.

It is also recommendable that the application of traditional materials can be used as a cover of other concrete structure. Thus, the traditional view can be obtained.

Carriers in the historical houses of Diyarbakır have been damaged by earthquakes. Some cracks and separations on the walls and floors have been observed. In the case of these, the building has to be supported by props. The reinforced application and destruction of extension have to be reconsidered to regain traditional structure of the house.

#### \*The Suggestions for Toilets, Baths and Kitchens

In the original plan of the historical houses of Diyarbakır, there is no bath, kitchen and toilet in the house. These places were located outer part of the house. For instance, the toilets were placed in the garden far away from the living place. The bath was not placed or placed in a cupboard as named "gusulhane". The kitchen was never suitable in modern manner.

The house was either divided parts or changed original structure by users. The historical houses suppose to be was enough for one family but this was not the case. The family was big and therefore the house was never suitable.

It is also noticed that new corners changed and/or extended some places in the house. Thus the originality of the house was deteriorated by these changes and extensions. The result was unhealthy and unusable property.

The originality of the house must be protected. The original plan has to be used for answering modern requirements. Incompatible extensions have to be removed.



## \*The Cleaning of Inside and Outside Paints

The migration from rural to city has been a major problem in Diyarbakır. This has affected all parts of the social life. As a result, the traditional house texture has been also affected. The migrated people have been low incomer and they have never considered the history in modern mean. These people have used the traditional houses as living places, because the owners of houses left the places. There was a case that the historical houses became cheap accommodation for low incomers.

The migrated people have also brought their life style to the traditional houses. This was resulted some extensions for animals such as chickens, cows etc. The extensions and some times the traditional houses were painted with cheap paints and labors. This caused problems particularly covering original stones and their artworks. The same problems were observed on doors and windows. Traditional world artworks and relief were lost. To overcome these problems mentioned above, the unoriginal covers have to be removed and original shape and view have to be maintained. The doors and windows have to be paint in original their colors.

The users of the historical houses should be well-educated about the place. They should have the aim and conscience to protect the house for next generation. It is well known reality that the historical house will be kept in original shape and plans if the user is its original owner. This is because of saving family ties and memories. If the use is not the owner, the house will become a basic need for accommodation or ordinary house for them. It is also known fact that if the users are well-off they will look after the historical house properly. This is an important factor that they will never extend the property and destroy its originality. The financial resources have to be obtained for revitalization or reservation of the historical houses. Those will make high living standard, better traffic management and better cultural impact. Long term credits should be provided for reservation, technical support has to be obtained for maintenance

#### **5.** Conclusion

House architecture is the most important factor to reflect social structure, living culture and civilization. Therefore, there is an organic relation between Turkish house and their settlements. This relation produces the data about Turkish community structure.

Today, these historical environments that have all developments of the community from past till now, are faced to the problems as neglect, abandoned and pressure of unearned income.

The changes in social structure of habitants, economic crisis and natural disasters can obstruct the development or destruction of habitations. Some city structures have been left to destroy; high population and new city roads have affected the city structures. The structure of the city has become monotonous because of high habitation rate without controlling environmental structure. Thus, the cultural collection of centuries has been lost. The destroyed house architecture is not only architectural or esthetics document for the city but also it represents historical and social richness of the community.



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# EFFECTS OF ENVIRONMENTAL FACTORS TO CULTURAL AND NATURAL HERITAGE OF PAMUKKALE

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In this study, the sources of environmental problems of Pamukkale settlement and tourism facilities are investigated along with the environmental rules and regulations of Turkey.

The considered data in the framework of the protection of the natural heritage and sustainability of the Pamukkale area are wastewater and solid wastes, thermal springs, pollution of travertine terraces, abrasion of antique ruins, vehicle emissions and noise, the warped arrangements in the electric and telephone lines, the sign boards of traders, facade materials of buildings and landscape applications.

As a result, for maintaining the protection of Pamukkale and environs which owns a cultural and historical heritage in the framework of sustainable environment and the principles of sustainable development, the pollution should be treated and the region should be protected.

The efficient usage of natural resources and energy, minimization of waste generation in the source and the usage of environment- friendly waste recovery technologies should be used in decision making process. Solution proposals are presented for the protection of natural and cultural resources. These proposals will be useful for the continuity and the protection of the cultural heritage and in this way the characteristics of the living in the region will be transferred to the next generations.

Keywords: Environment, Natural and Cultural Heritage, Pamukkale, Sustainability.



## INTRODUCTION

Environment has obtained a more significant dimension while conservation and continuity of cultural and natural sources are being taken fundamental. "Environment is a natural, artificial and cultural surroundings in which human beings maintain their lives and generations and participate in the mutually interaction" (Arat, 1996).

Environment becomes a problem with the increase of the necessities of human being in the time and the decrease of the natural sources as the opposite proportional with these necessities. A lot of activities as the necessities of human being, unconsciousness of human being and consumption of everything in an incredible speed have brought the world sources into the today's form. If the environmental problems are the changes of the situations in the ecosystems which arises from the human's activities, this situation will become with the transmission of the three factors as known to consume, to change and to add of the ecosystem and sources of the world.

A type of the environmental sources is historical origin of the built environment and the other is the product sample of the relation between product and source which has wider practice in the cultural heritage.

Conservation of natural areas, archaeological sites and historical monuments become necessary for the sustainable use of the tourism regions. For the improvement of the tourism, being removed of the property of being environmental problem of the industrial development and to obtain the ability of control of the use of natural sources are needed (WTO, 1983).

Being one of the sensitive subjects of today, environment necessitates more important determinations by bringing solution alternatives especially in the extent of the "Protected Special Areas" and also in tourism regions.

Pamukkale is one of the regions of Protected Special Areas which has an ecological importance, natural, cultural and historical presences and is needed to be conducted to the next generations and in this way it has to be compulsory of supplying the sustainability of these characteristics with conservation and development decisions. Due to these characteristics the sustainability of the property of the natural and cultural heritage should be obtained by scrutinizing the process of conservation and planning, existing situation, environmental criteria, environmental factors threaten to the region of Pamukkale.

In this context, the solution proposals are presented by analyzing the threats and opportunities of environmental factors upon the region for to be protected of natural and cultural sources and presences, and to be prohibited environmental pollution and destruction and improving its quality. These proposals are aided in to carry the characteristics of the living in the region and transferring to the next generations as obtaining the continuity and protection of cultural heritage of Pamukkale.



#### CHARACTERISTICS OF PAMUKKALE: NATURAL AND CULTURAL HERITAGE

Pamukkale takes part in the zone of Aegean Region and in the north part of Denizli city. Pamukkale becomes a known district in the world and also in Turkey with its natural beauties and historical ruins. Pamukkale takes part in Çürüksu Valley of small Çökelez Mountain with the height of 400 meter from the sea level and it spreads to the plateau with the width of 900.000 square meters. This region is named "Pamukkale" because of the aspect of the travertine terraces which resemble to the cotton masses (Temel Britannica, 1993).

This region is wealthy from the point of view of historical heritage. In this region a lot of antique cities are founded due to the appropriateness of the climate. In Pamukkale, the Laodikeia, Hierapolis, Colossae and Tripolis which are the great and important cities of the ancient period (Photo 2-3). Of these antique cities Hierapolis which is the subject of important historical occurrence and Pamukkale are in the same place. The region constitutes importance with the characteristics of thermal water city of antique Hierapolis city. In this region traces of Seljuk and Ottoman term have been seen besides the traces and antique cities of antique era.

The elements that form the natural values also take part in the region. The travertine's and thermal springs in Pamukkale and Karahayıt are the most important values of natural heritage. Pamukkale has a natural and authentic nature history due to the formation of thermal water (Photo 1). The period of the thermal tourism include longer than the others with its capacity, location and mild climate.

The town Pamukkale, Denizli and its nearest environment is a protected special area with its thermal source structure, environment, architecture, antique city and archaeological value, nature, topography, established tourism centers, natural and archaeological sites, travertines and spatial structure and urban identity. Consequently, region has carried a sensitive importance being into the exacting researches for the conservation and sustainability of the natural, historical and cultural heritage.



Photo 1.Travertines



Photo 2. Sight of Laodekia Antique City





Photo 3. Hierapolis Antique Theater

The legal status of the area is formed with the decisions of Turkish conservation laws listed below.

Firstly, the High Council of Historical Heritage and Monuments registered and declared Pamukkale and Hierapolis as a "First Degree Archaeological and Natural Site" on 12.13.1980 and the High Council of Preservation of Immoveable Cultural and Natural Properties reapproved the boundaries of the site according to the Conservation of Cultural and Natural Properties Law Act No. 2863, on 12.7.1983. Consequently the site was defined as a "First Degree Archaeological Site".

The areas "...which are sensitive to environmental pollution and deterioration and have ecological importance on a national and world scale, and where necessary organizations may be used in order to save the natural richness for future generations..." are considered as "Protected Special Areas" in the Article 9 of Environment Law. In this context, the Board of Ministers declared Pamukkale/Hierapolis as a Protected Special Area on 10.22.1990.

This Protected Special Area includes the boundaries of the town of Pamukkale. The developed part of the town is now located to the south of the travertines and the ancient city of Hierapolis. Pamukkale Municipality has certain responsibilities with this site according to the Municipality Law Act No. 1580.

However, the Law of Conservation of Cultural and Natural Properties and the Environment Law require responsibilities for the site to be concentrated with central authorities, and therefore the municipality has not had an active role at the site so the municipality has provided certain maintenance services.

Meanwhile, in 1982 Tourism Development Law Act No. 2634 gives the Ministry of Tourism the right to declare touristy areas and places where high priority may be given to development on account of the existence of scenic areas and sites of historical and cultural interest (Pamukkale Site Management Plan, 2002).



Regional and local development plans for the area are listed below;

- The first planning study for the conservation and development of Pamukkale started in 1989. Studies which are used in the preparation of the "Conservation and Development of Pamukkale (Hierapolis) Archaeological and Natural Site" were completed in 1991. The Izmir Second Conservation Council of Natural and Cultural Heritage approved this plan on 2.10.1991 with the decision No. 2172.
- Before the planning studies in 1990 "Regional Plan with 1/25000 Scale" was prepared by the Ministry of Environment evaluated and remodeled the Authority of Protected Special Areas evaluated and remodeled this regional plan with 1/25000 scale and approved on 13.08.1991.
- Master Plan with 1/5000 scale and Conservation Plans of Pamukkale/Hierapolis with 1/1000 scale were constituted accordingly.
- Prof. Dr. Emre Madran prepared a report of the Pamukkale Master Plan which has characteristics of evaluating the existing situation and assessing the realization of the 1991 Plan decisions as part of Turkey's Cultural Heritage Project in 2000.
- According to the Article 9 of Environment Law, The Directorate of Protected Special Areas has been completely authorized in the area. In the case of Pamukkale, the Directorate allows the site to be managed by the local units, since it is a First Degree Historical Site.
- In the site Italian Excavation Group has been studying since 1957. Excavations in this site have been allowed by the General Directorate of Monuments and Museums on behalf of the Ministry of Culture.
- Italian Excavation Group and the Directorate of the Museum have conducted the restoration studies and the İzmir Second Conservation Council of Cultural and Natural Heritage has approved the studies.
- The Directorship of the Museum is responsible for the maintenance of the site. The regional police department is in charge of the security of this site.
- The Pamukkale Municipality, the Karahayıt Municipality, and the Denizli Municipality have the proprietorship of the site as stakeholders.
- The Thermal Hotels in Pamukkale have constituted a union named as PATERO. This union has some missions in the policy of current value, activities, and standards as well as to develop projects for Pamukkale.
- The stakeholders of the site have gathered in an organization which is commonly referred to as the Advisory Board since 1992. The Advisory Board conducts meetings with the agenda which was prepared by the Ministry of Culture and makes advisory decisions on the activities at the site and its surroundings.

But some difficulties and problems with legal status of the area have been existing as followings;

In Pamukkale/Hierapolis the number of authorities concerned with legal, financial, and management are too many so this causes confusing in the processes of decision making. Process of decision making is very slow and it sometimes does not take place or there is no implementation and close contact with the site and there are no local people in existing situations (Pamukkale Site Management Plan, 2002).



## ENVIRONMENTAL FACTORS IN PAMUKKALE:

#### Water Pollution:

In Pamukkale before 1991 the tourist sites and hotels polluted the area and so the colors of the travertines have gradually become darker, yellowish and brownish and this is especially noticeable at the end of summer season. The hotels take the hot water directly from the springs to their swimming pools and give back the polluted water onto the travertines. This process has several adverse effects for the travertines and Pamukkale (UKAM, 1994; 1995; Elhatip 1997). The other reason of the colorization of travertine is the lack of a sewage system in the past. Each hotel has an underground septic tank and it is also very close to travertine. These tanks mostly leak wastewater to underground that emerges at the bottom of the terraces (Şimşek et al., 1998).

One of the most important damage to the surface of the terraces is caused by animals or people walking on the travertines. Thus they cause the deformation of calcite crystals and impediment of the formation of the new ones. To prevent these situations, the white travertines and water outlets are to be conserved by fencing in and walking on the white travertines are to be prohibited strictly. The artificial travertines are built for walking on them (Simşek et al., 1998).

Today the Directorate of Protected Special Areas has conducted the plant of sewage and wastewater treatment of the area. Pamukkale town, Karahayıt, Akköy, Yeniköy and Develi villages benefit from this plant. 140 km sewage pipeline spread in the area for treatment and discharge of wastewater in international standards. Another wastewater treatment plant is constructed in Akköy and this plant is designed for the population of 33.000 and it meets the flow rate of 2016. The management of plant is transferred to the regional union. The Authority of Protected Special Areas has done another financial contribution of 167,000 YTL for the drinking water supply between the years of 2003-2005 (http://www.ockkb.gov.tr).

#### Solid Wastes and Related Pollution:

In the sites as Pamukkale/Hierapolis waste disposal is a serious problem from the point of view of high rates of tourist activities and appealing natural attractions. Waste disposal which is in improper situation can be a major despoiler of the natural environment, viewpoint areas, roadsides, water elements (http://www.uneptie.org).

The most important factors to consider about solid wastes in Pamukkale area are design and implementation of waste handling system on site, sorting of solid wastes at source, economic and rapid collection and removal from site, transportation to sanitary landfill under construction by local municipality.



## Site Pollution:

The secondary pollution source is dust which is spread by vehicles by using a road from the town of Pamukkale which cuts through the travertine terraces. The other factor is the tourists walking on the travertine terraces and swimming in the associated pools. Vehicle and pedestrian access to the site was also considered as threatening the historical remains in Pamukkale/Hierapolis (Denizli Governorship, 1992).

Key planning proposals in the 1992 Preservation and Development Plan were:

- It was planned to forbid walking on the travertine terraces.
- A program was to be formed to use more thermal water for whitening travertines and to whiten a more extensive area of travertine terraces.
- The road which leads from Pamukkale town to the middle of the travertine terraces would be banned to the vehicle traffic but only used by pedestrians.
- The five hotels on the site and housing in Ören District were to be removed. In this process the authorities compensate to the hotel owners. The site of the hotels will be used for the observation terraces and simple facilities for refreshments, toilets and protection areas from the sun can be offered.
- The gates of the site in the north and south were to be used to ban vehicle entry to the site. The main entrance to the site will be the north gate which is on the road to Karahayıt.
- The access within the site would be restricted to pedestrians or special purpose vehicles. The special purpose vehicles were to use a route of north-south between the travertine terraces and the archaeological ruins. The pedestrians were to use a walkway running north-south and east-west through the city ruins of Hierapolis.
- A Pamukkale Preservation and Development Union were to be constituted to coordinate the implementation of these proposals for the site (Yüksel et al. 1999).

#### Noise pollution:

It is a kind of technological pollution. With the development of technology, human being has used a lot of devices in their works. Motorized traffic vehicles, recreational vehicles, private airplanes, snow vehicles, etc. are some of them. In Pamukkale sweeping vehicles of the area, motorized vehicles, music, human being, facilities, vibration of the sound are the risks of sound pollution for the natural and cultural heritage.

#### Crowded Pollution:

It is related with the carrying capacity of the area. The demographic elements, number of vehicles, crowded of traffic are the significant pollution of the environment of Pamukkale.



## Visual Pollution:

Visual pollution is an important environmental factor which signifies the aesthetic pollution of the physical environment. These criteria are the elements of visual pollution also in Pamukkale as they are seen below:

- Disharmony of the scale in built environment with the natural environment, local architecture
- Unsuitability of the building materials on facade
- Planning and design errors of the facilities
- Unsuitability of the landscape
- Irregular use of the commercial signs
- Unsuccessful design of the building entrance
- Ugliness of the electric and telephone lines
- Incorrect perception of the sight of the environment (Buhalis and Fletcher, 1996).

#### CONCLUSIONS

Pamukkale has been a regional focus of native and foreign interest due to the characteristics of natural, cultural and historical structure. Growing numbers of visitors and growing interest in thermal tourism will bring many more people to the site. This is certainly an opportunity, but might become a threat if not properly managed.

This significant region is exposed to serious threats from the point of view of conservation and maintenance of natural and cultural heritage. Environmental factors are the most important of these threats. Below, various solution alternatives are presented for the sustainability of Pamukkale.

- Inspection of master plan for water resource management and solid waste in Pamukkale area. The master plan should have an integrated approach including issues of afforesting, resource conservation, and waste management in addition to water harvesting, supply and sanitation.
- Infrastructure problems should be solved. Correct infrastructure (electric, water, communication, etc.) only presents in the North and South visitor centers. To complete the infrastructure deficiency, the administration and presentation models of the site area must define certainly.
- Energy and telephone lines should be taken underground for the visual effect.
- Thermal water conservation areas of Pamukkale and Karahayıt are protected against to pollution.
- The new concrete water distribution canals should be rearranged
- Pollution of travertine by clay transported with rain water should prevent.
- After whitening the travertine, the thermal water should be collected in a channel to be used for other thermal needs.
- A container system for garbage must be obtained. Segregation of solid wastes into wet and dry; door to door collection of wet waste on daily basis. The wet waste should be composted and the dry waste must be recycled (<u>http://static.teriin.org</u>).
- Dust pollution should be prevented



- Visitor facilities, including toilets, should be installed on-site. A shuttle service connecting the hotels with the village and the site should replace private car access.
- The site should be closed to traffic access, and panoramic view terraces should be constructed.
- The connection network is scrutinized again
- Roads to the north and south gates should be illuminated and landscaped.
- Awareness must be created amongst local people and tourists.
- Building capacity and training programmes should be developed for government officials and other stakeholders.
- Vacant treasury plots of area should protect.
- Activities of sport, music, congress and fair should be organized in the shape of not causing crowded and noise pollution.
- The restoration of the historical heritage should be done by giving them function
- Pilot projects need to be undertaken to demonstrate the technology, benefits and suitability of techniques for the region. Such initiatives should be developed with participation from the community where the beneficiaries also contribute monetarily.

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# ECO-DESIGN APPROACH IN FURNITURE DESIGN

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The purpose of this paper is to show the approaches of "*the design in conformity with the natural processes*" which takes into consideration of the furniture with the effects on environment during the lifespan starting from the design phase and continuation with the production phase. The designs in conformity with the natural processes require to use the elements such as being broken into fragments, recycling, re-using, re-meaning, updating, being used instead of another thing, with the materials environmentally friendly. In this paper, the design in conformity with the natural processes is mentioned as "*eco-design*". Eco acquires a meaning which maintains the reduction of the concepts of both economy and ecology together. Eco-design, in this sense, is used as *design environmentally friendly*, which contributes to the economy. Eco-design combines environmental factor with design. The designs, which reduce the effects threatening the environment and human health at the minimum rate, re-define using life of the product and material in different dimensions and enable it to reuse, can be defined as "eco-design". What aimed in this paper is to show the "eco-design" approaches in conformity with the environment in all phases which determine the life circle of the product, such as: design, production, use, recycling, reuse.

#### **1.ECO-DESIGN FURNITURE**

One of the important investments to environment is the design approach to direct the production-use-reproduction circle as being aware of the industry-user-environment needs of the designers. Traditional approaches aiming development and conservation of the environment conditions are based on the solutions inclined to preventing of pollution or waste. But these approaches are focused on reducing the present pollution, without taking into consideration the design phase.

This is still a disposable world, as anyone can see from the vast amounts of garbage dumped every day into landfills around the globe. But a growing number of manufactureres and designers want to change their methods. By rethinking how things are made, they hope to eliminate waste, or recycle it back to the earth or to industry. To to this, the entire life-span of a product is being reconsidered, from initial design to the end of its useful life. They call it cradle-to-cradle thinking.Figure 1. It may sound utopian, but it is actually becoming a 21 st-century reality [1].



**Figure 1:** Jonas Hauptman's reseat line are made of reconstituted North American aspen wood flakes held together with formalde-hyde-free adhesive. The furniture isn't strictly cradle-to-cradle, because not all the materials are recyclable. But the small amount of wood it uses will quicly biodegrade composted [2].

The furnitures coherent with natural processes are created during the design process. The design process of furnituer requires some significant questions to be asked as below:



- What are the main purpose and the usage area of the furniture?
- In which way of the furniture is used?
- What is the size of the furniture?
- What is the physical life of the furniture, which is to be planned?
- Is it clear that the design targets ensure the easiest way of maintenance, disassembly and recycling of the furniture?

These questions play an effective role for the designer to focus on introductory points of *"eco-design"* aproach, as well as on answers and solutions to be able to attribute the first ecological impression to the product. However, the design approach in conformity with the natural processes requires a teamwork not only for the designer, but also for the companies, a teamwork between the several departments of the company, such as purchasing, marketing, research and developlent, environment, health and security, quality control departments.

The eco-furniture design approach is that the product is created and developed considering the design desicions in furniture design such as cost and time efficiency, increasing the quality of furniture and its using life, decreasing the use of input materials and energy resources during the production stage, together with the whole economic, functional, aesthetics and ergonomics criterions which are affective on the design procedure.

In the eco-design approach, while the furniture is just in the design process, structural and material choices become important. These choices should be as below:

- The minimum use of materials.
- The use of recycleable materials and decreasing the energy use to the minimum level.
- The design with the materials which aren't composit.
- Designing the furniture to be dissambled into the parts.
- Ensuring a long using life.

To design in conformity with the natural processes, designers can suggest fewer materials, mainly steel, plastics and aluminum, and rely on mechanical fasteners instead of glue to put the chair together, such as Steelcase' Think Chair. Figure 2. Disassembly is a key part of the ecodesign furniture approaches. If materials can be taken apart, furniture can be recycled. If they are mixed together, that can not happen. Materials end up being remade into other furniture, such as park furniture, just one step away from the local dump.

Disassembly is only a start for the eco-design furniture. Designer can measure the furniture's impact on the environment throughout its life cycle. Their analysis consider the ecological effect of procuring raw materials and manufacturing, transporting, using and disposing of the furniture.







**Figure2:** Disassembly is a key element of the eco-design furniture approaches. Steelcase's Think Chair is 99 per cent recyclable and can be taken apart inless than five minutes [3].

## **2.PRODUCTION**

As a necessity of consumption economy, to get a product to be consumed as soon as possible, the producers have been accelerating the production speed by giving a new aesthetics values to the products of which the basic function is the same. Rapidly increasing population and the motivation of the new products offered to the consumers as in need increase the consumption speed. But these products, in a short time, turn into "garbage" and the environment enter into a process that it can not dissolve this garbage by itself.

Another important point in eco-design approach is the recyclable costs. Design approaches should be focused on to be able to provide "the conformity of the furniture with the natural process" consuming little energy, by paying attention to energy consuming necessary for recyclable. So, economical and environmental factors should be thought of in each phase of the design and it should be provided that the producer firms take part in this process.

In 2002, Steelcase, the world's largest office furniture manufacturer, took up the green design cause and set to work on making a chair that was good for people and the environment. Office chairs, it turns out, are not as benign as one might think. They have been accused of depleting the ozone, polluting air in offices, even disrupting harmones and raising the risk of cancer. What's more, they are rarely built to last. According to the U.S. Environmental Protection Agencey, an estimated three million tons of office furniture is chucked into landfills each year in the United States alone [1].

The issues to be considered in the production stage by the designers are shown below:

- the use of non-renewable materials,
- production processes,
- the amount of energy consumed in the extraction / processing system and how energy use can be minimised (local production, reduced transportation, renewable energy),
- finishes (many coatings contain harmful emissions for the atmosphere and for our health).



#### 3.USE

We can not update an interior easily but the furniture is the equipment that we update easily in constructed environment. In furniture groups, the furniture that are the mobile elements of the interior, are updated often by user. User needs to change very often his furniture that is an important element of the constructed environment, according to the value system updated, as a result of the tastes motivated and changing at times. At this point, the unsustainable furniture that turn into garbage products, give importance to eco-design approaches. Environmental consciousness is related to concepts of creativity and originality in this sense. Together with new technologies, new needs have caused the product to be redesigned, and so, a new circle to start. A similar product or function is presented to consuming society with different aesthetics appearance and price differences. Therefore, by the consumers' desire of having a new product, the furniture which completed their consumption period should be designed "in conformity with the natural processes" without becoming garbage. Concept of sustainable architecture and sustainable environment can acquire a meaning only if they are dealt with within all scales. Eco-design approaches evaluated in all scales from industry product to design of the architectural environment, should be taken into consideration for an environment sustainable in conformity with the natural processes.

The consumers having environmental consciousness think that in the purchasing decisions, *eco-designs "in conformity with the natural processes*" are much more effective than the others. The defined codes inclined to producer-designer-user mean the standards of the furniture should have and also provide their variety. Strengthening the codes of this triangle inclined to the user is important in way of making the user conscious individually. It will be a good step for making the consumer society more conscious on this subject that *eco-design codes* include the features related to environmental consciousness and the meaning of the life circle, shortly, they explain the consumption period and recycling story of the furniture. Apart from this, new technologies have provided that the artificial materials get an organic and natural appearance. This appearance of the materials is a deceptive condition for consumers in determining the recycling feature of the design. So, eco-design codes gain importance in informing the consumers.

Unlike many other types of industrial products, furniture uses few resources in use. So moving beyond concepts of resource use and wastes produced, the largest impact of furniture in the use phase is how long furniture is used. The biggest environmental consideration for furniture designer is to question the purpose and determine the applicable useful lifespan of the furniture.

We are in close contact and relation with the furnitures in different ways such as eating, sleeping, resting and working activities. Even we make some furnitures especial belongings by attributing them specific meanings. For example, people have their favourite sofa - they form relationships with meaning of furniture. This meaning may have little to do with cost but much more to do with the aesthetic and subjective qualities of the furniture. These are important issues for designers to consider when contemplating product lifespan, use of resources and customer delight. Furniture which we use our home tends to be bought with longevity in mind. Therefore good quality workmanship and the use of materials that age well are often the best design choices for promoting durability. Although furniture does suffer from obsolescence, it does so less than other product sectors.



Furniture obsolescence does not necessarily equate to final disposal but instead to secondary reuse through auctions, flea markets and other formal and informal mechanisms of exchange such as jumble sales, family hand-me-downs, fates and local adverts. Durability is exception to furniture design. Some people with less money, or those with a more nomadic existence might purchase furniture on purely a functional and cost basis. They do not see furniture as an investment for their home.

But require the utility of furniture to live more comfortably. In such cases disposable, shorter life furniture might be more appropriate than more durable alternatives. Figure 3.



**Figure 3:** IKEA for example, produces 'SoftAir.'- a lightweight, blow-up plastic furniture concept aimed at those who have limited disposable income and those who want versatile furnishings. SoftAir is inflatable like its early relatives and is relatively durable. IKEA sell the SoftAir range with a 10 year guarantee but even this timescale is perhaps less 'durable' compared to that of more traditional furniture (100 years +). The total reduction of materials, energy, transport and stock volume of SoftAir (compared to conventional furniture) adds up to 85%, with the materials being 100% reclaimable and recyclable [4].

Office furniture can have different lifespan concerns to those of the domestic furniture. Instead of selling furniture to customers some office furniture suppliers design and sell space and focus on optimising the overall office function of which furniture is a part, for their clients. This is often viewed in the context of an overall service and thus the provider may lease the furniture which, after a specific time, is returned, reused, disassembled and eventually disposed of. This is one way of dealing with the changing nature of the workplace driven, for example, by desk-sharing, tele-working, and opportunities that new technologies and process of working bring to the traditional office environment.

## 4.RECYCLE

Anxiety is mounting concerning the prodigal way in which we are using up the Earth's capital assets. For some time environmentalist have been urging us to live off the interest and preserve the remaining capital. The furniture industry is the sector which carries the most guilt in this respect with its voracious appetite for raw materials. This has led to mounting pressure to employ recycled materials. If designers only make a product recyclable, there will never be a demand for recycled materials in the future. If there is a demand for recycled materials the supply will follow certainly.



How can the recycling of a design which reaches to the user be provided? Recycling is to develop a strategy which determines the life circle of the product, while at the design phase yet, rather than a strategy inclined to provide the re-use of the product which has completed its consumption period. Figure 4.



Figure 4: Recycling is to develop a strategy which determines the life circle of the product [5].

Extending furniture durability is the general eco-design goal of the furniture lifecycle. This means trying to design furniture to avoid the pitfalls of furniture obsolescence through changing tendencies of fashion and interiors. While this might not be so much of a problem for more traditional furniture, it is an issue for shorter lifecycle furniture, office furniture, public furniture - furniture that has little scope to develop person-product interactions other than the pure functionality of the piece. Furniture is less likely to be valued when the issue of ownership becomes blurred or, in other words, people don't tend to look after stuff that isn't theirs.

Furniture can be produced from a wide variety of materials. Such variety means that the environmental impacts of furniture production also vary quite depending on the materials and processes chosen. Some materials are based on nonrenewable resources, such as metals and plastic. They both require considerable amounts of energy to process them into usable forms for production. Both metals and plastics do not stand up environmentally well on the surface to alternatives such as timber. But, they do have some plus attributes. They are particularly durable and will withstand a range of various conditions. Unlike wood they do not necessarily require a great deal of protection such as coatings, finishes to enhance durability. For outdoor furniture and extreme weather conditions, some protection may be required. Furniture tends to have a relatively longlife in comparison to many other products. Therefore using such materials undoubtedly enhances the lifespan of the product. For instance, using a chrome element in furniture may introduce a unique feature which the owner becomes very attached to. The meaning of furniture conveys deep debates on aesthetic qualities. Just as many other issues need to be acknowledged it is therefore very difficult to quantify the environmental credentials of furniture based on analysis of materials or production techniques.



On the other hand, some metals and plastics have more environmentally damaging extraction and production processes than others. As a general rule the use of recycled materials is a better environmental choice than reliance on virgin materials.

The table below illustrates the energy used in processing virgin and recycled materials and the comparative percentage energy savings made by using recycled material.

Table	1:	The	energy	used	in	processing	virgin	and	recycled	materials	and	the	comparative
percen	itag	e ene	ergy sav	ings n	nad	e by using 1	recycle	d ma	terial [4].				

Energy needed to	Amount of				
Material	Virgin ore	Recycled material	energy saved by recycling (%)		
Steel	8300	7500 (40% scrap) 4400 (100% scrap)	10 47		
Aluminium	134,700	5000	96		
Copper	25,900	1400-2900	88-95		
Plastics	49,400	8800	23		

The furniture examples to be considered recycled material in the production stage by the designers are shown below. Figure 5, 6.



**Figure 5:** Material: seat from 75% recycled plastic or recycled paper. Steel base 15% recycled steel. Design: Colin Reedy. 1995. The chair is essentially two monomaterial parts which permits easy future recycling. The steel frame is welded and painted with a powder-coating process. The seat shell, from recycled plastic or paper, rests on the steel frame and is easily adjustable. Plastic shell: compression-moulded sheets of 2mm postconsumer recycled plastic are cut out.



After being heated in the oven, the flexible shell is clamped into moulds of the correct shape and allowed to cool. Gridcore body: the recycled paper seat shell is laminated in 3 layers with wood adjustment spines glued into place. Its easily adjustable slant, may be upholstered or stained with waterbased dyes. No mechanical fasteners are used, the seat shell is welded. This production process minimizes energy usage and applies no toxic substances. In addition, all material scrap is returned for direct recycling to create a system of zero-waste [6].



**Figure 6:** Design: Cassina Inter-Decor Japan Inc., 1992. Meterial: 100% recycled paper and steel or aluminium rods. The seat and back are 100% recycled paper shaped with thermosetting resins to which heat and pressure were applied. The structure consists of tubular or aluminium rods [6].

## **5.REUSE**

Much of the environmental focus of the past has been concerned solely with the production sphere. But all kinds of take-back or reuse systems that enlarge the lifetime of a piece of furniture are equally relevant. Market institutions such as second-hand dealers that enable furniture reuse prior to final disposal are already popular and well established in many European economies. Other business concepts such as sharing or leasing furniture have only a niche status in the economy and need further development, exposure and testing.

In brief, the aim is to extend product life through design for durability, reuse, refurbishment and materials recycling to keep furniture out of the solid waste stream, by:

- avoiding colours or designs that go out of fashion quickly;
- avoid glues, metal clamps and screws in favour of 'push, hook and click' assembly;
- the use of in-mould labels rather than paper and plastic labels which can be mistakenly washed off or removed [4].




**Figure 7:** Bale Chair is an ingenious way of reusing material. It's made of moulded plywood certified by the FSC (Forest Stewardship Council), and the webbing straps are 100 per cent recycled polyester [7].



**Figure 8:** Wilkhahn Picto Chair.An office chair designed to have a long life. The product is made for easy repair, disassembly and reuse and can be recycled up to 95% The number of parts are mechanically joined, without glue. All plastic parts weighing more than 15g are marked for identification. to aid collection and disassembly end of life Wilkhahn has developed a system for taking back the product and remanufacturing it after the initial use: the cloth covers are detachable for cleaning, repair or replacement [8].



**Figure 9:** A reception desk which is part of a range of modular open office furniture, made of recycled, organic or reused materials, organic paint and won back PVC masking strips. Eco-Work proves that ecological materials, if intelligently applied and sensibly produced, may serve as a source of creative inspiration [6].



### 6.CONCLUSION

Just because of the limited and scarce resources on the world, like in the other fields, the ecodesign criterions should be taken into account also in the furniture desing and production. Ecodesign furniture approach created and developed in design statge. The design approach in conformity with the natural processes requires a teamwork not only for the designer, but also for the companies, a teamwork between the several departments of the company, such as purchasing, marketing, research and developlent, environment, health and security, quality control departments.

Eco-design approaches evaluated in all scales from industry product to design of the architectural environment, should be taken into consideration for an environment sustainable in conformity with the natural processes. Design approaches should be focused on to be able to provide "the conformity of the furniture with the natural process" consuming little energy, by paying attention to energy consuming necessary for recyclable. So, economical and environmental factors should be thought of in each phase of the design and it should be provided that the producer firms take part in this process.

Design approaches should be focused on to be able to provide "the conformity of the furniture with the natural process" consuming little energy, by paying attention to energy consuming necessary for recyclable. So, economical and environmental factors should be thought of in each phase of the design and it should be provided that the producer firms take part in this process.

To assemble around a global value such as ecological and environmental issues can change the vision of producer, designer and also consumer. The quality of our existence is directly related to the quality of care we show for our environment's realities. There are lots of things that ecodesign can do in socially acceptance of the furniture.

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# A NEW APPROACH TO INTEGRATED APPLICATIONS IN CULTURAL HERITAGE DOCUMENTATION

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The cultural heritage is a unique expression of human achievement and it is continuously under risk. There must be some instructions and technologies to be applied in preserving them for the future. Recording is one of the principal ways available to give meaning, understanding, definition and recognition of the values of these objects. The conservation and maintenance of the cultural heritage should not rest only on the shoulders of the owners. Combined efforts of the professionals, politicians and administrators working on different levels are needed. For the preservation of the cultural heritage a technical documentation which enables to establish plans allowing developing suitable alternative approaches for protection is necessary. The saving methods of the cultural heritages are supported by modern technology. Using the advanced technologies in the disciplines other than architecture and by cooperation among the different fields, the future of cultural heritage can be guaranteed in order to save the historical objects and areas. It is necessary to organize the plans and works covering the necessary technical documents of the objects and lands to preserve these objects and lands. With the help of these documents, it will be possible to reach the desired information for the works carried on these objects and lands. The information system generated by the use of digital photogrammetry and Geographical Information System together will enable any person interested in saving the cultural heritage to reach the necessary data. As mentioned above, integration of photogrammetry and GIS leads to the efficient use of data, analysis and presentation opportunities, which are very important for saving the cultural heritage. The aim of this study is to use this technology for the photogrammetric documentation of the cultural heritage and to enable the use of the documentation by using GIS.

### Key Words: Photogrammetry, Cultural Heritage, GIS

### INTRODUCTION

Architecture is a substantial part of our cultural heritage. But whereas other elements of our cultural heritage may be protected by putting them behind a glass in a museum, architectural monuments are widely used and endangered by long term influences like traffic or air pollution or destructive events causing heavy damage like earthquakes, fire or war etc. But by all means when monuments are seriously damaged, or completely destroyed, the amount and quality of any surviving documentation become highly important.

Istanbul, as a fast growing, diverse city with a distinctive, unique character, is divided into Old European Istanbul (Historical Peninsula), New European Istanbul, Asian Istanbul, Western Districts, Golden Horn, Bosphorus and Princes' Islands. Today, Istanbul, a dynamic mega city with a population of about 12 million, 5512-km2 land area sits on two continents is Turkey's the largest primate city (Bliss, 2005). In Istanbul, there have been unsustainable land use changes as a result of the intensive migration. Istanbul, being the most crowded province of the country, is located on the north-west side of Turkey and it houses 45% of the industries in its vicinity.



Land area dedicated to residential use is even on both sides. It is the largest metropolitan center of Turkey and it accounts for %20 percent of urban population. The overall annual population growth for the city was reported to be 4.4 % in 1985-1997 periods, which was approximately two times higher than the country's average of the same period. Between the years 1975 and 2000, the population of Istanbul has increased from 3 904 588 to 10 018 735 with an average annual increase rate of 6.2 %. Starting from the 1950's, Istanbul has been affected from the severe social and economical changes at the national level resulting in migration to the city and the growth of population. These changes have even become more significant within the past two decades which caused many environmental problems. Istanbul has experienced a very long and rich history. The role as capital city to numerous empires throughout its development has left Istanbul with exclusive architectural and urban features. Located on two continents (Europe and Asia), Istanbul is the largest city of Turkey with a population of over 10 million. It is a combination of a very rich historical background and a modern appearance. It was enriched with mosques, palaces, foundations, schools, baths, bridges and viaducts etc. All of these historical events have taken place in the part, which is called "Old City of Istanbul" (Duran and Toz, 2002). This mega city is now facing the challenges of living in the 21st century with the effects of increasing population mostly from high rural-urban migration.

Istanbul is a combination of a very rich historical background and a modern appearance. It was enriched with mosques, palaces, foundations, schools, baths, bridges and viaducts etc. Therefore these riches should be preserved and left to the next generations with the care that such treasure deserves.

The rapid development of information technology at the end of the last century has led to the realization that without the application of modern techniques in archaeology and conservation is not possible to keep up to date of the demanding documentation processes which are directly connected with an increasingly demanding research methodology and with the documentation itself. As part of many methods of recording of culture heritage were photogrammetry is one of the techniques of data acquisition, which has successfully established itself in conservation and archaeology over the last hundred years.

Also GIS technology greatly facilitates the inventory, evaluation, preservation, and documentation of archaeological sites and historical structures. As heritage conservation becomes more holistic and historic sites are steadily becoming integrated with the surrounding landscapes, GIS has been recognized as a critical component in the development of virtual historic collections and archives (Toz and Duran, 2004). Through a variety of data manipulations and queries within a GIS, we can answer all questions that are necessary for protecting management. Besides the spatial advantage, as another major advantage of GIS systems are the possibility of integration of different data source. This is specifically important in the context of environmental impact assessments. It has already proved useful in mapping urban areas, and as data source for the analysis and modelling of urban growth and land use/land cover change (Duran et al., 2005).



Digital Photogrammetry and GIS allow us not only to edit some plans with a high degree of graphic precision and metric accuracy, but also to detect all those defects or structural and constructive degenerations that cause the minimum deformations or alterations in the formal state of the building. Also, these technologies highlight on the conventional techniques in being an open system that allows the gradual incorporation of new applications or studies as these they leave applying. As a conclusion, one can affirm that the digital photogrammetry and the GIS provide a group of advantages and benefits in the architectural tasks impossible to obtain with such an efficiency, velocity and economy by means of other procedures. These advantages and benefits are among others:

To have a graphic database of quality, on which can work in a coordinated way, all the professionals involved in the cataloguing and preservation tasks.

To provide basic instruments for the coordination and pursuit of the works and carried out studies or to develop.

To facilitate the access, manipulation and bring up to date of all the information.

To reduce the costs, so much in the obtaining of the data, like in the later tasks to carry out during the documentation process, restoration and preservation.

To facilitate the exchange of data between diverse organisms and companies whose performances can impact or to influence in the environment of the monument (Hernán-Pérez, 2001).

In our study, forming an Information System is aimed with acquisition data by Digital Photogrammetric techniques and visualizes it in 3D with GIS environments. Different queries on 3D model of object have been done by linking graphical and attribute data. Briefly, our system has two main components; a digital photogrammetric system that we constitute a 3D model of the architectural object and the data base management system that we performed a relationship between graphic and attribute data of the object.

### 2. PHOTOGRAMMETRY AND GIS

Photogrammetry is a technique whereby information about the position, size and shape can be attained. Photogrammetric products refer almost exclusively to the object space (maps, surfaces (DEM's), orthophotos, points, profiles). Photogrammetry is an important contribution to many disciplines. The most widespread use of the photogrammetric technique being for the representation of the facades or elevations of building and structures. There are many uses of the technique, including 3D city models for building repair and conservation. The 3D reconstruction of houses and other manmade objects is currently undergoing active research, and is an issue of high importance to many users of GIS, including urban planners, architects, telecommunication and environmental engineers for historical development, topography, vegetation land use pattern, transportation network etc (Duran, 2002).



Since the development of the science of photogrammetry, there have been many applications of its techniques and technology in the recording and documentation of monuments and sites of importance. Whilst there may have been a redirection of effort when aerial mapping expanded following the invention of aircraft, there has been a shift again to other measurement applications offered by photogrammetry, especially those in architecture and archaeology. Developments in the sciences of photogrammetry and image processing over the past decade or so have seen an increase in the automation of the data collection process, ranging from high precision industrial applications through to simple solutions for non traditional users (for example, 3D builder and PhotoModeler). In addition to systems that use imagery from consumer digital and analogue video systems and sequences of images have almost automated the creation of 3D models (as has the development of 3D laser scanners) (Ogleby, 1999).

The GIS is a relatively new technology that joins the computer science's advantages with the modern systems of capture of data, so that it allows the integration and the treatment of all type of information of a computer team, in a simple way on the part of any user that requires work with this information. A GIS includes software and hardware tools, and a group of procedures elaborated to facilitate capture, edition, administration, manipulation, analysis, modeling, representation and exit of spatial referenced and semantic data, to solve any type of planning, administration, storage, and so on information concerning problem (Hernán-Pérez, 2001).

With the advent of geographic information systems, a powerful method is available to store graphical and descriptive data with all their links. Digital photogrammetry and the GIS provide a group of advantages and benefits in the architectural tasks impossible to obtain with such an efficiency, velocity and economy by means of other procedures.

# **3.CASE STUDY**

# **3.1.Photogrammetric Documentation of Monastery of Christ Pantepoptes**

In this study the monastery of Christ Pantepoptes (Eski Imaret-i Atik Cami) in Fatih, was selected as sample building for the case study (Figure. 1) Fatih is situated at the slopes of the fourth hill in the Historic Peninsula in Istanbul. The district starts at the shores of the Golden Horn-Haliç, and extends up the slopes along the Atatürk Boulevard. Retaining walls reaching up to 15 meters are to be found at some spots along the Atatürk Boulevard, as well as dykes and terraces dating from the Byzantine period. These structures present an interesting view in the direction of Galata, Golden Horn, and the Historic Peninsula. (Gülersoy et al, 2001).

The images were taken with Rollei D7 metric camera with 1280\*1024 geometric resolution and 7.52 mm focal length. The images can be displayed immediately after acquisition on a 2.5" colour screen to check the image quality. The digital data are saved to memory cards inserted into the camera (SmartMedia, CompactFlash, PCMCIA Cards...). Subsequently, they can be downloaded to a computer and converted from the special Rollei RAW format into usual data formats such as BMP, TIFF, JPEG by the Rollei d-Image software.



Figure1. Study area

Photo Modeler software by EOS Systems Inc. was used for photogrammetric evaluation. The Canadian PhotoModeler Software Package is well known as a low cost 3D- measurement tool for architectural and archeological applications. It is a Windows based software that allows measurements and transforms photographs into 3D models. The image coordinates of corresponding points and control points were measured manually and the images were oriented automatically. After the facades of building was identified as surface patches, the wireframe and photo-texture model were built up using the oriented images. Afterwards, creating 3D model can be transferred to DXF format and then merged in AutoCAD. Fig.2 shows an example of photogrammetric evaluation and 3D wire frame model of the monastery model of Christ Pantepoptes (Figure.2) (Duran and Toz, 2002).

After digital data were merged for 3D modeling in AutoCAD, it was saved as .dxf file. This file was imported into Max. After editing photos of the monastery of Christ Pantepoptes (Eski Imaret-i Atik Cami) in Adobe Photoshop, they were stacked on surfaces of building by using mapping technique in material editor of 3D StudioMAX. Stacking photos on surface of the monastery made the building seem realistic (Ozaslan and Seker, 2001).

After creating 3D model and stacking photos on the building, the last step was rendering (Fig. 3). Rendering a scene or scenes (animation) by using 3D StudioMAX is possible. It is possible to export the project into file formats jpg, bmp, eps, tif or into video formats mov, avi, by using 3D StudioMAX's

In this project 3D textured model was also created in AutoCAD and in Arc View environment (Fig. 4 and Fig. 5).





Figure 2. Examples of the photogrammetric evaluation and 3D wire frame model of the monastery model of Christ Pantepoptes



Figure 3. 3D textured model of the monastery of Christ Pantepoptes (Eski Imaret-i Atik Cami) in 3D Studio MAX.



Figure 4. 3D textured model of the monastery of Christ Pantepoptes (Eski Imaret-i Atik Cami) in AutoCAD.



Figure 5. 3D model of the monastery of Christ Pantepoptes (Eski Imaret-i Atik Cami) in ArcView.

### GIS

GIS is an important tool for urban planning. GIS includes software and hardware tools, and a group of procedures elaborated to facilitate the capture, edition, administration, manipulation, analysis, modelling, representation and the exit of spatial referenced and semantic data, to solve any type of planning, administration, storage, and further information concerning the problem. GIS technology greatly facilitates the inventory, evaluation, preservation, and documentation of archaeological sites and historical structures. As heritage conservation becomes more holistic and historic sites are steadily becoming integrated with the surrounding landscapes, GIS has been recognized as a critical component in the development of virtual historic collections and archives.



We use two different kinds of databases: first one, which includes in text information, is attribute data and the second one, which has geometrical information, is graphical data. The first database is handled with Arcview 3.2, which is a GIS software by ESRI, and the second database is generated from the photogrametric digital system (PhotoModeler). Both databases are linked and managed together by the GIS software ArcView 3.2, creating the AIS. To make a relationship between graphic and attribute data, database knowledge or an attribute data belong to the related object is needed. For attribute data that should be in the AIS, a content design has been done and filled in MS Excel in DBF (Data Base Format) file format. Some of nontopographic information for feature (attributes) such quarter name, street name, door number, building functionality, basement, medium floor, roof, total floor, building condition, registration, building name, construction date, financer, architecture etc. were stored in the database table. Afterwards digital terrain model (DTM) of study area was being produced and captured with orthophoto in Arc View software. 3D city modelling allows a person to interactively fly and walk-through a given urban space. This technology has already been applied to several cities worldwide; however, it has usually been implemented for limited sections of the city only. For these reasons 3D city model of study area was being produced and linked photographs and .avi files in this project (Fig. 6, Fig. 7 and Fig. 8).

In this project, although only 3D texture model has been generated as graphical data, all the components of the attribute data have been used. It can be added the other parts of the graphical data. Besides, in any time the users can update all data.



Figure 6. 3D city model of study area and linked photograph









Figure 8. Panoramic Image Display on the Internet.

# CONCLUSION

The increasing use of close-range photogrammetry techniques for recording historical buildings and objects worldwide motivates the development of new tools for data acquisition and 3D modeling.

3D photo-models are best suited to give a clear and detailed impression of existing situations. For the generation of 3D photo-models digital images are needed.

The texture applied to the three-dimensional object model is, as far as available, taken from the photographs. If threedimensional photo-models are stored in VRML-format, it is possible to visualize and animate them on the Internet. These models can be used easily for generating an information system.

Therefore, 3D photo-models show up to be a new product in the area of planning and documentation.

It is useful to create 3D models both for planning, projects and also for presentation and visualization. In this study both photogrammetric and geodetic measurements were used together to create 3D model. It was seen that 3D Studio MAX is quite professional for creating 3D models and also for creating animations by using these models. So it is very complex to use MAX and it takes a long time learning to use it functionally.



An Architectural Information System with the modules and special archives provides the possibility for the comprehensive documentation of architectural cultural heritage. The important advantages of GIS, which are recognized through this study, can be summarized as:

the ability to integrate different types and formats of data,

allowing the classification of complex data to obtain their easy and effective utilization, providing analysis over both spatial and attribute data,

presenting an integrated environment where data produced in other softwares can be used,

offering a highly precise environment. The information system will help the public to form a view on the development process of their urban environment. The awareness for the importance of the cultural heritage will be raised.

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# AN ANATOLIAN ANCIENT CULTURAL HERITAGE, THE MIDAS MONUMENT: AN OVERVIEW

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The main purpose of this paper is to indicate importance of the Midas Monument and it's conservation that represents one of the ancient cultural heritage of Anatolia, dating back to 700-500 BC. The highlands of Phrygia lie between three cities; Eskişehir (ancient Dorylaeum), Kütahya (ancient Kotiaion) and Afyonkarahisar (Byzantine Akroenos) at the NW section of the central high plateau of Anatolia. It is believed that during the Aegean immigration of the 1200 BC, Thrace-origin Phrygians crossed into Anatolia in various groups. After the collapse of Hittite Empire, Phrygians appeared in history beginning from 800 B.C.

The Phrygians who had been the most powerful and effective in terms of social and cultural perspectives in their history, established fortress type settlements in Anatolia. The Phrygians who constructed many important settlements in the highlands around the Mount Turkmen, established the ancient Yazılıkaya Village as a religious centre. It was a famous settlement on a rocky platform in the Early Bronze Age. Phrygians developed cult monuments, rock graves, rock reliefs, water cisterns, altars, niches, rock facades and fortress walls in and around the Yazılıkaya Village. The Phrygian cultural establishments which were affected by the harsh forces of nature and several invaders, managed to survive to present days. The Midas Monument, in the Yazılıkaya (written-rock) is unique as saying "Were there nothing else in Phrygia, this rock alone would be worth the journey". It is carved on a projecting spur of the rock plateau of Midas City (Yazılıkaya). It is about 16 m. in height and 16.4 m. wide, and was built about 2500 years ago.

The rock, onto which the Midas Monument carved, consists of rather porous and easily erodable volcanic ashes that are very delicate to climatic conditions. Hence, a crack, caused by weathering, has split the upper part of the monument and therefore the middle of the gable is badly damaged and the crack is deepening, silently. Especially bottom part of the monument and two sides are affected negatively by biological activities of the lichens, as well as the capillary rise of water.

The Midas Monument that was suggested for addition to the World Cultural and Natural Heritage List is without comparison anywhere on the world. World wide attention is needed to survive and to sustain this world heritage.

Keywords: The Midas Monument, Conservation



## **1 INTRODUCTION**

The Phrygians who had been the most powerful and effective in terms of social and cultural perspectives in their history, established fortress type settlements in Anatolia. The Phrygians who constructed many important settlements in the highlands around the Mount Türkmen, established the ancient Yazılıkaya Village as a religious centre (Figure 1-2). It was a famous settlement on a rocky platform in the Early Bronze Age. Phrygians developed cult monuments, rock graves, rock reliefs, water cisterns, altars, niches, rock facades and fortress walls in and around the Yazılıkaya Village. The Phrygian cultural establishments which were affected by the harsh forces of nature and several invaders, managed to survive to present days (1) (2) (3) (4).



Figure 1 . Location Map of The Study Area



Figure 2. General view from the Midas Monument and Yazılıkaya Village (4).



# 2 THE MIDAS MONUMENT

Haspels, in her very well documented book titled as "The Higland of Phrygia, Sites and Monuments", wrote that young English Captain W.M.Leake was the first man in the history who discovered and reported the tombs and monuments carved in the rocks lying in the Midas Valley. This discovery by Leake marked the beginning of the archeological exploration of the Phrygian Highlands. As quoted from her book "The Midas Monument, (Figure 3) Yazılıkaya is unique." "Were there nothing else in Phrygia, this rock alone would be worth the jurney." It is carved on a projecting spur of the rock plateau of the Midas City where it stands out, isolated ,against the clear sky, aloof and impressive (1).



Figure 3. The Midas Monument (16 m. in height and 16.4 m wide) (Photo, N.Oruç 1984)



It is carved on a verticad rock surface. It is two-dimentional, shaped like a house façade and covered entirely with geometrical designs. A deep intentation like a shallow niche is suggestive of a door leading inside, ever since Leake's discovery. The Monument has been known as the **"Tomb of Midas"**, a name given by him because the words **MI** $\Delta$ **AI** and **FANAKTEI** could be read in the larger of the two inscriptions, the one above the façade, to the left (Figure 4). On the outher edge of the right-handed side post the second inscription extend upwards the monument (Figure 5).



Figure 4. Inscriptions on the upper left of the monument.



Figure 5. Inscriptions on the outher (Archeological Museum, Eskişehir) edge of the right handed side post of the monument. (Archeological Museum, Eskişehir)

It was indicated that a satisfactory solution to the meaning of these inscriptions has not yet been found. One of the difficulties is that the material is limited by the frequent recurrence of the same word or group of words. However the evidence of epigraphy points toward the early dating of the oldest monuments in the later part of the eight century B.C. (1).



## **3. CONSERVATION OF THE MIDAS MONUMENT**

The region of the high lands of the Phrygia is known as the country of the Mount Türkmen. The greater part of the Mount Türkmen is covered by volcanic tuff, belonging to Neogene period. It is generally known that tuffs consist of quartz, biotite, plagioclese and opaque minerals. Herewith, the main rock unique of the Midas Monument also belongs to the Neogene volcanic sedimentry rocks. The tuffs remain in good condition as long as they are dry, they tend to disintegrate when exposed to rain or to the heat of the sun after frost.

The outer zone of the Phrygian Highlands lies at an altitude of about 1100 m. to 1400 m. above sea level. A typical continental climate prevails in the region with hot and dry summer, and rather cold and snowy in winters. The temperatures in winters are -5 and -20 C° and 30 to 40 C° in summers. The Midas façade faces east which increases temperature chances great deal. The features of the tuffecous material and harsh environmental factors speeds up the deterioration of the Monument. In addition to these acidic and salty droppings of the rock pigeon and swallow birds nesting in the broken akroteria are harmfull for the cracked area and the monument (Figures 6 - 7). Beside the capilary rise, biological activities of the lichens influence and weaken the lower parts of the monument (Figure 8).





Figure 6. Rock Pigeons (Photo, N.Oruç 1984)

Figure 7. Swallow Birds. (Photo, N.Oruç2006)



Figure 8. Lichens at the bottom of the monument. Figure 9. Badly damaged akroteria and crack (Photo, N.Oruç 1984) on top of the monument. (Photo, N.Oruc 1984)



Haspels (1) indicated a crack, caused by weathering, has split the upper part of the monument, and therefore the middle of the gable is badly damaged. It is also observed that the middle part of the decorative akroteria has been damaged in the past (Figure 9).

There are several studies in relation to providing engineering geology data for the structural conservation of the Midas Monument. A research team from the Engineering and Architectural State Academy of Eskişehir, made several field studies in the region and prepared a preliminary work report that indicated short and long term suggestions for the conservation of the monument(5).

Ayday and Göktan who did a preliminary engineering geology study regarding to the conservation of the Midas Monement, indicated that two types of the tuffs (white and pink) are the main rock units of the monement and the source of damage on the façade of the monement was a pre-existing discontinuity which was thought to exit potentially at the time of the construction. The bottom part of the monument is greatly influenced and weakened by the capillary rise and by the biological activities of lichens. The weathering processes have contributed to the growth and extention of the crack (6).

Binali, Kasapoğlu and Gökçeoğlu determined the variations of some parameters of the rock samples, collected from the monument area, under freezing-thawing cycles at laboratory conditions. They found out that the white ignimprites at the lower level were more affected by freezing – thawing cycles then the pink ones at the upper level freezing and thawing was considered one of the important processes contributing physical weathering of the ignimbrites examined(7).

According to Topal and Sözmen (8)(9), the Midas Monument, which was constructed within white and pink tuffs, have deterioration problems. They indicated that the feldspar minerals were mechanically fractured due to weathering. The chemical weathering of the tuffs , produced weathered zones, which were 4,5 cm and 2,5 in thickness within white and pink tuffs, respectively. An approximately 1 cm silica rich zone have developed under the lichen cover on the pink tuff. Pigeon droppings were noticed to be the main source of soluble salts and salt crystallization was considered the most destructive environmental factor. Spalling of the tuffs in capilary zone was related to the salts transported up by capillary. Hence, they suggested that these depths should be considered in the course of conservation works and surface water and salts in the close vicinity of the Monument should be totally elaminated for the conservation.

### 4 CONCLUSIONS AND RECOMMENDATIONS

The rock, onto which the Midas Monument carved, consists of rather porous and easily erodable volcanic ashes that are very delicate to climatic conditions. Hence, a crack, caused by weathering, has split the upper part of the monument and therefore the middle of the gable is badly damaged and the crack is deepening, silently. Especially bottom part of the monument and two sides are affected negatively by the biological activities of lichens, as well as the capillary rise.



More detailed geotechnical investigations and discontinuity analysis should be carried on the Midas Monument and it's environs for proper consolidation treatments. Since the Midas Monument is without comperison anywhere on the world, it should be added to the world cultural and natural heritage list by the **UNESCO**. World wide attention is urgently needed to survive and to sustain this world heritage.

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# REHABILITATION OF HISTORICAL BUILDINGS OF ODUNPAZARI – ESKİŞEHİR – TURKEY

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Eskişehir is located at NW of central Anatolia and according to recent archaeological excavations; it is one of the oldest settlements in the history of Asia Minor. Eskişehir has become a Turkish home since 1097, following the Seljuks who conquered the region. Herewith, Odunpazarı was the core of early inhabitation for Turkish people in Eskişehir.

Odunpazarı is the only section of the city which retained the traditional civil architecture up to date by preserving its customs and traditions with its winding roads, blind alleys, houses with wooden decorations, projectures and inner courts. There are several cultural heritages such as mosques, fountains and registered buildings. However, because of devastating effects of climate and social-economical burdens, a very large number of these buildings have become almost ruined as years passed on.

Odunpazarı Quarter is officially listed as *Historical and Urban Protected Area* comprising about 70 hectares with neutral zone. Within the protection zone, there are 182 registered, 16 monumental and 116 planned buildings. The main goal of this paper is to introduce the conservation works of *Historical Odunpazarı Buildings*, conducted to preserve the cultural heritage of traditional civil architecture in Eskişehir.

Keywords: Eskişehir, Odunpazarı, street rehabilitation, cultural heritage

# 1. INTRODUCTION

Eskişehir is a medium-sized Anatolian city to the South East of Bursa and the last major stop before Ankara (1). It is an important crossroads and among the major cities of Turkey with its two universities, developed industry, modern agriculture and sophisticated cultural life. Moreover, it holds the third place after Izmir and Ankara in terms of human welfare development (2). Geographically, Eskişehir province consists of plains, which are surrounded by mountains and plateaus. Porsuk River is an important water body and a valuable source of recreation flowing throughout the city. The climate is mostly terrestrial.

Eskişehir has been an important settlement from the ancient times. For thousand of years, the city and its surrounding area have occupied an important intersection for different cultures, which made their home on Anatolian soil. The region has accommodated many civilizations throughout history. "Eski Şehir" which literally means "Old City", derives its name from its historical background and has been a major residence of Hittite, Phrygian, Roman, Byzantine, Seljuk and Ottoman civilizations, traces of which are still visible in and around the city (2;3).



In every period of history, Eskişehir has had a dynamic composition. Lying near the site of the ancient Phrygian city of Dorylion, the present city probably began in Byzantine times as a cluster of settlements around hot springs. The scene of a crusader victory over the Seljuk Turks in 1097, it came under Ottoman control near the end of the 13th century. Especially following the last quarter of the 1800s, it was the scene for rapid development. The city expanded with the coming of the railway in the late 19th century and the immigration of Turks from the European provinces of the Ottoman Empire in the early 20th century.

Most of the city was rebuilt after its destruction in the Turkish War of Independence between1919 and 1922. (1;3).

Odunpazarı is located on the hills to the south of city centre. It is the centre of the early inhabitation in Eskişehir and currently the only surviving traditional residential area reflecting the historical features of the city. Since Odunpazarı was the core of inhabitation, it was mostly resided by high-income level groups until the first quarter of 20<sup>th</sup> century. As the urban development started expanding over plains around the railway station and apartment blocks became much more popular rather than traditional houses and wealthy owners abandonetly Odunpazarı after 1950s. From this period on, Odunpazarı has mostly been a home for medium and low income level groups.

Although the major land use is residential, there are considerable amount of buildings used for commercial purposes within the area between Kurşunlu Mosque and Alaaddin Park in Odunpazarı. These buildings are usually used as grocery stores, butcher shops, bakeries, tailor's shops, barbershops and traditional cafés. Unfortunately, some historical buildings were destroyed during enlargement works of Şeyh Şahabettin and Seyitgazi streets.

The Ministry of Reconstruction & Housing and Council of Monuments of Ministry of Culture declared Odunpazarı Settlement, as *Protected Area*, first in 1978. Depending on the investigations and surveys conducted by Council of Monuments and Sites, 12 structures were registered as monumental historical buildings, while196 were registered as vernacular architectural structures at 1981. In 1995, Odunpazarı Municipality undertook a design of district plan for the desired site; as a result a *Protection Development Plan* was prepared. Eskişehir Council of Monuments and Sites also approved this plan in 1997. According to the most recent plan, 182 registered buildings and 16 monumental buildings were determined as immovable properties to be conserved.

# 2. THEORETICAL BACKGROUND

### 2.1. Cultural Heritage in Eskişehir and Odunpazarı

Cultural heritage basically refers to items or sites with significance for past or existing social history. The term encompasses the qualities and attributes of places that have aesthetic, historic, scientific or social value for past, present or future generations. These values may be seen in a place's physical features, but importantly can also be intangible qualities such as people associations with, or feelings for a place (4). Cultural heritages include objects significant to the archaeology, architecture, science or technology of a specific culture.



As Turkey has been a home for various civilisations throughout the history, it is one of the wealthiest country in the world in terms of hosting numerous cultural heritages including buildings, historical places, monuments and other artefacts.

Considering Eskişehir and especially Odunpazarı, most important cultural heritages are historical and architectural assets, mostly the historical buildings within the area. Odunpazarı hosts numerous traditional houses, mosques, fountains and tombs that reflect both traditional civil architecture characteristics and local merits.

#### 1. Odunpazarı Houses

From the very beginning, Eskişehir was established as an Anatolian Turkish city and the houses within Odunpazarı were constructed faithful to traditional Turkish houses. The houses usually have 1,2 or 3 storyes. Nearly all of the houses have gardens, front façades face the main street and are contiguous. Façades have simple characteristics and are in harmony. Projectures of the houses lined up along the winding roads have views on each other. Regarding structural features of the houses, a ground floor closed to the street with a stone or adobe wall and an upper floor which sits on either load bearing stone walls or wooden studs characterizes the house type generally seen within the geographical boundaries where the Turkish house is to be found. The upper floors have a timber frame construction. The middle floor, if there is one, has a low ceiling and is either a mezzanine floor or a whole floor. The top floor has, through time, become ever more lively with several projections and with a multitude of windows which are of a standart size. In the earlier houses windows have glazed panes opening on either side vertical sliding windows(sash windows) emerge only after western influence shows up. The standart size of the window creates a sense of unity with its recurrent rythm, not only in each house but throughout the town.

The ground storey of most of Odunpazarı houses are reserved for service areas and upper storeys are designed as living spaces. Some of the service areas such as conveniences and woodboxes are located in the gardens. However, all of the kitchens are constructed inside. If the house is big enough, then one or two rooms can also be found in the ground storey besides service areas. A timber made staircase connects the storeys and ornamental wooden room doors, closets, cubbyholes and ceilings of upper storeys are admirable. Within one of the rooms there is usually a bathroom designed as a closet.

The room is the most significant unit in every Odunpazarı House.Each room has the ability to meet the needs of a couple.It is possible to sit, recline wash, eat and even cook in each room.Each room has identical character size may change but not the qualites.These are strictly related to the way of life which has not changed much throughout time.Consequently the room has remained the same.An arrangement which allows for change has been developed, so as to meet the prerequisites of all the different functions mentioned above.This arragement has been based on the prevailing customs of the nomadig times.The tent which was the living unit then has now been replaced by the room.The tent also has areas which are not strictly delineated, allocated to different functions.In the room areas separated from one another with partitions, semi-partitions levels.The interior of the room has been shaped in compliance dimensions which human functions it contains.



The beds are kept in built-in closets, they are layed out when it is time to go to bed and are put away once again in the morning. When it is time to eat, the tablecloth, table base and copper tray or wooden tabletop is taken out of the cupboard and is put away after dinner. The centre of the room has been left free for this purpose. The divans used for seating are placed along the walls.

The plan of the Odunpazarı house is formed with the arragement of the rooms around a sofa. The room is a living unit, the form, size and qualities of which show a very insignificant difference from one to the other.

The most characteristic plan types are those with outer or open sofas, utilizing projections and eyvans. The authentic aspect of these plan types is the independent nature of the room, which instead of being adjacent is separated from the other eith the extentions of the sofa, plan types with central sofas emerge in the later periods.

The main building material in the Turkish houses is wood and consequently the building method is generally timber frame. The timber frame construction also facilitated opening more windows building projections and wide eaves. This provided control over climatic conditions, and the building to breathe in humid climates which, in turn, helped prevent condensation and moisture in the rooms.

With boards, lathes and profiles used in combination, proportionate and rithmic divisions on the façades, which were enhanced by effects of shadow and light and sometimes with the addition of coloured decoration, paintings and mouldings.

The main threat to these historical buildings is mostly the abandonment by its inhabitants. Also physical factors also speed up the degradations of the main structure and make the buildings defenceless against external threats. Moreover, such buildings usually become shelter for the homeless and become ruined. On the other hand, being an asset under legal conservation makes it even more difficult to perform rehabilitation or maintenance activities. Because, any interventions on these heritages are subject to strict limitations determined by the protection development plan application terms and, thus, would cost a great deal of resource for its owner to maintain a rehabilitation (5).

Odunpazarı Municipality has started the "Rehabilitation of Historical Odunpazarı Houses Project" in the Odunpazarı Quarter, which is the only settled area where the city's historical character can be viewed today. The goal of this project is to revive social, economic and cultural ties and to protect and improve the traditional atmosphere.





Figure 1. Miniature of Ottoman House(Yeşil Efendi Residance) (6)



Figure 2.Interior view of a room at the Ottoman House (6)

# 2. Mosques

Traditional Turkish house architecture and Kurşunlu Mosque has remained in Odunpazarı Quarter as a prestigious point of the town. Kurşunlu Mosque which is a beatiful example of 16th century Ottoman architecture was built by Vezir Mustafa Pasha at about 1525.

Kurşunlu, with its menzilhane(overnight stopping places), soup kitchen, mosque, medresseh rooms, and mevlevihane (place where dervishes whirled) is a typical Ottoman Külliye (complex of buildings adjacent to a mosque.)



Eskişehir and its environs served as an important Mevlevi center for centuries, beginning at around 1250 when Turks settled here up to the establishment of Republic of Turkey.

The Mevlevi Sikke (tall felt hat worn by a Mevlevi Dervish)on the dome of the semahane (dancing hall) behind the mosque is a witness to the past.

In the backyard of the semahane there are seven graves belonging to the latest mevlevi sheik(head of group of dervishes) Hasan Dede and his family.

On the top of the Kurşunlu Mosque there is a magnificent dome. The last congregation place(place out of the mosque for the people who are late to pray) is covered with five small domes and six marble columns that support these domes.

iryakizade Hasan Paşa or Odunpazarı Mosque, it has been the symbol of Odunpazarı since the end of the 1800's. The typical settlement of the Odunpazarı can easly seen from the minarette of the Odunpazarı Mosque (3).





Figure 3.General view of the Kurşunlu Mosque and it's complex.

### 2. Legislation on Protection of Cultural Heritage

The main objective in the protection of the environments encompassing historical, architectural, visual and ethnographical significance is to provide sustainability of tangible and intangible heritages within the mentioned environments. However, the most important point to be considered during the protection process is to make these heritages a living and a developing part of the city, rather than to turn them into museum items.



In Turkey, for years, protected areas and protection zones have been unfortunately places open to degradations and ruination. Many historical heritages of high quality have been ruined either by the owners or the nature itself. Considering the protection process, which in fact has various dimensions, only a means to protect cultural and artistic assets complicates the problems encountered.

n Turkey, there are various laws, regulations, directives and technical specifications related to protection of cultural heritage. The most important national laws are *Law on the Protection of Cultural and Natural Heritage* (number 2863, 21/7/1983) and *Law on Rehabilitation and Use of Ruined Historical and Cultural Immovable Heritage* (number 5366, 16/6/2005).

Rehabilitation projects of streets under official protection as *Urban Protected Areas and/or Protection Zones* are required to be prepared in accordance with 2863 and 3386 numbered *Law on the Protection of Cultural and Natural Heritage*, put into force respectively on 21/7/1983 and 17/6/1987, regulations, *High Commission* resolutions, *Protection Committee* determinations and any related legislation in Turkey. Within this context, *Technical Specifications For Rehabilitation of Streets Under Legal Protection* outlines the objectives, scope, criterion and detailed information on various applications related to rehabilitation services.

Street rehabilitation projects mainly include survey, restitution, restoration, urban design and other related engineering projects of the front façades of the buildings, court and garden walls and other complimentary items in the street.

Surveys, restitution and restoration works of registered and unregistered cultural heritage within *Urban Protected Areas and/or Protection Zones* are also subject to *Technical Specifications For Survey, Restitution and Restoration Projects*.

# 3. CONSERVATION PROJECTS IN ODUNPAZARI

The actual proprietors of the cities are local authorities, in other words municipalities. As a part of its municipalism concept, Eskişehir Odunpazarı Municipality, as well as other local authorities, has undertaken various projects in order to conserve and sustain cultural and historical heritages especially within Odunpazarı Protected Area. These projects include various rehabilitation and restoration works of historical buildings and their surrounding elements.



**Rehabilitation Projects** 

The cultural and urban heritages located within Odunpazarı territory lays important responsibilities on Odunpazarı Municipality. Conservation of historical and cultural buildings and providing their sustainability for the sake of next generations is a part of municipalism concept of Odunpazarı Municipality.

The most important project of Odunpazarı Municipality in terms of rehabilitation is *Rehabilitation Project of Odunpazarı Houses*, which took start in November 2005 and planned to be completed within the second half of 2006. This project includes consolidation and rehabilitation of 100 historical Odunpazarı houses and other complementary architectural and landscape elements and spaces within the selected streets.

*Rehabilitation Project* of *Odunpazarı Houses* is realized with the supports of Ministry of Culture and Tourism, Eskişehir Council of Monuments and Sites, Anadolu University members and the local people.

Rehabilitated Odunpazarı Houses are supposed to provide both employment opportunities for the local people and a centre of production for the intended investors. Moreover, with this project, Odunpazarı Houses, which make the most precious specimens of Turkish civil architecture, will be enlivened.

1. Street rehabilitation project of Beyler Street

Beyler Street is an important bridge combining Kurşunlu Mosque with Eskişehir city centre. It is approximately 140 meters in length and hosts 8 registered buildings in Odunpazarı.

*Street Rehabilitation Project of Beyler Street*, prepared by Architecture Department of Anadolu University with the demand of Odunpazarı Municipality, is one of the most important stages of *Rehabilitation Project of Odunpazarı Houses*. This street rehabilitation project aims to bring in Odunpazarı, the oldest settlement of Eskişehir, to historical and cultural heritage of both Eskişehir and Turkey once again. Besides, one of the major goals of the project is to make Odunpazarı known as the new centre of Turkish tourism with its unique architecture and local merits. It is also believed to contribute to improvement of social-economical and cultural standards of Historical Odunpazarı Region and promises to form a new application platform for the survival of evanescent local arts and merits (7).



With this project, Odunpazarı Municipality conducts the consolidations of roofs and exterior façades of 27 historical buildings along Beyler Street in Paşa Quarter in the first place. Technical interventions within rehabilitation works include:

- Removal of exterior plasters.
- Removal of wooden threadbare doors and windows.
- Use of Ottoman tiles instead of Marselles tiles
- Repair and consolidation of roofs with pitch pine wooden elements.
- Reproduction of traditional roofs.
- Reproduction of traditional type ridges.
- Addition of chimneys.
- Production of traditional type wooden window with top quality pitch pine material.
- Placement of metal mesh surface under plaster layer.
- Plastering of curved or flat surfaces (walls, vaults, domes) with mud plaster.
- Plastering of *bağdadi<sup>1</sup>* and masonry surfaces with lime plaster including straw and goat hair.
- Reproduction of *bağdadi* surfaces on walls and ceilings.
- Application of lime plaster with ochre on new plaster surfaces.
- Removal of oil paint from wooden surfaces.
- Production of copper sheet gutters for roof drainage.
- Reconstruction of traditional window lattices.
- Beside rehabilitation of the huses, works for infrastructure of the street, such as electrical posts and pedestrian roads, have also started(7).

A general view from Beyler Street and rehabilitation



Figure 4. Before Rehabilitation





Figure 5. After Rehabilitation

Odunpazarı Municipalty Kara Kamil Public Relation Center (Şamlılar House)



ŞAMLILAR SOKAK (ESKİ HALİ )

Figure 6. Before Rehabilitation



ŞAMLILAR SOKAK (YENİ)

Figure 7. After Rehabilitation



2. Street rehabilitation project of Işıklar, Arif Bey and Koca Müftü Streets

Işıklar, Arif Bey and Koca Müftü Streets are located to the north of Odunpazarı Protected Area, between Şeyh Şahabettin Avenue and Türkmen Street. Şeyh Şahabettin Avenue is a centre for commercial activities within the region.

Street rehabilitation projects of Işıklar, Arif Bey and Koca Müftü Streets include simple maintenances and redressing works on 55 façades of 13 registered and 24 unregistered historical buildings along the streets. Interventions include painting works, coatings, roof and simple façade maintenance works without intervening structural order and architectural attributes. Moreover, the project proposes simple modifications in windows, entrance doors, garden gates, eaves fascia and roof so as to be compatible with original Odunpazarı house features.

Besides technical interventions on the buildings, projects to rearrange the landscape elements and site furniture as well as infrastructure were also prepared by Odunpazarı Municipality for the mentioned streets.

The project was awarded, by the Ministry of Culture and Tourism, in the category of *Street Rehabilitation* of 1<sup>st</sup> National Architectural Protection Awards, in October 2006.

3. Restoration of Kurşunlu Mosque and Complex

Detailed restoration work was started by the General Directorate of Foundations.And Odunpazarı Municipality proposes below mentioned uses within Kurşunlu upon completion of restoration works:

- Continuing to use for wedding ceremony,
- Using caravansary as a place of multiple cultural activities
- Using alms house as one of the administrative units of Kurşunlu mosque and complex
- Using  $hanikah^2$  as a centre of tourism and conservatory of Turkish Music
- Designing the soup kitchen as a cafeteria

### 4. Restoration of Boutique Hotel

One of the most important restoration projects in Odunpazarı territory conducted by Odunpazarı Municipality is the *Restoration of Boutique Hotel*. The project includes restoration of 3 buildings to form a boutique hotel complex, which were expropriated by Odunpazarı Municipality. All of the buildings were constructed in 19<sup>th</sup> century in vernacular architectural style. Most significant characteristic of the buildings is being an outcome of a ceased technology by means of material, technique and labour.



The overall project proposes both restoration and adaptive reuse (residential usage) of these 3 buildings. The boutique hotel is proposed to consist residential units, a restaurant and a court where social activities will be encouraged to take place. The cookstone in the court will be preserved within the restoration project to serve traditional cuisine. The common inner court of the buildings will also be associated with the *Ottoman House Museum* next-door, which were formerly restored and now run as a museum and a restaurant, by opening a doorway up in the wall between the gardens.

The proposed project aims to sustain the mentioned dilapidated buildings, and thus conserve some of Eskişehir's most important cultural and historical heritages. Restoration projects are prepared faithful to the restitution projects and promise as few modifications as possible in order to protect the original features of the buildings. The proposed reuse is believed to attract the attention of national and international visitors and provide opportunity for the guests to examine the heritages with a closer look up. The proposed re-use is also an asset to sustain the intervention, since it is necessary to conserve and maintain the buildings to provide sustainability for its status and new function. Another important expected result on the heritage is to enliven the evanescent local handcraft activities and traditions, besides preserving physical structure of the area.



Figure 8. Outer views of the historical houses to be restored as Boutique Hotel



## 2. Other Projects

Another performance of Odunpazarı Municipality to perpetuate the historical atmosphere and spirit in the region is the *Restoration of Atlıhan*. Odunpazarı Municipality started the mentioned project in order to prevent social degradation and protect the architectural features and thus, contribute to the revival of social and cultural activities. Within the project, Atlıhan was designed as a bazaar sustaining traditional architectural elements with respect to historical Odunpazarı houses.

Figures showing restoration of Atlihan Project.





Figure 9 .Before restoaration

Figure 10 .After restoration

# 4. CONCLUSIONS

Odunpazarı hosts many important tangible and intangible cultural heritages that are not only locally or nationally but also internationally significant. This is why; the region was declared *Protected Area* in 1978 by the Ministry of Reconstruction & Housing and Council of Monuments of Ministry of Culture, to provide protection and limitation for new developments to be compatible with the historical features of the settlement.

However, besides inadequate awareness to adopt and protect the heritages, various careless and blind interventions also ended with degradations and ruinations in most of the precious historical buildings.

Considering these facts, Odunpazarı Municipality started important projects with the supports of local people and some institutions/organizations in order to protect and sustain the cultural heritage within Odunpazarı Protected Area in 2004. These projects also target to provide employment opportunities for the local people and make Eskişehir – Odunpazarı a new centre of national tourism.

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# AN URBAN OPEN SPACE MODEL FOR MODERN TURKISH **REPUBLIC: GAZI FOREST FARM IN ANKARA**

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In the establishment process of a nation state, basic revolutions were needed in every field of life in Turkey. All the reforms of innovation and transformation aimed a break with the Ottoman Empire. By shifting the previous capital Istanbul to Ankara, the vision of change was reflected in the overall spatial organization. Therefore, Ankara is the first city that was planned according to modernism in Turkish Republic. Accordingly, physical environment was to be built to transform the social practices of the existing society. The modern image of the model city and the new living patterns were being displayed through railway, while entering the city from west. While approaching the new capital, the model village Etimesgut / Sincan, the model farm Gazi Forest Farm and the model city Ankara would act as a scene of the ideology and the young Republic. Gazi Forest Farm was the representation of production, acting as a preentrance to the capital. Other than spreading out modern agricultural technologies, it had a mission of imposing the modern way of living in the cultural transformation process of the country.

Keywords: Urban open space, modernization process, cultural transformation.

### 1. INTRODUCTION

After the Independence War, previous capital of Ottoman Empire - Istanbul - was shifted to Ankara as the capital of the new regime. Ankara was a provincial town with a population of 20.000 at that time. It was a town of scarcity with limited amount of green in 1920s. Therefore, for being the model of the new regime, Ankara is the first modern city of modern Turkish Republic.

Gazi Forest Farm is one of the earliest examples of survival and sustainability in this new environment of the ideology. But recently, the new order of free market economy caused the decline of public interest but the escalation of privatization of urban spaces for the rent of land. In this process of decentralization, the lands of cultural/historical buildings or sites are getting important according to their economical values. Gazi Forest Farm is one of the cultural/historical spaces that are evaluated with absolute value (rent of land) instead of potential value today. As the first applications of modern everyday life took place in spaces of leisure and social activities, Mustafa Kemal established this space as a recreation area for the modern Turkish citizen and an urban open space close to the city of Ankara for the transformation of country's culture, other than creating an important production space. But, while it was out of city borders when established, it stays in the gravitational center of the extended city. This process brought loss of lands of the Farm, which became a brown field in time. Although it is a heritage of the founder of the Turkish Republic, this space became the core of speculations as well as falling apart from its establishment objectives.



Aim of the Study

The aim of the present paper is to clarify potential values according to the Farm's origins. Therefore, reaching the roots of the Forest Farm is the main purpose to provide a "shift from the *things in space*, to the *actual production of space*" [1], which will be critical for the evaluation of this publicly owned 32 km2 land.

## 1.2. Method of the Study

For this purpose, establishment of Gazi Forest Farm and its transformation in time is discussed throughout socio-spatial processes. While searching for its roots, it is found that the establishment process of the Forest Farm fits to the cultural transformation process of young Turkish Republic. Therefore, culture will form the main axis since Gazi Forest Farm was one of the critical environments of the *transformation of country's culture according to Western ways* in Ankara. Tools and tactics of cultural studies such as all written and oral materials will be used and documents of Forest Farm, such as establishment records, advertisements in newspapers, interviews, visual images and so on will be critical for clarifying the subject.

### 2. The Definition of Culture

Culture has several definitions as it is a complicated term. But Bocock [2] identifies these definitions in five ways:

- 1. Cultivating land, crops, and animals.
- 2. Cultivation of mind.
- 3. Process of social development.
- 4. Meanings, values, ways of life.
- 5. Practices which produces meanings.

The last two definitions that were shaped by the effects of anthropology produced their counters. For having a discrete, bounded view of culture, they were criticized as inadequate for covering the dynamic qualities of cultural flows [3]. Recently culture is defined as "a network of representations which shapes every aspect of social life" [4].

### 2.1. Culture in Relation to Civilization, Enlightenment and Development

In the eighteenth century, the word 'cultivate' was used for raising, improving and educating the living things or products in nature. This word was adapted for human mind and taste, and a hierarchic discrimination was produced between societies and racial groups according to social activities. This discrimination was fundamentally based on civilization level and from this point of view culture is defined as civilization and social development process [5].


Development itself as a discourse is a part of western culture because of the meanings and political, economical and social institutions it was formed in. The societies which were at the center of Enlightenment accepted themselves at the top of this process and the others behind. Even the societies which were not actually colonized became obsessed with 'backwardness'. Our country was one of the countries in a transformation in the name of culture, during the development process. However, Mustafa Kemal was devoted to his nation's culture but was receptive to contemporary civilizations'. What he proposed was political and economical independence at national plane and a system for bringing the nation to contemporary civilizations' level together with unifying the country to these civilizations [6].

#### 2.2. Turkish Enlightenment

According to Mustafa Kemal, it was hard and unnecessary to distinguish civilization from culture:

Culture is the sum of the works of a society in governmental, intellectual (that is science and fine arts) and economical (that is agriculture, commerce and transportation) measures ... when talking about the civilization of a nation, I do not think of any thing other than these three components of culture [7].

He explained his notion of culture as: a life style based on science and knowledge, a route to open out to the contemporary world and join it as a whole, a belief of success to bring welfare, peace and happiness to Turkish society [8]. Civilization was the heart and soul of young Turkish Republic.

His perception of culture was in relation to the characteristics of our nation and history. To him, culture is appropriate within its own ground. That ground is the character of the nation – Atatürk [9].

Mustafa Kemal used the method of educating and cultivating people for an entire transformation of the society and its institutions. He saw the future and reliance of Turkish existence as a problem of production of new Turkish citizen. Therefore, he recreated Turkish culture which would produce this new citizen. Culture should be the basis of Turkish Republic [10].

3. Establishment of Gazi Forest Farm – 1925

Tekeli [11] defines spatial aspect of nation state establishment in four measures; 1. Construction of new capital city Ankara as the new habitat of national bourgeoisie; 2. An integrating railway construction for the interior market (the railway had a tree scheme before the republic); 3. An industrial development program, by constructing factories throughout railway; and finally, 4. People's house construction in every settlement. Here we can evaluate the establishment of Gazi Forest Farm as an extension of the habitat for the production of national bourgeoisie in new cultural environment, as an agricultural and industrial development program on railway route and also as a prior of people's houses and village institutes, in the name of education and cultivation.



Also the five definitions of Bocock mentioned previously about culture, fits to what was done in Forest Farm case. It was necessary to know that even in the most infertile soils of the country, human will would obtain everything needed. By this way, the prejudices would be overcome and it would be proved that fertility is only in the mind and in the will of the individual. Then, Mustafa Kemal commanded to search for a land for the model farm [12].

#### Cultivating land, crops, animals:

Among the outcomes, he selected the most infertile and unhealthy lands, mentioning that, that place was what he was looking for. Those swamp and barren lands along the railway would be cultivated by this way. His aim was to prove that it was possible to manage the most pessimistic conditions in every situation [13]. This was also important to rebut the pessimistic claims of Ankara.

#### Cultivation of mind:

Before deciding what to grow and where to grow the lands were carefully examined according to scientific methods in laboratory conditions, both by national and international experts. Unfortunately, the results were not promising. Most of the lands were unsatisfactory according to these analyses. But after studying on these analyses, appropriate lands for agriculture, for stock raising and recreation were decided on with a very rationalistic approach. Stock raising would help to strengthen the soil with fertilizer and pools to wash the salty soil.

In May 5<sup>th</sup>, 1925, the construction process was started. After defining the needs, the building of management, the dwellings for the manager, accountants and workers, storage, oven, kitchen, atelier, granary, barn, dairy, nursery and also Marmara pool for 1000 m3 water were constructed [14]. Like Marmara, Karadeniz pool was firstly designed for watering the land, with a capacity of 4000 m3. Watering was as important as fertilizers to enrich the soil. Therefore, in order to collect the rain in various seasons and to direct the existing streams towards the fields, canals and dams were provided.

#### Process of social development:

The pools Marmara and Karadeniz met the requirement of water in Ankara in summer time and also became a beach for swimming. Some sports activities took place in Karadeniz pool in hot summer days [15]. An American journalist Rose Lea suggested her ideas about the sea like pools in the farm as: "After his significant success, the great warrior is decorating his farm with the sea; the witness of his victory." The author evaluates the story of the farm and the pools as a part of the epic, written in one attack [16]. Moreover, by adding zoo, restaurants, beer parks and other activities, he aimed to present whatever the individuals need in the best pattern. Recreation areas and parks were located around 'Marmara' and 'Çiftlik Köşk's. There were flowers, fruits and vegetables in and around these two parks, serving for the inhabitants [17]. According to La Turquie Kemaliste Mustafa Kemal was 'desiring the welfare of his nation with whom he was in love'. Therefore, he was personally controlling the care of the excursion spots under shadows of trees, parks, restaurants, cafes, swimming pools and also zoo.

Meanings, values, ways of life & Practices which produces meanings:

In reality the swimming pools were a part of this open air school, which used to transform the culture of local inhabitants. The opportunity of Karadeniz swimming pool in Gazi Forest



Farm was a major event for the inhabitants, especially for the ones who desired Istanbul beaches. In fact, as a characteristic of Istanbul, sea represents the deficient in Ankara. Such deficiencies are also damaging the process according to the founders. For that reason, reaching the sea would broaden the horizon of the Republic and would present new opportunities for new discoveries.

After the construction of Marmara Köşk, presidential orchestra started their concerts, with an aim of offering the pleasure of western music to people. This music took place not only in private invitations in Marmara Köşk, but also in public space and in radio. Just like Marmara Köşk that Mustafa Kemal lived in (1930), the dwellings of workers, public bath (1936-38) and Beer Factory (1933-34) were all designed by Ernst Egli [18]. Beer Factory was established in 1934 and for the reason that it was nourishing also the children were encouraged drinking beer.

Education:

In addition to cultural facilities and the production of scientific techniques and modern methods, the mission of education of the Farm was also successful. For the students of High Agriculture Institute, a ten months apprenticeship in the farm became a must from 1930 [19]. These young agriculturists were those, to spread the new technologies and scientific knowledge to the entire country. They were educated in their own ground with their own experiences and became the ones to educate the villagers. More than producing science, Forest Farm was cultivating new generations that believe in science, knowledge and well being of young Turkey [20].

Year	Male	Female	Total
1930/31	16	-	16
1931/32	17	1	18
1932/33	39	5	44
1933/34	45	4	49
1934/35	40	5	45
1935/36	43	5	48
1936/37	46	6	52
1937/38	47	4	51

Table 3. Students of High Agriculture Institute between the years of 1930-38.

As it can be seen in the table, female students were educated with males as well. Mustafa Kemal believed that increasing the efficiency in agriculture was the only way of performing more people to work in other areas. Therefore, the people should be educated and given such agricultural samples. Forest Farm was a tool of educating people by practice in these 'laboratory conditions' [21].



Meaning (A network of representations that shapes every aspect of social life):

The negative conditions as well as the affirmatives, in private and public space of the capital were aimed to be obstructed by the articles in Hakimiyet-i Milliye [22]. In an article about the recreation areas of inhabitants of Ankara (Ankaralı), it was written that; the view of the inhabitants in Mamak, Kayaş, Hatipçayı was reactionary, but in Farm Park, Marmara and Karadeniz, it was advanced. If transforming Mamak to Farm or altering the Turkish music to an orchestra would not be possible, it wouldn't be possible to create a unity. According to the author, Farm belongs to Ankara, but how about Mamak or Kayaş? They belong to Eyüp, Edirnekapı that equals to Ottoman. Gazi Forest Farm that was built with scientific methods and western necessities, like swimming pool, night club, Beer Park and forest, was a reflection of Ankara's civilized life.

People liked Forest Farm since it represented contemporary civilizations. This physical element as social space made cultural categories of the society visible. Those who felt themselves as a part of Republic needed to be seen in this space of the new regime.

#### 4. CONCLUSION

Technological tools and methods were the ways of increasing the efficiency in agriculture. It was the only way of performing more people to work in other areas. If a farmer could not produce enough to feed more than himself, it wouldn't be possible to develop the fields of science, industry, communication, education, health, arts and etc. Turkish Revolutions were the first example that covered the development process with such an approach, and the most successful in the world with its symbols, institutions and concepts in spite of all negative conditions, to Ozankaya [23]. In that sense, Mustafa Kemal was a real supporter of science. For him, science was adding more to the existing. The people should be educated and given such agricultural samples that their products to be sold effectively, both in national and international markets. These required 'laboratory work' and 'market investigation'. Laboratory conditions were prepared in Gazi Forest Farm, which was built as a model for rural development and for the civilization in and around the model city Ankara.

Different than any modern urban social space, Atatürk Forest Farm is a unique case in the world for being a part of the development process for geographical extension and cultural expansion in the very first years of young Republic.

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# PRE-HISTORICAL LANDSCAPES AND CULTURAL HERITAGE OFFSHORE OF THE BALTIC SEA IN LITHUANIA

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Archaeological findings along the Baltic Sea coastal area of Lithuania in recent years very often direct us towards the depths of the sea. Reasons for that are noticeable fluctuations of water-level of the Baltic Sea in prehistoric times, rise of water-level and rapidly changing east coast of the Baltic Sea in historic times.

In the earliest phases of the Baltic Ice Lake (BIL), around 13,000 BP, water level reached its maximum (Lampe 2002: 13). Southern Baltic lakes were joined to form a vast basin, extending from Lithuanian coasts in the east towards Denmark in the west (Uścinowicz 2003). Final regression of the BIL started from around 10,300 BP. The water level decreased to about - 40 m (Lampe 2002). Sea level fall amounted to 0.3-3 m per year, and the coastline shifted northwards by 30-40 km at that time (Uścinowicz 2003). Compared to modern coastal line, Lithuanian coastal areas at the period were as far off from the west as 80-90 km (cp Bitinas, Žulkus, Mažeika 2003).

First fragmentary traces of human presence in the territory of Lithuania might be linked to the end of Boling period, though more definite traces of Palaeolithic Ljungbö type culture are from Aleriod and Boreal periods (around 11,000 BP and later). Flint artefacts, findings from late Palaeolithic period, are in fact surface and accidental only. The only Palaeolithic bone artefacts from the horns of reindeers were discovered on the coast, in modern Klaipėda. Overspread of artefacts from late Palaeolithic period is correlated also to the range of flint overspread. Its northern boundaries had been lying exactly across Lithuania (Ostrauskas 2005: 19-22, 43, 44), about 55° N, about 54° 35' N on the seacoast.

Underwater traces of Palaeolithic culture, up to 40 m in depth, are presumptive, though finds of the type would be a pure luck rather than a consistent pattern.

At around 9,600 - 9,500 BP in the Baltic basin the Ancylus phase had started, isolating a freshwater body from the ocean. Recent investigations indicate that the Ancylus Lake could not have been higher than -18 m (Lampe R. 2002). Rapid sea-level rise along southern coasts of the Ancylus Lake between 9,500 and 9,200 BP resulted in widespread erosive processes. Around 9,200 BP the sea level was 25-26 m and around 8,500 BP about 28 m lower compared to recent level. Between 8,500 and 5,000 BP the sea level was continuously rising. The transgression was accompanied by intense erosion. The sea level rose by about 25 m at that time (Uścinowicz 2003). In the former coastal area of the Baltic Sea the limnic-telmatic sediments were found at about - 15 m and dated to c. 8,000 BP. In Wismar Bight findings from end- Mesolithic sites are at depths of -7 m (6,200-6,300 BP) (Lampe 2002).



Latest finds from Lithuanian coastal areas are correlated to research data from Germany and Poland. Systematic researches in underwater cultural heritage of the Baltic Sea started in 2000. In Klaipėda university they were also accompanied by finds from ancient coasts. During the expedition of 2002 three stumps of trees were found *in situ* on the bottom of the Baltic Sea at a distance of 6 kilometres from the sea shore near Juodkrantė, at a depth of 27 metres (**RF-I-1-3**). According to anatomic investigations of the tree structure, they belong to the pine (*Pinus*). Conventional radiocarbon age (14C is 9160±60 years BP and the calibrated age - 8090 years BC (laboratory index: Vs-1372). These trees grew on the Joldia Sea coast at the end of the Preboreal when the water level did not reach the mark of 30 metres below present sea level (P.S.L.) (Bitinas, Žulkus, Mažeika... 2003).

Underwater archaeologists have made a second discovery of a drowned forest 2003 at a depth of 14, 5 metres, at a distance of 3 kilometres from the sea shore. Preliminary surveys near Melnragė (suburbia of Klaipėda), carried out by Klaipėda University, identified well preserved pine tree trunk (**RF-II-1**), embedded in thin layer of sand and moraine loam. The radiocarbon Data (<sup>14</sup>C) is 7770±120 years BP (laboratory index: Vs-1388), thought to date from the end of Mesolithic period (Žulkus 2005).

Traces of active erosion of ancient coasts, relicts of regressions and transgressions, can be discovered underwater. Degraded moraine stones together with areas of sandy flatlands are stretching along entire coast. In 2006 unusual formations – canyons of 2-4 m in depth, scoured out by strong water stream in moraine ridges of ancient coastal cliffs – were discovered close to Palanga in the depth of 18 m.

8000 BP is recognized as the beginning of Mesolithic, early post-glacial Lithics in Lithuania. Lithuanian archaeological periodization also singles out EpiPalaeolithic period (the very beginning of Mesolithic). Artefacts from Preboreal and Boreal period are correlated to early Mesolithic, whereas Atlantic period – to late Mesolithic. Particular human skills of adaptation to dynamic environmental changes was typical for Mesolithic. At the end of it – beginning of Neolithic, in 6-3 millenia BC, water level in the sea and rivers had been changing several times - four Litorina transgressions took place (Juodagalvis 2005: 54-55, 63).

Abundance of lakes is a characteristic feature Mesolithic in Lithuania. Camping sites were building up around creeks and lakes, on islands. Humans of Mesolithic had been choosing sites, where heavy and light soils met each other, where people could lead a more comfortable way of life in pinewoods or mixed forests, rich with beast and vegetal food. There is almost no information about Mesolithic camping sites in coastal areas. They are likely to rest in other places, different from those in the continent, as people had been actively hunting and fishing (Juodagalvis 2005: 63, 78-79, 83). While searching for optimal living conditions and adapting to water transgressions or regressions, Mesolithic people could start their camps closer to or away from the sea, around lagoons.



On the basis of latest research data it is possible to maintain that Mesolithic coasts of Lithuanian seashore lie underwater at a distance of 12-20 km to the west from recent ones (fig. 1). Researches point to varied Mesolithic environment, which happened to exist instead of recent sea. Stumps of pines near Juodkrante, at a depth of 27 metres (9160 $\pm$ 60 years BP), point to vast glacial loam and sandy flatlands. 7770 $\pm$ 120 years BP is the date of relict forest, discovered at a depth of 14, 5 m near Klaipėda and belonging to another landscape. Drowned pines had been growing among boulders and cliffs in a glacial loam flatland with sandy patches (Žulkus 2005).

End of Mesolithic and beginning of Neolithic is treated as the period of pottery rise. According to latest dating data this is to be around 5500-5300 BC or 6550/6300 BP (Girininkas 2005: 113). Mesolithic finds in coastal area are rare, whereas Neolithic ones, late Neolithic in particular, from well-known coastal settlements between Latvian – Lithuanian boarder line and the Gdansk Bay are numerous (Girininkas 2004). People from coastal areas employed cleverly for their survival the variety of local ecological system and emerging amber resources. Developed fishery, seal-fishery in particular, stimulated the start of settlements. In mid Neolithic bones of different type seals in settlements of Šventoji made 41,5% of all discovered ones, while in late Mesolithic they had been dominating around settlements of coastal culture (Girininkas 2004: 5; Girininkas 2005: 150, 156).

Part of the Stone Age settlements are desproyed in the result environment urbanisation, other searches are encumbered by layers of drifted sand. Remains of Neolithic settlements might happen to remain underwater.

In about 6,000 BP the water table reached - 2 m and rose slowly to about - 0, 6 m P.S.L. until 3,000 BP (Lampe R. 2002). According to Uścinowicz, the sea level around 5,000 BP was lower than the recent one by about 2.5 m. Last 5,000 years were characterized by small sea-level changes. During the first one thousand years of the Subboreal Period the sea level was rising and was 1.3-1.1 m lower than today. Cliff erosion processes and development of lagoon dominated at that time. During last 2,500 years of the evolution the average sea level rose by merely 0.7-0.6 m with annual sea-level rise of 0.3-0.25 m (Uścinowicz 2003; Kunskas 2005).

Before Limnea transgressions Neolithic settlements of Šventoji were discovered in about 50-100 m from the coasts of lagoon type lake, around 1,5-3 m higher than contemporary water level. A lake formed at the end of optimum climate, during the last stages of the Littorina Sea. This created the best conditions for the settlement of fishermen. During the Subatlantic period, the lake turned into a marsh. In the period of transgressions they used to appear around 5-7 m above water level (Kunskas 2005). 42 settlements of Neolithic period (dated by 5110±110 BP-3779 BC to 3730±70 BP-1984 BC) were discovered on the Baltic Sea coast at the bay and at the relic river of Šventoji. Some cultural layers of Neolithic settlements are spread below present sea level (Rimantienė 2005: 31-43). Geomorphological and archaeological researches allowed an opportunity for analysis and research of underwater cultural layers. At the end of Mesolithic natural environment in the neighbourhood of Šventoji happened to be very similar to that of Neolithic. In the depth of 12-15 m, in the distance of 1-1, 5 km from recent coastal line glacial loam, gravel ridges and valleys with sandy silts can be treated as traces of lagoon type lakes of the period (fig. 2).



In subsequent times, when the sea level had steadied, impact of the sea upon coastal areas of south-eastern region of the Baltic Sea showed itself by torrents of silt and storms of extreme intensity. Erosion of amber rich coasts of Sambia (Samland), which started in late Neolithic (Girininkas 2004: 4), seemed to coincide also with increasing torrents of sand, carried from the South to the North. According to archaeological data, huge sandy drifts started in 17<sup>th</sup> century. Dunes of Curonian Spit started moving and covering coastal flatlands. Remains of Šventoji settlements of 16<sup>th</sup> -17<sup>th</sup> centuries were buried under coastal dunes. In Palanga the surface of the Vikings Time land with traces of human habitation was uncovered in layers beneath sand and they are between 0.5 and 2.5 m in depth (Žulkus 1997: 10-15).

Due to rise of water level and erosion of coast cultural layers of late-medieval town Šventoji – Heiligen Aa with remains of buildings from 16<sup>th</sup> -17<sup>th</sup> centuries (in 17<sup>th</sup> century English merchants settled down in there) ended up underwater. The church, built in 1520, became an object of underwater archaeology. Other buildings and piers of Heiligen Aa were buried underwater a long time ago (Žulkus, Springman 2001).

Eventually torrents of sand started to decrease. During last fifty years active coastal erosion, including territory from Kaliningrad area (Russia) to Latvia, is in process (Dubra 2005: 39). 10 erosive, 4 accumulated and 6 stable coastal sectors are identified in Lithuanian coastal line of 99 km (Žilinskas, Jarmalavičius, Pupienis 2004). In modern times both natural factors and human activity make great impact on coastal alterations.

At present time archaeologists know, where underwater, in the neighbourhood of Šventoji and Palanga, remains of several wooden ships of the  $16^{\text{th}}$ - $19^{\text{th}}$  centuries are (W-1, W-2, W-9, W-13 ir W-15). Three of them are in the depth of 2-3 m, other two are onshore. Some of them were discovered 15 years ago. These wrecked ships, lying in littoral waters between Šventoji and Klaipėda, are in different situation. Very dynamic changes of last decade (observation in 1993-2003) in this strip of the coast (Bitinas, Aleksa, Damušytė 2004. Map – 81-85) affect differently these objects of heritage.

Wrack 2 - (W-2) from  $17^{th} - 18^{th}$  centuries was discovered, researched and measured by the author back in 1989. The hull was at the depth of 2, 5 m, 150 m from the coast. Apparent part of wrecked sailor was 18 m in length, about 8 m in beam and topping sandy floor up to 0,7 m. In 2000, 2002 and 2005 remains of above were not traced any longer – they had been covered with sand (NSLR). W-2 is about 3 km to the north of Palanga, right in the location, where the balance of coastal silt is positive (geological-geomorphological map – 81, 8. pic. 1.). W-13, lying in the distance of 150 m from the coast, is in a similar situation. Remains of a small wooden sailer from  $17^{th}$ - $18^{th}$  centuries (15 m in length, 6, 3 m (max) in beam) lie on a sandy bed about 2 m from the surface. Discovered back in the spring of 2004, the fore of W-13 was topping about 10-30 cm above the floor, the mid part – about 0,5 m, the aft – about 1 m. In the spring of 2005 the ship was noticeably covered with sand and only a small part of its fore was visible. W-13 is also under affect of coastal strip – under normal conditions sandy silt collect around and above it.



W-1 (a sailing ship from 16<sup>th</sup> century) is in a more or less intensively erosive region (Bitinas, Aleksa, Damušytė 2004: Map 81, 8. pic. 1), though formation of silt around the remains of the ship is mostly predetermined by winter storms. W-1 is in the depth of 2, 5-3 m, about 250 m from the coast. In the summer of 1999 it rose up to 0, 2 - 1, 3 m from the sea bed. After "Anatolijus" hurricane in the winter of 1999 remains of the ship were washed up at another 40 cm. The wrack of September, 2003 was washed up to 70 cm, compared to the autumn of 2001. In the April of 2004 some elements of the ship rose up even to 1, 8 m.

Wrack 9 (W-9) is in a sandy beach at present. Its length is over 20 m, beam – about 6 m. During the hurricane of 1967 remains of this ancient wrack were washed up to 1 m and buried later in sand again. After a bigger storm on March 19, 2002 it emerged once again – its constructions were poking at about 0, 7 m above sandy surface. In two weeks the remains were hidden again in the sand. Until 2006 they appeared no more. W-9 is in the strip of erosive silt (Bitinas, Aleksa, Damušytė 2004: 81, 8. pic. 1), therefore, cases of its exposure should become more frequent with every bigger storm.

Wrack 15 - (W-15). Remains of wooden hull (a section of about 10 m in length) is dendrochronologically dated by 1699 (+3-7 m) and is located in a sandy beach around Klaipėda (Melnragė), periodically being washed up after bigger storms – in the winter of 1994, in the spring of 2003 (Žulkus 2005: 288). W-15 is in a stable beach zone (Bitinas, Aleksa, Damušytė 2004: 81, 8. pic. 1).

Permanent morpho-dynamic tendencies enable to plan activities for preservation of these wrecks. If active regulation of coastal silt is not going to follow, hulls of ancient ships, which are lying in erosive beaches (W-9 and W-15), they will be washed up more often and inevitably destroyed by wash and human activity. Wracks, which are in accumulative coastal and littoral zones (W-2), are being more and more covered with sand. That impedes their search and exploration, but provides with natural protection. Though in shallow waters, these wracks are more affected by strong winds and swell. Erosive and accumulative processes of coastal areas make a smaller impact on them.

Subject to dominating winds and their strength, undercurrents in littoral zones of the Baltic Sea affect wracks even in relatively considerable depths. In the summer of 2006, comparing to the summer of 2005, W-14 (a sailing ship, sunk in 1870 or 1871), lying in the depth of 22-24 m, was evidently washed up from sand. In the summer of 2003 a rather strong undercurrent was sighted at relict forest RF-I in the depth of 29 m.

To supply erosive Palanga resort beaches with sand, in recent years it was decided to provide some places in the depth of 7-8 m with sand, which is excavated from Klaipėda harbour and some other places. This action may affect underwater natural and cultural landscapes as well as underwater cultural heritage.

Huge, still unexplored areas of the Baltic Sea bed evidently open opportunities to discover new objects of underwater cultural heritage, aging from Mesolithic to Modern Ages. Wide interdiscipline researches are necessary for new discoveries. It is evident that localization and exploration of underwater objects of natural and cultural landscapes, underwater cultural heritage is a necessary precondition for their protection under conditions of intensifying human activity in littoral zone of the Baltic Sea.



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# THE EXAMINATION OF THE REUSE OF MADRASA BUILDINGS IN KONYA IN ENVIRONMENTAL, USAGE AND STRUCTURAL LEVEL<sup>5</sup>

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Transferring the architectural monuments, reflecting the cultural values of past societies, to the next generations is a social duty. Contemporary necessities should be fulfilled by making use of the cultural knowledge of years and transferred to the next generations. In the historical process, there are changes in both the social and economical structure and the architectural and urban situation of the society. In a society which has changing conditions and standard of judgment, also the functions of the buildings change in time. In this change process, the adaptation the historical changes, city sections and architectural monuments to the contemporary use required today for keeping alive and transfer to future is faced as an important problem. In this context, Madrasa buildings are seen as one of the monumental building type needed to be adapted to contemporary uses.

The most beautiful examples of the madrasa buildings which contribute the development in the development line of Turkish architecture and show a consistent improvement were constructed in Konya in Anatolian Seljuk's Period. 4 of them namely; Ali Gav Madrasa, Sırçalı Madrasa, Karatay Madrasa and Ince Minareli Madrasa are our subject for this study. These madrasas with their historical and architectural characteristics, their different functions and changes for recent functions will be examined in environmental, usage and structural level.

# 1. INTRODUCTION

The issue of how to preserve the historical heritage and make use of it is one of the most important problems of this period from the future point of view. In this context it is necessary to preserve the monuments and transfer them to the next generations for providing the historical continuity and causing the individuals and society to earn a healthy historical consciousness. For an individual to become socialized and form the consciousness of cultural continuity, the environment he lives in should transfer the signs and symbols of the historical past to him. In this transfer it is necessary not to be satisfied by the conservation of the one in the past. To conserve just the one in the past means proving the historical existence. However the most important duty of today's individual should be to heed the past and the traditional from the point of indispensable values for human being transfer the essence of these to today's architecture with a contemporary interpretation while building today and tomorrow.

<sup>&</sup>lt;sup>5</sup> In this study the master bachelor's degree thesis of "The Evaluation of the Madrasa Buildings in Konya According to The Reuse Conditions" by Esra YALDIZ with the counseling of Assist. Prof. Dr. Bahtiyar EROĞLU in Selçuk University Physics Sciences Institute is used.



The cultural value reaching from past to present can be useful during the transfer of our architectural products to next generations from the cultural, economical and social point of view in pursuance of the reuse of the existing sources in addition to the social responsibility. Besides the reevaluation of the monumental buildings to open the service occupies an important place in the scope of providing the optimum use of the insufficient sources and obtaining economical profit. In addition to this, the harmful effect of the building sector against the natural environment will decrease with the evaluation of the existing buildings, the continuity in the stand point of increasing the quality of old buildings and living environments will be provided. Depending on this, it is necessary to preserve or refresh the natural, built environment together with the socio-economical environment for a healthy and effective continuing conservation (Hoşkara, 2006)

The cultural change concept and providing the continuity of place and social continuity are very important problems faced in the reuse of the historical buildings. "Social continuity" basically can be defined as the conservation of the local identity forming the environmental values as well as the improvement and change of the socio-cultural, economic, demographic structure forming the social building character (Göçer, 2003). The physical environment changes because of the rapid change in the social structure and identity within the change process.

It is necessary to preserve the monuments to provide historical continuity and cause individuals and society to gain a historical consciousness. For this the environment should transfer the signs and symbols of the historical past to the individual (Tekeli, 1989). However it is not enough to preserve the one in the past and the future, preserving just the one in the past means to prove the historical existence. The most important duty of today's human being should be to remember the past and the tradition from the point of the indispensable values for mankind while building today and tomorrow and transfer the essence of these to today's architecture with a contemporary interpretation (Özer, 1989).

# 2. THE MADRASA BUILDINGS IN KONYA AND THEIR REUSE

Konya is one of the oldest settlement centers of Middle Anatolia Region. It was the capital of Anatolia Seljuks between the years of 1097-1318. This period was the most magnificent years of Konya's history from the point of both the physical texture change and the social and political structure (Alkan, 1994). The most important buildings of the period were built in Konya because of some privileges of its being the capital. One kind of the buildings built during this period was the madrasa. However four of the madrasa buildings in Konya could reach to the present time. These are the Sırçalı Madrasa, Ali Gav Madrasa, Karatay Madrasa and İnce Minareli Madrasa.

# Sırçalı Madrasa

It has been located in Konya city, Meram district, Gazi Alemşah quarter. It appears from the inscription placed on the portal that the madrasa was built by Bedrettin Muslih in 1242 and dedicated with the aim of giving education to the ones from Hanafi denomination (Konyalı, 1964). The building has a symmetrical and rectangle –settled to east-west axle- plan scheme. It is one of the madrasa buildings having an open courtyard, two floors and two iwans (Figure 2.1).



The madrasa was closed by the means of the law named as Education Unification in 1924 and not used for a long time. Until 1940s, almost the entire upper floor of the building, madrasa rooms of the ground floor and a big part including the arcade in front of them was destroyed. The repair was done in 1940s by the General Museums Directorate; the madrasa was prepared for use with a serious and comprehensive repair work in the years of 1954-55. A new arrangement was done to use there as grave monuments museum in 1960-61. It was assigned to National Education Ministry as museum in 1965. Between the years of 1969 and 1975 repair works were done by Directorate of Waqfs. The upper floor of the madrasa was assigned to Konya Relief and Monuments Directorate to be used as foundation building. Today the upper floor of the madrasa is used by Konya Relief and Monuments Directorate, the ground floor is used as Konya Grave Monuments Museum.

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Figure 2.1. Sırçalı Madrasa Ground Floor	Figure 2.1. Sırçalı Madrasa First Floor	
Restoration Plan (drawn according to the	Restoration Plan (drawn according to	
dimensions taken from the Directorate of	the dimensions taken from the	
Waqfs.)	Directorate of Waqfs.)	

# Ali Gav Madrasa

It is located in Konya city, Selçuklu district and Tarla quarter. The building -settled to northsouth direction- is today in a ruined position, a big part of it is placed under the newly opened roads and constructed buildings. There is no inscription or archive document to give the definite construction date of the building. It is possible to say that the Ali Gav Madrasa could be constructed at the end of XII<sup>th</sup> century and beginning of XIII<sup>th</sup> century in Seljuks period by considering its architectural characteristics (Önge, 1967). The Ali Gav Madrasa in the madrasa buildings having closed courtyards has a plan scheme with two iwans and an arcaded courtyard closed by a dome (Figure 2.2). Ali Gav Madrasa remained standing with all of its architectural members until the last of 19th century. In 1901, after some repair and modifications it was opened to service namely as "Mahmudiye Madrasa" by Ferit Pasha - the governor of Konya (Konyali, 1964). With the Education Unification Law, the building stayed empty between the years of 1924-1963. In the years of 1965 and 1984 there were some excavations and restoration work done in the madrasa by the Directorate of Waqfs. The building was assigned to National Education Ministry to be used as library in 1968. It was assigned to the Association of History Literature Culture and Art to be used for cultural aims by the Directorate of Waqfs in 1995. Some additions were applied in the building according to the new function.



Karatay Madrasa

It is located in Konya city, Karatay district, Çiftemerdiven quarter. It is found out from the inscription placed in the portal that it was constructed by Celaleddin Karatay who was one of the Anatolia Seljuks statesmen in 1251-52. The building served as an important education institution in Seljuks period. It continued its duty until 1908 in an uninterrupted way (Konyali 1964). The madrasa is one-storey building with one or two iwans and a domed courtyard without an arcade (Figure 2.3). The madrasa was closed because of the Education Unification Law in 1924. The building was repaired in the years of 1936, 1952, 1953 and 1957. The madrasa was opened to service as museum of tile works in 1955 with the aim of exhibiting the tile works coming from Konya center, Beyşehir Kubad Abad excavations and the countries in the vicinity of Konya. It was restored in 1988 and 1993 by the Directorate of Waqfs and it has still been used as museum of tile works.



İnce Minareli Madrasa

It is located in Konya city, Selçuklu district, Beyhekim quarter. The madrasa which was one of the most important education buildings of Anatolia Seljuks period was built by the vizier "Sahip Ata Fahreddin Ali" during the time of Sultan İzzeddin Keykavus. The inscriptions of the madrasa could not reach today but it is thought that it could be constructed in 1258-1279 according to the records of charter of the waqf (Konyalı, 1963). The building is similar to the Karatay Madrasa in the point of plan characteristics. There is a different plan trial in Ince Minareli Madrasa in which the madrasa with domed closed courtyard and the madrasa with open courtyard architecture come together (Figure 2.4). Ince Minareli Madrasa was worn out so much between the years of 1876-1899 and had various repairs. In Ottoman period, the madrasa continued to be used for educational aims until the end of 19<sup>th</sup> century. The building was used as weapon storage in 1920s (Atçeken, 1998). The madrasa was closed in 1924 and not used for a while. The madrasa was assigned to National Education Ministry in 1954 and arrangements were done to be used as a museum in 1956. The madrasa continues to live as a museum where the stone and wooden works of Seljukid and Ottoman period are exhibited.



The Interventions Applied to the Buildings for New Functions

Some interventions are determined as a result of the reuse of the madrasas which lost their functions but had symbolic meaning and value. We can group these interventions as the ones applied to plan schemes, structural systems, façade and the close neighborhood and the ones applied as a result of technical needs.

There are not many changes for the new function in the plans of the madrasas in Konya. It has been tried to protect the main place concept of the buildings as much as possible. The additional buildings to fulfill the place requirements of new functions like ticket office and toilets were built to the Ince Minareli Madrasa and Karatay Madrasa which have been used as museums. It was remained true to the original material and the structural system as much as possible. The ruined and destroyed parts were tried to be completed as suitable to the original material and structure.

Building technical hardware was rearranged according to the day's conditions. Electricity, heating, air-conditioning, fire safety, clear water-waste water installations were arranged on the wall surfaces in such a way not to harm the buildings' structure, interior and exterior place character, plan scheme and visual effects in Karatay and Ince Minareli Madrasa. The installations were passed on top of the plaster in such a way to cause a visual failure in Ali Gav and Sırçalı Madrasa (Figure 2.5).



There is also a negative façade intervention by placing a big signboard and electricity panel on the façade of the monument in Ali Gav Madrasa. Besides the new entrance parts formed in this building are in harmful quality for its original character with their dimensions and materials. There is no negative intervention to monument facades like this in Karatay or İnce Minareli Madrasa.





The nearby environment played an important role in the reuse of madrasas. The new functions provided the buildings to become integrated with their environment. For Sırçalı, Karatay and Ince Minareli Madrasa the close environment of the buildings were arranged according to the new functions and the buildings were provided to be used together with their environment. However with the construction of high-storey buildings in close environment their mass (3-dimension) effect decreased.

# 3. THE EVALUATION OF MADRASA BUILDINGS

# 3.1. The Environmental Evaluation of the Buildings

The building has a bigger importance when it is considered with its environment. There is a continuous relationship between building and the environment. In this context, it can be said for Sırçalı Madrasa that it is placed in Konya city, close to Konya city center, in a commercial and residential environment and used for a public service. However the aim of use (Relief Monuments Directorate – Grave Monuments Museum) seems to be as a result of a decision given without considering the cultural structure of the environment and the planning decisions directed at the future. Its rear street location brings the question of "who will visit here as a museum?" to the mind. In addition to this, its upper floor usage as an official bureau belonging to public and distance to the other connected institutions are the environmental deficiencies in fulfilling the new function.



There is a heavy traffic on the streets placed on the east and the south of the Madrasa. Except the backyard of the building the sidewalks on the south, north and east façade are used as pedestrian pavement. It can be seen as positive that there is enough parking lot arrangement nearby the building; there are a fountain and a park arrangement for public use behind the madrasa. Reuse of the building with a new function controls the new constructions in the close environment of the building.

Although Ali Gav Madrasa is located in an important neighborhood, it can not be perceived because it stayed below the road altitude in the garden between the roads. The buildings around the madrasa do not suit the building. The front façade of the building was closed by the high-rise buildings; the backside façade was closed by a high school building and stayed below the road altitude as a result of the new arrangements in the environment. The environment of the Madrasa does not have the suitable character for the historical work of art.

Karatay Madrasa is located in Konya city center, across the Rectorship Building of Selcuk University and on one of the most important junction point of the city. Ince Minareli Madrasa is in Konya city center and within a historical texture composed of Beyhekim Mosque, Aleaddin Mosque and Exposition Area. Both Ince Minareli Madrasa and Karatay Madrasa are located on the pedestrian and vehicle axle coming from Mevlana Museum and circulating the Aleaddin periphery. For this reason these are placed on a location where both the pedestrians can easily reach and mass transport densely feeds. The function of the building as "museum" is seen appropriate for these reasons however the pedestrian way, the heavy vehicle way and the tramway placed nearby cause the madrasas to face the negative traffic effect.

#### 3.2. Usage Evaluation of the Buildings

The usage evaluation of the buildings is very important for decisions of today and the future. For this reason the new functions of the buildings and the place – function relationship should be evaluated.

When the relationship of the places and the functions in the building is taken up in Sırçalı Madrasa, it can be seen that the connection between the technical bureaus at the upper floor and the administrative section is not enough. To reach the administrative section from the technical bureaus at the first floor and the south of the building, firstly the stairs (vertical circulation member) then the arcade (horizontal circulation member) and again stairs must be used. That is to say; first you go downstairs, walk along the arcade in open courtyard and go upstairs again. It can be seen that there is a compulsion when the climatic conditions of Konya are considered. It is one of the compulsions in the circulation to reach the wet volumes from the technical bureaus along the open courtyard. The usage of the ground floor and the courtyard of the building as a museum in the form of a mummy, the calling empty places as stores, having no social interaction level between the users groups are considerable issues. The positive properties of the building are the relationship between each unit area and functions within themselves, user and service opportunities, and the suitable dimensional criteria directed towards the user groups. The size of the building, the number of users, the effect on the nonuser groups, the frequency of the connection and the usage of the inner building areas, the material choice and application in these areas are suitable for the new function, the places verifies the suitable dimensional criteria for the new function.



In Karatay and Ince Minareli Madrasa the relationship between the places and functions, transportation opportunities of users and various services, suitable dimensional criteria for user groups, their centered location in the city are positive properties for their usage as museum. In both of the buildings the size of the buildings, number of the users, façade character peculiar to the monumental building, effect on non-user groups and the connection of the exhibition places in the buildings to each other by the means of transparent members, material choice and application in the places are suitable for the usage of the buildings. However in Karatay Madrasa it stands out that the entrance to the closed section of the museum is given from the additional part which has a hut quality and does not verify the dimensional criteria for the users. In both of the buildings, the open-air connection of the users with the toilet-lavatory blocks in the garden, the part of the building which is under the earth level brings the compulsion for the access and service to the additions applied without adequate studies.

The semi-open sitting area and the pool in the garden of Karatay Madrasa are positive applications directed towards forming social areas required for the contemporary museum understanding. The semi-open area in the south of Ince Minareli Madrasa where the stone works are exhibited does not seem to be in harmony with the madrasa for its location, material, top cover, dimension and form.

Ali Gav Madrasa was discharged by TEKSAD 1.5 years ago and the situation is in court with the Directorate of Waqfs. For this reason the building is not in use.

3.3. Structural Evaluation of the Buildings

#### 3.3.1. Sırçalı madrasa

• The interventions affecting exterior of the building

Walls: The use of waterproof untraditional materials in tea kitchen and toilet parts accelerates the corruption in stone walls. Coatings both change the appearance of the walls and accelerate the corruption.

Metallic parts: Despite of repairing the metallic parts of the building or changing the corrupted parts, a big part of them were removed and door, window handles and hinges with window balustrades were changed to have a smooth appearance.

Windows: Concrete is used outside; gypsum material is used in the interior of the windows. Changes were done in the number of the windows, dimension of them and window system in the cells. Consequently new ones were applied instead of preserving the original window components.

Health and safety conditions: It has been tried to be provided the illumination, airconditioning and cooling systems- suitable for today's standards, however heating problem was tried to be solved by the means of radiators which were not appropriate for the original character of the building.



• The interventions affecting the interior of the building

Structural system: The vibrations of the heavy traffic on the roads passing around the building could cause sittings in the foundation of the building.

Interior spaces, architectural components, surfaces: The effect of the original material was decreased by using new decorative components in interior spaces especially in the room of the director and secretary. All of the cell doors were made again because of turning the student cells into technical bureau and stones.

Technical systems: Vertical rain pipe, water pipe, electricity cables, heating pipes are left outside and caused visual pollution. The installations are renewed by the materials not having original visual effect (Figure 2.6).



Figure 2.6. Electiricity installation causing visual failure in Sırçalı Madrasa

#### 3.3.2. Ali Gav madrasa

The building which was highly affected by the appropriation trouble was repaired by using simple materials because of the economical reasons.

• The interventions affecting exterior of the building

Walls: There is no connection with the originality of the building in filling the pointing parts of stone walls with cement on the facades of the building. The different expansion coefficient and the porosity inside the new material could harm the original material. Roofs: The top of the brick structured dome and iwan vault of the original structure was covered by the site-casting mosaic in an inappropriate way for its period. One of the components giving the structure its character –domed top cover- was changed. Entrances and porches: The area between the two columns in front of the iwan was closed by the framed glass and formed a new entrance (Figure 2.7).





Figure 2.7.Entrance places of Ali Gav Madrasa

- The interventions affecting the interior of the building
  - Structural system: The structural system was damaged because of not having periodical maintenance, the load bearing walls and dome disappeared. Besides the vehicle roads opened around the building and foundation excavations of the high-rise buildings some destruction occurred in the building. It was determined in a research done in 1965 that the foundations of the high-rise buildings around the madrasa were built on top of the walls of the madrasa.

Interior spaces, architectural components, and surfaces: The front of the main iwan was closed by a glass with wooden frame with the aim of forming a closed place. The historical wall surfaces of the building were covered by wooden wainscot. It is possible for people and negative climatic conditions to harm the interior space components and surfaces of the building because of the broken unsafe doors and windows.

Technical systems: The effective conservation precautions were not taken about the technical systems so the corruption on the wall surfaces accelerated and the electricity cables caused visual pollution and caused the building to lose its originality.

• Additional building

While the building was being used by TEKSAD, formation of the service places like toilets-lavatories and tea kitchen necessity occurred. Service places were formed by building a one-storey place outside the body walls of the madrasa in the garden of the building. This addition directly affected the traditional composition balance of the monument. Also the construction of the additional building without required studies has caused visual pollution. The additional building can not be perceived from the road as the main building and the additional one is in a lower position from the road altitude.



#### 3.3.3. Karatay Madrasa

• The interventions affecting exterior of the building

Walls: The corruptions in the walls having rubble as the bond system were repaired by filling the empty parts with rubble and lime mortar for the pointing. New windows were opened in one of the student cells which will be used as administrative section.

Metallic components: Instead of repairing the metallic components or changing only the ruined part of the building, a large amount of them were removed and changed with new transparent material in cell doors.

Windows: The windows of cells, iwan and tomb giving the building its character were changed, and two new windows were opened to the cell wall which was used as administrative bureau. The historical appearance and effect was changed by using the new materials for the window cavities placed on top of the cell door cavities.

Entrance and porches: In the reuse of the building the entrance was formed by adding a new place to the original entrance iwan.

Health and safety rules: The electricity feeding lines, the alarm line against the fire and robbery were passed through the canals opened on the ground and walls so the surface character of the original building material was corrupted.

• The interventions affecting the interior of the building Structural system: The vibrations of the heavy pedestrian, vehicle and tramway traffic around the building have been causing movement in the foundation of the historical building.

Interior places, architectural components and surfaces: The transparent vitrines formed in the cell door cavities changes the interior place speculation of the building.

Technical systems: The original material was damaged by opening canals on the wall surfaces for hiding the mechanical installation in the wall and the ground.

• Additional building

As a result of changing the building to a museum with the contemporary museum understanding, some auxiliary places like information, administrative section, toilets-lavatories and open-sitting areas were tried to be formed. These additions were placed in a way that these would not overwhelm the building with its mass or material and would not expose. However as the appropriate studies were not done there is a visual failure for these additions (Figure 2.8).



Figure 2.8. Additional Building of Karatay Madrasa



- 3.3.4. İnce Minareli Madrasa
  - The interventions affecting exterior of the building

Metallic components: Instead of repairing the metallic components or changing only the ruined part of the building, a large amount of them were removed and changed with new transparent material in cell doors.

Windows: The semi-open part of the original building placed in front of the masjid as last congregation section was rearranged and closed with hidden joinery, uncolored transparent glass for safety reasons (Figure 2.9).



Figure 2.9. Closed masjid part of İnce Minareli Madrasa

Health and safety rules: The electricity feeding lines, the alarm line against the fire and robbery were passed through the canals opened on the ground and walls so the surface character of the original building material was corrupted.

- The interventions affecting the interior of the building
- They are same with the interventions of Karatay Madrasa and have similar effects.

• Additional building For converting the building to a museum with contemporary understanding, auxiliary places like information, toilets-lavatories were built. These additions were placed in a way that these would not overwhelm the building with its mass or material and would not expose.

#### **4. CONCLUSION**

The following results exposed when the standing buildings of the Anatolian Seljuks Madrasas in Konya were examined in environmental, usage and structural level. For Sırçalı Madrasa; it can be said that the building has been used for a public purpose in a commercial and residential environment and a position close to the city center. However the usage aim of the building is a result of a decision given without considering the cultural structure of the environment and planning decisions directed at the future. The new function is not an appropriate usage for the medium with in the city texture. When the relationship between the areas and actions within the building was evaluated, it can be seen that the connection between the technical bureau and administrative section is insufficient. The interventions in structural level were not in the quality corrupting the original character of the building.



In Ali Gav Madrasa; it is seen that the construction around the building does not adjusts the building. The building which was highly affected by the appropriation trouble was repaired by using simple materials because of the economical reasons. The structural interventions were in the quality damaging the original character of the building. There is a scale and proportion disharmony between the additional building and the existing one.

Karatay and İnce Minareli Madrasa have been used as museums in a junction point of historical places, other education institutions, parks, car parks, bus and tramway stations with strong pedestrian and vehicle connections. There is an appropriate use from the environmental and functional point. Some additional buildings had to be done during the studies of adapting the buildings to their new function. The interventions required by the new function stayed within acceptable limits.

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# SECOND HOMES IN A COASTAL AREA-MAHMUTLAR SAMPLE

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Second homes are defined as the homes that are used for resting and enjoying for a short period of time away from the home used for daily using. It can also be said that, these homes have tourism functions either. As a matter of fact, the fact of second homes, holiday villas that can be thought as natural demands. But the development of the second homes on coastal areas in Türkiye is unfortunately seen as damaging the physical environment, natural and cultural resources or destroying them totally. This increases the pressure on the coasts also.

Mahmutlar is a settlement with its rapidly increasing population, investments in tourism sector, and its changing economical aspect and with its important potential. Alanya-Mahmutlar which is one of the oldest tourism places of Türkiye – has become an area for people who have their second homes densely there because of its climate, sea, beaches and closeness to big cities.

The scope of the study is to specify the characteristics of second homes and the users of second homes in Mahmutlar and to find out the effects of second homes to the physical and social environment in Mahmutlar.

Keywords:, Second homes, Physical environment, Mahmutlar, Tourism

#### 1. INTRODUCTION

Second housing is defined in the Dictionary of Urban Science (Keleş;1980) as the housing unit which one stays during his short trips or vacations away from his permanent home. In other words, second housing can be defined as the housing a function of which is tourism.

The vacation homes are classified in several ways both in our country and in the world. One of these is the classification consisting of the holiday homes along the Queensland coasts:

- 1- Private holiday homes that are used by their owners or by the guests during summer holidays or in the weekends.
- 2- Holiday homes that are rented out mostly in summer by their owners in order to derive revenue.
- 3- Holiday homes that are open to the family's use as a private holiday home temporarily and are operated by other institutions in the rest of the year.
- 4- Holiday homes that are bought with the aim of investment and rented out by a company (KOÇ; 1996).



Acceleration of the urbanization, the changes in the vacation and traveling habits of the people, the priority of the transportation facility in the coastal areas have increased the demand for having a second and holiday home in the coarse of time. Unfortunately, in our country, the development of the second housing which may be considered as a necessity has turned into physical environmental pollution, destruction or depletion of the historical and natural assets.

The fact that the second housing which is desired to be used especially during the annual vacation periods are located around the coastal settlements due to the climatic conditions, the desire of the second housing owners to be close to sea result in the location of these areas to be parallel to the coast. However, the fact that the second housing areas cover a large field around the settlements constitutes an adverse effect on the development of the tourism and protection of the natural assets. These areas that are individually planned limit significantly the possible capacity of water coarse in the region and the opportunity of making good use of the coasts (KORÇA; 1991). The main problem with the cooperative apartment buildings and housing complexes is that they form a weird mosaic since they are not planned as a whole but locally (GEZIN; 1991). Second housing necessitates a large area since the houses are built in a scattered way and requires additional space for road, infrastructure and other necessary facilities. That the second housing is built on a large area in a wastefully manner, that the owners make good use of these houses for a limited period of the year and that the areas suitable for relaxation purposes are wastefully allocated for the second housing within the same region as the permanent housing constitute a typical example of irrational use of land. This kind of use leads to aggravation of the overuse of some tourist attractions (TOSKAY; 1983). In our country, in most of the second housing areas, there are septic tanks instead of sewage system. This causes contagious diseases and threatens human health. Thus it unbalances the natural environment, especially sea.

# 2. THE METHOD OF THE STUDY

#### Scope of the Study

The scope of the study is to specify the characteristics of second homes and the users of second homes in Mahmutlar and to find out the effects of second homes to the physical and social environment in Mahmutlar.

#### The Limits of the Study

It is discussed that there is a dense development of tourism and second home because it is near Alanya, one of the important tourism centers and in the impact of even Alanya's managing and social aspects. So the research study includes the second homes just take place in Mahmutlar settlement.

#### Methodology

The type of the study is descriptive. Observation technique used in the study is questionnaire, oral conservations with the local and municipality authorities.

#### The Survey Instrument

The data collection instrument was prepared following a rewiev of existing literature and included questions adopted by a number of previously administered questionnaires dealing with the second home owner's attitudes and opinions of the second home development about the settlement.



The questionnaire consisted of 53 questions, but this paper is based on the answers to:

- General profile of the second home owners
- General profile of the second homes
- Second homes' effects on environmental quality

32 questions were excluded from the analyses for the reason that they did not contribute to the aim of this study. These questions have been analyzed elsewhere (GÜNDÜZ, 2003).

In the study area, 180 questionnaires were held but 148 of these were taken into account. This study has been carried out by the method of face to face conversations by chance in 34 site and 18 apartment.

#### Data Analysis

For the analysis of data the Statistical Package for the Social Sciences (SPSS, version 11.0) was used.

# **3. RESEARCH FINDINGS**

#### 3.1 Research Area

The city of Antalya which Mahmutlar is a county of is located in the south of Turkey, in the Mediterranean Region. Mahmutlar is 145 km distance from Antalya and Alanya is 10 km distance (Figure 1). Since Mahmutlar is close to the northern winds because it is surrounded by mountains in the north, it has a warmer climate than the other places along the same latitude. For this reason, the summers are hot and dry and the winters are mild and rainy.



#### Figure 1

In Mahmutlar, second, third, sixth, seventh and eight class agricultural lands are found. In the alluvial land in Mahmutlar, irrigated farming is practiced. Banana is widely cultivated in the colluvial land.



There are three districts in Mahmutlar, namely Yeni District, Cumhuriyet District and Yukarı District. The one which is most populated and closest to the coast is Cumhuriyet District. Yukarı District is located at the farthest distance from the coast and it is least populated district in Mahmutlar.

According to the information obtained through researches in several publications, the foundation of the settlement dates back centuries. It is known that the first settlement was at the time of Romans. Within the county borders, traces of Amaksiya, Laertis and Syedras ancient cities are found (ŞAHİN; 1997).

As for the historical heritages, ruins of Romans are found in Asar, 7 km distance from Mahmutlar and there are ruins of a castle of Seljuk Empire in the south of Mahmutlar.

In Mahmutlar, there are numerous historical ruins whose archeological researches and excavations are not completed and about which no information has been obtained due to financial problems and staff insufficiency. Thus these historical heritages cannot be made useful in tourism.

#### **3.2. Mahmutlar - The Profiles of The Second Homes And The Owners**

As mentioned before, Mahmutlar has become a settlement center of diffused cultures from BC to today. It is 10 km away from Alanya and has 4,5 km coast in Alanya Bay. It is one of the dense tourism areas with the population 15000 in winter and 40000 in summer, 2805 ha area in square meter and approximately 7050 beds capacity. Today the town is one of the tourism areas of our country with both natural beauty and archeological values. Its being reached easily and its other values make the area attractive for second homes.

A great number of the home stock in the city is second homes. These homes start from settlement line, stand on the coast line by increasing gradually and develop an back streets parallel to this axis. Today, agriculture sector has started to lose its former importance so some people have been leaving agriculture and inclining towards trade especially tourism. Thus, it is seemed that agricultural areas in cities have been turned into usage of second homes.

Some areas in north part where commercial growing hothouse and field vegetables are made, citrus fruits and gardens of which economical values are too high are opened to the usage of second homes. These areas both destroy the natural values and effect the city scene negatively (Photo1).

After some researches and observation in this area, it is seen that the construction quality is extremely bad in Mahmutlar. The front sides of the buildings which were just completed 3-5 years ago seem rather disorderly because of the poor quality supplies. Most of the buildings need to be repaired. However, due to the approval of the draft resolution enabling the foreigners to acquire property, the construction sector in the Aegean and Mediterranean Regions revived and private housing complexes were built. This development has been under way in Mahmutlar since the last year. 10 thousand houses are under construction to be sold to foreigners. Especially Dutch and Irish tourists are interested in these houses. Newly constructed housing complexes in Mahmutlar where the constructions of second housing are common for years have brought in a new understanding of the summer houses. Many facilities which the present houses do not have become standard features for the buildings that are constructed as housing complexes (such as the swimming pool, security, parking lot, market). It is observed that the construction qualities are higher than the usual (Photo2-3).



The density in coastal region has also moved through the midlands. The agricultural land that determines settlement's macro-form and that could be taken as a threshold which is one of the most important factor as a matter of planning has been and still being devastated. Banana and citrus fields, which provide considerable income for Turkish economy, has been devastated and these places has been allowed to second home zoning. Second home density affects the settlement's micro-climate and, wind chill rises up consequently.

That homes were planned in a way that sea breeze is carried over the midlands, is worthwhile. It can be appraised as a positive quality for Mahmutlar if worse examples throughout the country are remembered and taken into account. Due to one by one plans and development of second homes in the settlement area, they restrict benefiting from coastal line opportunities, moreover they compose a spoiling effect on urban landscape and silhouette (Photo 4-5-6).



Photo 1



Photo 2







Photo 5



Photo 4



Photo 6



#### **3.3** Questioning the Expectations and Opinions of the Users

The findings obtained through the public survey which was carried out in order to determine the user profile of the second house in Mahmutlar, the environmental effects of the second housing and the purpose of the use of the area are assessed below.

The owners of the second homes in Mahmutlar are usually over middle aged people. The majority of the users is tradesman / craftsman (33.1%) and retired people (19.6%). When the educational backgrounds of the owners are evaluated, the ratio of the bachelors is striking. It is possible to say that the user's of second homes in Mahmutlar belong to middle-class. It was confirmed that the 61,5% of the owners of the second houses in Mahmutlar reside in the Central Anatolian Region, 16,2% in the Meditarrenean Region, 11,5% in the Marmara Region, 4.7% in the Black Sea Region and 2% in the Aegean Region. At least one or more two reasons of having a summer house were wanted to state from the users of the study area. The results of the questionnaire shows that the basic reason for having summer house is to achieve summer holiday for family. And also the basic reason for buying second homes was asked to the users, and we can see that it is investment and using. 31,1% of the second home users bought their second houses from the previous user (second hand). Thoughts for future of the second homes have been examined in general, so the users want to feel the houses as safety place for family members and themselves, at least they have them to use at weekends and after being retired in their spare time, and to save Money.

Standing empty of the homes at the settlement area when it is not used (it is about a nine or ten months long period of time in a year) supports and confirms the idea of "wastage of national resources" that is one of the biggest critic against standing empty of the second homes.

It is asked to the residents that from which aspects it negatively affects the environmental quality. It is requested that at least one option must be chosen as an answer. Besides that choosing more than one option is not limited. According to the survey results, the foremost negative effects of developing tourism and second homes are the restriction of agriculture by 30% and sea pollution by 26 The most stated effects of the second housing in the region by the owners are that it damages the forests and plants (stated at a rate of 19%) and that it causes visual contamination (stated at a rate of 16%). The least stated effects are that it causes air pollution (stated at a rate of) and that it causes destruction of the historical and cultural assets (stated at a rate of 2%) and gives harm to the animals in the region and sea (stated at a rate of 2%). Only one of the users considers it destructs the archeological sites (Table 1).

There is no canalization network in the settlement area and cesspool is considered as a solution to the problem. Absence of canalization system and disposing of wastes by cesspool as a whole are other damages to the environment. By using excessively in summer season, there is a risk that wastes can be mixed with ground water. This can be a threat to public health by leading to contagious diseases and this can also devastate water and balance of the natural environment tied to water.



Table1.					
CATEGORY		%	CATEGORY	Y	
User's Age Gaps	20-30 year's old	1,4		Bought from the previous owner (second hand)	31,1
	31-40 year's old	20,9		Built by the affiliated housing cooperative	27,7
	41-50 year's old	37,2		Bought from the main contractor /firm	26,4
	51-60 year's old	33,1	The West of	Built by me	4,1
	61 and up	7,4	Owning the House	Boughtfromthepreviousowner(thirdhand)	3,4
	Tradesman/Craftsman	33,1		Bought from a big building firm	2,7
	Retired	19,6	By right of inheritance	2,0	
Householder' s Job	Free	17,6		Other	2,0
	Private/Public concern	16,9		<u>Flat received from</u> <u>contractor for</u> landownership	0,7
	Worker	5,4		Inheriting to children	24,3
	Officer	4,1		Selling	23,6
	<u>Tradesman</u> - <u>Industrialist</u>	2,0		Protecting exactly	21,6
	Academic	1,4	Thoughts	To overhaul and use	17,6
	Primary School	School 14,9 for Future	for Future	To be permanently resident after retirement	9,5
Householder' s Educational	Secondary School	8,8		To leave the house for relatives	2,7
Background	High School	27,7		For renting	0,7
	University	47,3	The Seasons	Summer	92,6
	Institute of Art	1,4	of the Home	Permanently	6,1
	Upper Class	2,7	Using	Winter	1,4
Income Groups	Upper Middle Class	29,1	The time	1-2 weeks	14,2
	Middle Class	62,8	intervals	3-4 weeks	36,5
	Middle Low Class	3,4	that the	1 - 3 months	29,1
	Low Class	1,4	dwellings	3- 6 months	9,5
	Unanswered	0,7	are used	More than 6 months	4,7



# Table1. Cont.

	Marmara Region	11,5		Unanswered	6,1
	Aegean Region	2,0	2,0 61,5Condition of the dwelling when it is not used	Vacant	71,6
	Central Anatolia Region	61,5		Rent	3,4
	Mediterranean Region	16,2		Vacation without pay for relatives	21,6
Pormonant	Black Sea Region	4,7		Unanswered	3,4
Fermanent	Abroad		Second	Negative	100
of Users			homes'	-	
of Users		4,1	effects on		
			environment		
			al quality		
The Basic Reasons for Having Summer House	Achieving summer holiday for family	51		Limited of agricultural areas	30
	Retirement	16		Sea Pollution	26
	Because the best exchange appreciation	16	Second	Destroying flora and forests	19
	For social prestige	12	Second homos?	View and noise pollution	16
	Coming into a value for future	5	nomes' negative effects on environment	Air Pollution	5
The Basic Reason For Buying Second Homes	Investment and using	56,8		Destroy of historical and cultural values	2
	Only for using	41,2		Giving harms to sea and land animals	2
	Only for investment	2,0		Destroy of archeological areas	0

# 4. RESULTS AND EVALUATION

Alanya-Mahmutlar that is one of the oldest tourism centers in Turkey has been one of the regions in which second homes are densed due to its climate, sea, beaches and closeness to the big cities. Today, Mahmutlar is face to face with a dense second home fact. The second homes which were acquired by cooperativizing show a more dominant degree of development than primary homes' development. This development creates negative effects on the natural urban development. It is a fact that second home demand increases the land and dwelling prices. While these circumstances are considered positively by property owners, permanent population who have limited budget can not buy houses easily. It is not possible for permanent population, renting houses in reasonable conditions. Turkey is widely popular among foreigners because of its potential, natural assets, cultural heritages it holds and since it is still cheaper than Greece and Spain. Although income level is high in Europe, the cost of living is high as well. For this reason, the primary choice of the Europeans is Turkey since they have the opportunity of obtaining the living standards they desire for lower prices. The fact that the sources provided by the pension funds in the European Union can be make use of in Turkey brings in a great flow of source. Development and its effects are a dynamic process. Therefore, the effects of tourism today do not necessarily reflect the impact several years later. . The aberration experienced in 1970s-1980s in order to produce housing for foreigners and that turned into looting of the coasts should not be reiterated.



It is determined that, the time intervals that dwellings are used are between three weeks and three months. At the times while residents are not in their second homes, nearly 100% of these places are unoccupied. This is considered as an economical prodigality and also leads to natural and coastal damages which can not be recovered. Therefore building second homes must be subject to some restrictions.

Since the work place is close to Alanya, such a big tourism center, tourism has become rival to agriculture. The agricultural land which is one of the most important factors for the planning which determines the macroform of the settlement was destructed and that destruction is still under way. That the areas which cover banana and citrus gardens providing great resource to the Turkish economy are destructed and that these areas became available for the second housing use are important issues that should be emphasized and should be avoided with the high-scale planning resolutions.

It has lost its availability as an investment area for the tourism facilities that can be used for longer periods although it is close to Alanya where is one of the big holiday centers. Because it gives service for a limited period of the year to the summer housing users.

As a result, the effects of the second housing in the settlement of Mahmutlar on the physical and social environment could not go any further from the reality of our country. In fact it has become one of the most qualified regions that shows the problems in our country. In order to minimize its additional burden on state economy, pressures upon the environment, its damages to the environmental resources and to keep up with the changing tourism understanding, different alternatives should be developed and the efforts towards bringing it in to the tourism should be accelerated.

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# THE IMPORTANCE OF CULTURE TOURISM IN OWNING CULTURAL HERITAGE: ILISTRA / GOKYURT SETTLEMENT (TURKEY) CASE

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In recent years, the mass tourism dealing sea-sand-sun has started to leave its place to culture tourism in which seeing and living the historical and cultural assets gained importance. The Works of art and archaic city ruins carrying the cultural-historical characteristics of a particular period or place to present time forms the most important elements of culture tourism. The culture tourism is one of the most important tourism kinds in Turkey hosting a very rich cultural and natural heritage together with the coincidence of different cultures one on the top of the other and the reflection of this variation to space. The determination of culture tourism potential of Kilistra settlement which has a rich history and cultural assets testifying history, the development of the strategies directed at providing the sustainability of tourism and settlement culture. In that respects the history of the settlement and space development process were examined, geographical and cultural assets were analyzed and SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis was done for developing the preserve-use strategies. As a result of the evaluation of the analytical data the strategies directed at realizing the sustainability of Kilistra settlement that exposing its historical-cultural and natural assets in the scope of culture tourism were developed.

Key Words: Cultural heritage, culture tourism, sustainability, Kilistra, Lystra.

# 1. Introduction

Culture tourism concept was emerged in the beginning of the 1980's during the studies of introduction of cultural identity and heritage of EU. Cultural tourism is a form of experiential tourism based on the search for and participation in new and deep cultural experiences of an aesthetic, intellectual, emotional, or psychological nature [1]. It has been part of the conventional wisdom of tourism and leisure studies that cultural tourism is one of the growth sectors of the West European tourism industry and that this relationship between culture and tourism is mutually beneficial [2]. Richard cites various factors which have contributed to this growth, among them are the followings:

- the current social trend towards an understanding of heritage values and the democratization of culture;

- the increasing level of education of population in general;

- the aging of the population (mainly in European countries)

- the modernization and greater impact of the promotional tools used in the different sectors of the tourism industry [3].



Culture word is a concept that does not only include the past but also the actual. Most of the activities (concert, exhibition, festival, carnival, Olympic Games and etc.) related with the present day are also included by the concept of the culture tourism. Thus, culture tourism can be seen as two categories namely actual and historical in the tourism economy. In general, culture tourism includes education, art, and culture, festival tours, the visits to the areas preserved for their monuments, archaeological and natural characteristics, pilgrimages and especially the journeys having cultural activity as scope.

The natural and cultural heritage, diversities and living cultures are major tourism attractions. Excessive or poorly-managed tourism and tourism related to the developments can threaten their physical nature, integrity and significant characteristics. The ecological setting, culture and lifestyles of host communities may also be degraded, along with the visitor's experience of the place.

There were put on some principles of the cultural tourism charter at the 12<sup>th</sup> General Assembly in Mexico. These are;

- Since domestic and international tourism is among the foremost vehicles for cultural Exchange, preservation should provide responsible and well managed opportunities for members of the host community and visitors to experience and understand that community's heritage and culture at first hand.
- The relationship between Heritage Places and Tourism is dynamic and may involve conflicting values. It should be managed in a sustainable way for present and future generations.
- Conservation and Tourism Planning for Heritage Places should ensure that the Visitor Experience will be worthwhile, satisfying and enjoyable.
- Host communities and indigenous people should be involved in planning for conservation and tourism.
- Tourism and conservation activities should benefit the host community.
- Tourism promotion programmers should protect and enhance Natural and Cultural Heritage characteristics.

Tourism should bring benefits to host communities and provide an important means and motivation for them to care for and maintain their heritage and cultural practices. The involvement and co-operation of local and/or indigenous community representatives, development plans and site managers is necessary to achieve a sustainable tourism industry and enhance the protection of heritage resources for future generations [4].

The culture tourism is one of the most important tourism kinds in Turkey hosting a very rich cultural and natural heritage together with the coincidence of different cultures. With this study, it's aimed to exhibit potential of culture tourism of Kilistra antique settlement by determining historical and cultural assets and to define development strategies that are intended to evaluation of these potentials. For this aim, the strengths with opportunities and weaknesses with threats of Kilistra antique settlement regarding to the improvement of culture tourism were analyzed with SWOT method. As the result of analysis, civic development strategies were developed for increasing the effects of strengths of the settlement and reducing the weaknesses of the settlement.



- 2. The Characteristics of the Study Area
- 2.1. Geographic location of settlement

Kilistra the hidden antique city is in Gökyurt village of Hatunsaray borough of central Meram County that is about 45km South-west of Konya city (Fig.1.). It is the central of the neighbouring settlements like Güneydere (Botsa), Yeşildere (Detse), Kayalı (Tolsa), Erenkaya (Bulumea), İlyasbaba-Tekke, Evliya and Kumralı. Gökyurt village shows the same geological properties with its neighbours Deste and Botsa. Volcano spraying ash called as tuff stone forms massive rock ranges. With these properties, it resembles Kapadokya, Ihlara, Karaman Taşkale, Manazan and its surroundings [5].



2.2. Historical characteristics of settlement and its vicinity

The researches done in the Mula Tumulus that is close to the city showed that the history of the settlement reaches till B.C. 2000 years. The city was affiliated to Iconium that is the capital city of Lykaonia in B.C 1st century and is in the border of Lykaonia. In the same centuries the region was in the border of Roman Empire is in the place where *King's Way* (Via Sebaste) intersects with the way that connects Iconium (Konya) to the south. In B.C. 25 year, Lystra was established as a military colonial city in the term of Empire Augustus [6-7]. During the Homonad wars Lystra city was looted by Homonads. Later on folk of Lystra city immigrate to Kilistra and surroundings that is suitable for hiding and defending because of the molestation and compulsion applied to them and aroused from regional competition between Roman people who are members of paganism and Jewish's [6].

In A.D. 50-60 years, two Saints of apostles namely Paulus and Barnabas were stopped by Iconium (Konya) and Lystra. And then they stayed in this region for along time and offered homilies to the public and made most of the Jewish and Greek people Christian [8]. Saint Paulus told that the folk of the Lystra was local or authentic and they spoke a language peculiar to them. Saint Paulus stated a pagan temple outside of the city and tried to spread



Christianity belief by propaganda. The city that includes a forest of craved rocks belongs to the Middle age wasn't handled by researchers well. The resources of the Byzantium term mentioned about this region but none of Kilistra. The travelers came to Konya and the surrounding centers for investigation at nearly the beginning of 12.century and never dropped to Kilistra [6]. W. M. Ramsay was the first researcher who visited Kilistra determined its name by epigraph that he founded in this region in 1880s [9].

### 2.3. Present conditions of antique Kilistra settlement

Ali Sumas Mountain exists in west of Kilistra, the church belongs to Byzantium term, castle and ramparts of Roman term and its other complementary structures are all in a height that dominates and has a good panorama of the region (Fig.2.). Kilistra antique city that is located on 2km<sup>2</sup> fields is like rock hollow that is carved to the soft lava formatted rocks and similar to the Kapadokya region. The center of the city is still on the soft lava formatted plato perpendicular brae where Gökyurt village is located on. Under this plato is completely an underground city (hidden city).



Fig.2. Church entrance on Ali Sumas Mountain

In Kilistra antique city:

- Antic way –Via Sebaste- that passes between cemeteries of two villages made in eastern of city and comes from Lystra side exists (Fig.3.)

- In the south-east entrance of the city there is Devrek settlement region that is 500x200 m size and a plato with perpendicular brae, observation tower in the south of entrance gate and rock grave (necropolis) in open and close type whereas in the foot there is a water cistern.

- The rock hole formatted chapel and room graves exist in the east of the rock mass that lies down from the entrance of the ancient way to the north. This region is called as Konacak settlement region (Fig.4.). In the west side of Konacak settlement region there is a meeting center and connected to this mass there is a cross plan chapel called as "Sandıkkaya" and destroyed civilian building groups in terraces adjacent to the chapel in the south-west side (Fig. 5.1.-5.2.).

- On tuff reef hill (tumulus) that shows the property of the underground city, Gökyurt village settlement exists. The container shaped like water canteen founded in tumulus belongs to B.C. 2 thousands year whereas the ceramic part came with flow rubbles and were founded during the clearance belonged to the Hellenistic Age (Fig.6.).



- In the region known as Paulönü- Koyak Valley Settlement, there is Kayabaşı ancient parish in the east foot of Ardıçlı hill, necropolis and Sümbül-ini Church (Saint Paul church) that is east of this rock mass and 2-3 layers of building groups connecting to this church (Fig.7.). In Ardıçlı hill-Başpınar Harmanları settlement field, a big water cistern with three naves (Katırini) exists, whereas in Söğütlü Dere settlement field unfermented grape-juice (must) houses exists (Fig.8-9.) [5].



Fig.3. Location of cultural assets of Kilistra Antique City



Fig.4. Konacak Settlement.



Fig. 5.1. Cross Plan Chapel



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Fig.5.2. Meeting center and stairs in front of the church.



Fig.6. Kilistra settlement scene.





Fig.8. Katırini water cistern.



Fig.9. Must houses.



# 2.4. Architectural characteristics of Kilistra settlement

The current texture of Kilistra settlement has an appearance like brae houses suitable to the topographic structure. Two layers sheltering units with flat roof were assembled on the localities that are formed by carving tuff rock (Fig.10.). Entrance of the sheltering units that take place on the narrow stabilized way is realized by flatness that is formed via heightening with several ramps from the floor. The field that the entrance door is opened toward is called as "street" in the public and is a middle field that is viewed by differently regarding to order and form from each house (Fig.11.). In this locality, walking around is done by shoes used in outside and kitchens and rooms are opened toward this street. The outer side of the street is opened toward outside through oriel (Fig.12). In interior locality, "bench" formed by elevation difference was used as sitting locality in the summer months. This locality is an authentic structuring which provides the relation of inside and outside. In the houses, bench either exists in the surface of opposite of the entrance or right or left surface of the entrance.



Fig.10. Houses suitable to the topographic structure.



Fig.11. Different types of dwellings.



Fig.12. Oriels in dwellings.



Inclined topography of the land was used by precincts public in an expertise way and the connection to the stable that is the lower floor of the house was done by a stairs through the middle field called as street. This stable can also be reached from outside. The stable exists in lower floor is kept as wide in some houses and an entrance to the stable roof that is designed as a flat roof is done from the living field. The toilet requirement of the houses was provided in localities located on the roof (Fig.13.).



Fig.13. Toilet arrangements on the roof.

The number of the rooms depends on the economical situation and population of the household in related house whereas order and dimension of the room doesn't. The width of the dimension of the room is determined by trees used in top cover. The width of the room is between 3.00-3.20 m. Every room meets the requirement of living, sitting, relaxing, sleeping, eating, etc. One of the rooms is fancier than the others. The dishes are used as a knickknack in the rooms. The shelves formed on the surface of the wall are the fields where the dishes are placed to (Fig.14.).



Fig.14. Room arrangement in the dwellings.

The kitchen is opened toward the middle field similar to the rooms. There is an oven in the kitchen for cooking. The chimney of oven exists in the outer wall surface is ended with an cube on the surface of the roof so as to extend the direction of the smoke. In the kitchen are benches and shelves for placing the kitchen appliances. Replacing old appliances with current kitchen appliances in this locality with time, original locality order has been changed (Fig.15.).



The stone has been used as building material in houses. The intervals between the chipped stones were filled with rubble stones. Wooden balks were placed between stone lines. The windows in living floor were placed between these wooden balks. The oriel takes place in middle field was made by wooden completely. By extending the wooden balks tied to the wall toward the surface of the wall, the oriel was formed. In order to prevent the slope, it's supported with a buttress. The top covers of the houses are flat roof type. The straw is laid on the wooden roof and then by spreading and pressing the earthen on the straw the roof is formed. The wooden poles are used in both interior locality and middle field in structure. The wooden poles extend or increase the size of the locality.



Fig.15. Kitchen arrangement in the dwelling.

2.5. Cultural characteristics of Kilistra settlement

The major mainstay of the public of the village is farming, agricultural and stock-breeding. The viniculture had also vital role during the settlement history of the precincts. The existence of the regions such as Karabağ, Kuzbağ, Karşıbağ and etc and workshops as independent or in the houses showed the production of wine intensively. These workshops and wine houses were kept operated during Islamic term under the name of the unfermented grape-juice (must) house and this is the indication of making use of the harvest obtained from viniculture during the centuries [7]. Moreover, apiculture is one of the mainstays and black-beehive honey production is made in the village.

Handcraft and textile have also an important and fundamental history in the precincts. The young girls who are in marriage age made baskets that have colours and patterns peculiar to the precincts and they aligned them to the wall which is called as street and exists in the middle field of their houses. Excessive number of the baskets is a message that indicates that the one who made the baskets are ready to get marriage. A dish is lapsed onto the single part stone takes place on the right window of the top floor. Household believe that this dish symbolizes the abundance. The dishes colored by household have also taken care in the interior locality as it's mentioned before (Fig.16.).

Gökyurt village still makes their traditions alive. One of these traditions is the drink that is believed to be a remedy for the illness and that's made from the local vegetable which is known as Kirebolu in Kapadokya whereas known as Gilabba in here. The pumpkin is still accepted as holy and only put on the tables of the woman in the wedding ceremonies.



Kilistra that is the subject of the discourses and miracles of Saint Paulus and Barnabas is being visited by Christians under the scope of belief tourism. There is only one village residency for accommodation in the village.



Fig.16. Dishes on the right window of the top floor.

Although the digs have been continuing since 1997 and no official opening ceremony is done for tourism, Kilistra is still worthy to be seen with its diggings and other assets obtained till today. In untouched nature, there are caves and seclusion rooms carved to rocks in heights. The diggings obtained till today are five chapels, one water cistern, one ceramic atelier and two observation towers.

Conservation and saving cultural assets of Kilistra antique city and surroundings was started in 1987 via announcing Ardıçlı Tumulus and Necropolis region as 1st degree Archeological site by the Konya Preservation Board. Conservation works kept on in 2001 by entering Byzantium Church and remainders of castle and rampart of Roman term exist on the Ali Sumas Mountain in an official register as 1st degree Archeological site. Harmanyeri location, the tumulus where the Gökyurt village settlement exist, Kayatepe location which is at the north-west of the village and Kilisırasekisi Saddles Reefs which is at the south-west of the village were registered as 1st degree natural site, urban and archeological site, 2nd degree natural site respectively in 2001. The dig, clearance, repair and restoration works in the ancient city have been carried on since 2001 by Konya Museum Directorate.

3. Development Strategies of Kilistra Settlement under the Scope of Culture Tourism

SWOT analysis was done as guidance to produce the strategies which intend to evaluate the historical and cultural assets Kilistra antique city under the scope of culture tourism. (Table 1).



Table	1.	SWOT	analysis	used	in	the	evaluation	of	culture	tourism	potential	of	Kilistra
settlen	nen	t.											

STRENGTHS	WEAKNESSES					
Founded historical creations belong to terms	Not enough budget for saving-conservation-					
of Roman and Byzantium such as the chapel,	restoration works.					
one water cistern, observation tower, a police	In spite of having important belief centers no					
station, underground city and etc.	conscious conservation exists.					
Being convenient for culture tourism because	No effective use cultural assets by					
of having historical and cultural abundance.	conservation provided.					
Being house ownership for different religions	No conservation of civic historical texture and					
and cultures during the history	architecture.					
Existence of civic texture that shows the	No allowance for any intervention because of					
traces of different civilizations	legal statues in Archeological site.					
Architecture of the precincts that is created by	No awareness of the importance of current					
climate properties and cultural structures.	historical and cultural potentials of the region.					
Existence of the Archeological site.	No development of the consciousness of					
Having history, culture and nature	public regarding to culture tourism.					
concurrently.	No possibilities for accommodation.					
Existence of handcraft that is peculiar to the	No required level of improvement regarding					
precincts (basket manufacturing, textile and	to infrastructure.					
etc.)	Insufficient level of transportation					
Existence of kitchen culture that is peculiar to	infrastructure.					
the precincts (pumpkin)	No effective usage of cultural assets as					
Existence of festival and celebration	economically.					
The budget obtained from Ministry of the	Insufficient financial resource and					
Culture for restoration of the historical	investment encouragement for tourism.					
structures and protection of historical heritage	Insufficient budget spared for culture					
	tourism and marketing (presentation).					
	Anothy of multiplic and minute spateme					
	Insufficient introductory signs					
	insumerent introductory signs.					
	No conservation for natural assets.					



# Table 1. Cont.

<i>OPPORTUNITIES</i>	THREATS				
The increase of importance of local and	No presentation in international platform				
cultural assets day by day for civic	level.				
improvement.	Existence of ownership problem. Being				
Existence of protection policy of historical	affected by environmental conditions for				
and cultural assets.	Archeological heritage.				
The increase of national and international	Unconscious approach by precincts against				
project supports for local cultural assets after	tourism.				
understanding the importance of local culture	No sufficient presentation in both national and				
in economical development.	international level.				
The increase of importance of culture tourism	Weak transportation connection to the region.				
in global scale.	No works of sustaining and improving				
Having easier introducing and transporting	handcrafts of the region.				
facilities with the advanced technology.	Negative effects of the settlement in the city				
The increase of importance of belief tourism	center over the tumulus to the underground				
all over the world.	city.				
Being closer to the big cities (Antalya,	No congruity for building by new structure				
Konya, Ankara and etc.).	materials with the texture of the settlement				
Having easier introduction and global	and becoming wide spread of this building in				
transporting facilities with the advanced	the civilian texture.				
transportation and communication technology.	Having low level of education for precincts				
Existence of precincts public that are open-	public.				
minded and can be awakened for protection.					
Having done saving, dig, clearance and repair					
works by Konya Museum Directorate.					

The results obtained form SWOT analysis showed the diversities of the strengths of the Kilistra antique city. However, resources of cultural potential in the strengths are not introduced enough and used effectively. These negative situations are caused from the weaknesses of the city. Increasing the effects of the strengths of the settlement and reducing the weaknesses of the settlement are taken as a base for determining the civic improvement strategies of Kilistra antique settlement. Considering this and SWOT analysis below mentioned development strategies can be determined so as to preserve and use natural, historical and cultural assets of the settlement;

- Pointing in introduction of the country out that our country does not only have seasand-sun (3s) values but also with rich cultural heritage,
- A cooperation between local management, civilian society organizations and university is required for introducing and presenting cultural heritage in the region to the culture tourism by obtaining the inventory of the cultural heritage in the region.,
- By improving the belief tourism, opening and presenting the region to the culture tourism in a global scale,
- Supporting international investments for culture tourism by investment discounts, investment credit with low interest rates and convenience in taxes,



- Preparation of tourism master plan that is intended to sustainability of the cultural assets of the settlement by conservation and transferring the cultural heritage urgently,
- Ownership problems of the settlement that is located on the underground city (tumulus) must be solved,
- Transportation possibilities of the surroundings and the country of the settlement must be efficient,
- Awakening the public of the precincts about the cultural heritage and make them be participants in the repair/restoration works by letting them have required vocational course,
- Saving, clearance, repair and restoration works of archeological heritages and cultural assets must be done,
- Forming new incomes for conservation and sustainability of the settlement,
- Supporting the public of the precincts as technically and economically during the maintenance and repair works that are intended for sustainability of the architecture of the precincts,
- Improvement of the civic infrastructure of the settlement (road, water, electricity, drainage and etc.),
- Increasing the accommodation possibilities in the settlement and building new facilities to meet the subsidiary needs of the tourists (restaurant, café and etc.), Making public of the precincts participate the taken decisions for conservation of the settlement and providing sustainability of the culture.

It is possible to diversify strategies for civic development of the region by evaluating the strengths of the region. Increase in national and international project grants are met as can be seen an important opportunity for pointing out the importance of local culture in civic development, conservation and development of local cultural assets. For instance, it is possible to evaluate and make use of the region for *belief tourism* by improved and supported projects that are intended to introduce historical, cultural and natural assets of the region. Sustainability of the architecture and handcrafts of precincts can be provided by developed projects and economical contributions. This will also play an important role for the development of the settlement is faced to will be removed by applying the civic development strategies as effectively.

# 4. Conclusion

Kilistra has an important potential regarding to cultural infrastructure and historical back demand. Considering this potential the most powerful and conspicuous point is 'the cultural heritage'. This concept includes past, present and the future. Although some studies have been initiated for sustainability and conservation of the cultural heritage by related institutions and organizations, the steps for evaluation of current potential has not been realized yet. In this study, introduced civic development strategies that are intended for development of culture tourism in the settlement are important resources for the policy that will be formed for conservation of the settlement. Moreover, the strategies developed in this study will also be a vital role in cultural continuity by evaluating the historical, the cultural and the natural assets regarding to conservation-use and transferring them to the future generations.



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# IZNIK CITY WITH ITS HISTORICAL LANDSCAPE PROPERTIES

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Historical textures that give identity to cities, add time dimension to living spaces are important in terms of cultural continuity. Historical city textures present unique landscape properties by their long past, physical homogeneity and the cultural values they contain.

Iznik city, being a capital four times in the history because of its strategical location, is a rich, unique center in terms of history and natural resources. Iznik city was under the influence of Hellenistic Age, Roman, Byzantium, Selcuk, and Ottoman Periods. The city has came with characteristics of ages that these civilization's to now. The city is like an open museum by its city plan, walls, church, mosque and other religious buildings, antique theatres, caravanserai, aqueducts, baths, tile-making ovens, monumental trees and underwater riches. Iznik tiles, an important decorative element of past period architecture, are still important in our time.

Besides all of these, Lake Iznik and the natural structure of the city completes historical landscape in functional and esthetical way. The city is an important center of cultural tourism with the values it carries to 21st Century.

In this study; Iznik city's monumental buildings and city texture, with urban, archeological and historical site properties, was studied in terms of historical value, physical status, function and visual elements from the past to present time. As a part of our traditional culture, suggestions were developed to Iznik city's historical landscape preserve, develop and revive as a place to live in.

Key words: Iznik, cultural heritage, historical landscape, urban identity, conservation

### INTRODUCTION

Historic landscapes were divided into two main categories in ICOMOS (International Council on Monuments and Sites) Venedict 1964 and ICOMOS Fontainebleau 1971 meetings. This categorization was also accepted by Historical Gardens Foundation. According to this categorization:

1. Natural and Archeological landscapes, preserved areas, and rural landscapes.

2. Gardens and park landscapes. This category includes historic structures and gardens around them, city parks created through historic processes and preserved areas used for science and technology.

During the urban development process, Iznik city can be considered as an example of the archeological landscape in ICOMOS's first category.

Physical environment is a concept that includes natural-cultural, historic-social artificial elements and their relationship with each other. In this respect, social, economic and technological developments enable cities to gain peculiar characteristics and qualities. Old Turkish cities were generally situated in certain areas in nature to be in control of their environment, and the structures were constructed using local materials in conformity with climatic conditions. These cities consist of houses, mosques, and castles with special characteristics. In Anatolia, after castles and city walls became less important, settlement developed around religious structures exceeding the borders of city walls. The settlement units around mosques constitute the districts of the city. Districts are social constitutions as well as physical units. Small historic cities appeared with their complicated street patterns and big and small gardens in every corner of Anatolia.



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Iznik is a city with peculiar landscape features which prevented itself from social and technological erosion. The interaction between the urban structure with the pyhsical, architectural and aesthetical components formed in different periods and the dinamic social life has been an important role in the development of Iznik city.

### 1. Physical Charasteristics of Iznik City:

**Geographical location:** Iznik, which is a sub-province of Bursa, is a city located in the east coast of Iznik River, after which it was named, in the southeast of Marmara Region. Iznik is surrounded by Yalova and Kocaeli in the north, Sakarya in the northeast, Bilecik in the east, Yenişehir in the south, and Orhangazi district and Lake Iznik.



**Topography:** Iznik has a smooth area surrounded by high mountains. The topographic structure of Iznik city caused the transportation system to be established as grid plan. This plan enabled the city to spread in three different directions connected to the land. Moreover, being in a concave region surrounded by mountains parallel to the coast determined the climatic features of the city.

**Climate and Vegetation:** Iznik semi temperate climate, influenced by the Mediterranean climate. Such climate has affected the agriculture in the city positively and enabled it to have a rich flora.

**Geological and Hidrogeolojical Structure:** Located on the south of North Anatolian fault line, Iznik has negative features in terms of suitability for settlement due to ground liquefaction caused by its geological and hidrogeological features.

**Hydrology:** Lake Iznik, which is 312 km<sup>2</sup>, is the biggest lake in Marmara Region and the sixth biggest lake in Turkey (Anonymous, 2000). Being an important source, the lake was chosen as the settlement area of Iznik city.

### 2. THE HISTORICAL PERSPECTIVE OF IZNIK CITY

Iznik City, which became the capital city four times due to its strategic location throughout its long history, was under the domination of Hellenistic, Roman, Byzantine, Byzantium, Seljuk, and Ottoman Empires. These different civilizations influenced the development of the city.

### Hellenistic Era (Greek Period) (BC 316-281):

The most significant feature belonging to this period is the plan of the city. The city, which is situated on a smooth area according to the plan, is surrounded by a rectangular city wall and has four gates. The two intersecting main roads lead to the temple (Hagia Sophia Church) and end with the four gates (Nuhoğlu, 1995). The city plan including Hellenistic features is still preserved today. However, no trace was left of the Hellenistic city walls surrounding the city.



### Roman Period (BC 281 – 395):

During Roman Period, which was influential in the city with its significant structure, Iznik became a complete city (Akkaya, 1994). Therefore, most of the historical structures in the city today belong to Roman Period. During this period, the city was located on an important trade road (Bodur, 2000). The important structures survived today are: Antique Roman Theater, Gymnasium, City walls, Istanbul Gate, Yenişehir Gate, Göl Gate, Lefke Gate, and Big Ceremony Area.

### Byzantium Period (BC 395-1075):

During the Byzantium period, the strategic importance of the city increased more. Both in Roman and Byzantium period, Iznik showed a significant progress in the religious, political, cultural and economical areas, and was used as a military base with its strong city walls (Karginer et al., 1963). On May 20, 325 I. Ocumenic Council assembled, and then later between September 24 – October 23 787 II. Iznik Council was assembled at Ayasophia Church (Erton, 1995). The two councils that were significant for the Christian world increased the importance of Iznik (Şen, 1998). During the Byzantium Period, the city became a karawane city as the roads leading to the sacred cities went through the city (Nuhoğlu, 1995). In this period, there were big public improvements in the city and monasteries, churches and water roads were constructed (Eyice, 1998). In 1065, an earthquake destroyed all churches in the city and damaged the city walls and towers badly (Yalduz, 1999).

### Seljuk Period (1075-1097):

Iznik was conquered by Seljuks and became the capital city of Seljuk State. Therefore, Iznik city is the first capital city of Turks in Anatolia.

### **Byzantium Period** (1097 – 1332):

The city continued to be the capital city in 1097 in the Byzantium Period and became the center of culture and art (Erton, 1995). The structures which date back to that period and is still of importance are Hagia Sophia Church (Ayasophia Museum) and Baptisterium (Böcekyazması) Moreover, archeological excavation of the ruins of Koimesis Church, Hagios Tryphon Church and Ayatrifon Church still continues.

### Ottoman Period (1332-1922):

The Ottomans influenced Iznik with their peculiar settlement style and their respect to the monuments belonging to the previous periods. Iznik continued to be the capital city in this period as well. The biggest church of the City was converted into a mosque in the Ottoman Period. A fast reconstruction was started in the city and one of the churches was turned into a moslem theological school (madrasa) and others into small mosques (Şen, 1998). One of the most important sources of income of the city was the art of tile-making. The structures reached today are Green Mosque, Nilüfer Hatun Museum, Hacı Özbek Mosque, Sheikh Kudbettin Mosque, Mahmut Çelebi Mosques, Süleyman Pasha Madrasa, and Murat I. and II. Turkish Baths.

### **Turkish Republic Period:**

Especially after 1965 Iznik city entered a phase of economic development based on its tourism potential. During the development period in the Republic Period, reconstruction plans aiming to preserve the city were prepared. After the devastating earthquake occurred on August 17, 1999, Iznik was examined in terms of suitability to settlement by using geological/geotechnical methods. As a result, the ground quality of the city was determined (Anonymous, 2000).



### 3. THE LANDSCAPE VALUES OF THE HISTORY OF IZNIK CITY

The city reached today with an identity shaped by the characteristics of the civilizations it accommodated. The historical background of Iznik is of importance as the basic element in the formation of the settlement structure of the city.

### 3.1 Townscape

In the evaluation of the townscape,

The city plan, city wall gates, at which the two main intersecting roads meet, and city walls, the natural borders of the city, were considered together as the first group.

In the second group, the present historical monuments and structures in the city were analyzed.

In the third group, Lake Iznik and olive gardens, a cultural feature of the city, constitutes the historical landscape of Iznik.

### 3.1.1 The First Group in Analyzing the Townscape (City plan, City walls, City wall gates)

**City Plan:** According to this city plan system, which is also called grid, the city which is built on a smooth area, is surrounded by quadrilateral city walls and have four gates. There are two main road intersect at a right angle the city. At the intersection of these two streets is used as the center of the city today as in the past.

**Ramparts and Gates:** The city walls were rebuilt, repaired or widened in each period (Nuhoğlu, 1995). Thus, they have the architectural features of each period. Iznik city walls, which belong to Late Roman Period, are the second most important city walls in Turkey after Istanbul's city walls. There are four gates to enter the city, namely Istanbul Gate, Yenişehir Gate, Lefke Gate and Lake Gate, and secondary gates, which can only be used by pedestrians.

### **3.1.2** The Second Group in Analyzing the Townscape (Monumental Structures)

Significant monumental structures in the city is listed below according to the year they were built:

• Structures built in Roman Period

Ancient Roman Theater: The theatre, the most magnificient surviving archeological structure in the Northwest Anatolia, was built on a smooth area and has a rare archeological characteristic like Side Theater in Antalya. The theater, constructed with big block stones, is 85 m in length and 55 m in width. It is 7.332 km<sup>2</sup> and was built for 15.000 people. The archeological excavation still continues today.

**Gymnasium:** It's a structure in which Ancient Greek and Roman youth received intellectual and physical education and participated in sports activities (Bodur, 2000). Being one of the structures that completes the city, the theater is located in the center of the city. Nothing remains of the structure which collapsed as a result of a fire. The place of the gymnasium and the surrounding is used as the center of the city today.

**Big Ceremony Area:** It is a wide area used for the big ceremonies during the Roman Period. This area is still used like as a ceremony area as in the past since there is a Municipality Building and a meeting area there.



### Byzantium Period Structure:

**Ayasophia Museum (Hagia Sophia Church)**: It is a basilica shaped big church built on the foundation of Gymnasium at the intersaction of the roads leading to the four gates of the city (Eyice, 1988). The church has undergone significant architectural changes so far as it was repaired after it was damaged due to earthquakes and fires (Anonymous, 1996). It was turned into a mosque by Architect Sinan and became the first mosque in the city. Today, it is used as a museum.

**Baptisterium (Böcek Ayazması):** Baptisterium is a room which can be reached going down an eleven-step stairs and has a circular plan. It is used as a place for rituals in the 1870s and as a sacred water source visited by Greeks until 1921 (Gönenç, 1993).

### • Structures built in the Ottoman Period:

**Green Mosque:** The mosque, which is named after its minaret with turquoise tiles and bricks, is one of the significant cultural structures in Iznik city. It was the first mosque with tiles and it is still used today (Şen, 1998). The surrounding of the mosque is used as the recreation area.

Süleyman Pasha Madrasa: It is one of the structures which make Iznik a cultural center and known as the first university in the Ottoman Empire. It is also the first example of the madrasas with atrium (Kargıner et al., 1963). It was restored in 2000 to serve as the Tile Makers Market. In this way, it is used to reintroduce and support the traditional art of tiles in tourism in the city. The open atrium, on the other hand, is used as an exhibition area for various art activities. With the restoration suitable to its historical structure, it is turned into a lively place.

Nilüfer Hatun Museum: The plan of the structure is like upside-down "T" and it has rich and colorful stone-brick engraving. The structure continued to serve as a soup kitchen until the end of XIX. century and then until 1960s, it was used as a warehouse. It is used as a museum today. Tile Ovens: As a result of excavations, a number of tile ovens, materials and ruins were found;

and thus, the main applications and techniques of the art of tiles and ceramic in Iznik during the Ottoman Period were determined (Eyice, 1988).

Iznik is one of the most important centers of the Early Ottoman Period Turkish Structure Art. A number of mosques, Turkish baths and madrasas were constructed reflecting the architectural characteristic of the period. Today, Haci Özbek, Sheikh Kudbeddin, Mahmut Çelebi, Yakub Çelebi, Eşref-I Rumi Mosques are still used in the city.

# 3.1.3 The Third Group in Analyzing the Townscape (Lake Iznik, Natural Structure and Olive Gardens)

**Lake Iznik and The Natural Structure of the City:** Lake Iznik and the natural structure of the city make the historical and cultural structure of the city perceivable. The natural structure of the city complements the historical city landscaping in functional and aesthetical terms.

**Olive Gardens:** The olive gardens strengthen the identity of the city by contributing agricultural city feature in view of the effects of the rural characteristics on historical city structure.

Moreover, there are many old trees which can be considered as monumental trees. One such tree *Platanus orientalis*, which forms the allee on Kilicarslan avenue, is one of the main monumental trees in the city. Another monumental tree Topkapi Cinari in downtown is *Platanus x acerifolia Willd*. The tree perimeter is 19.70 m, habitus 8.70 m, and height 24 m.



# 4. CONCLUSION AND SUGGESTIONS

The historical, archeological, natural, rural, and urban landscape features were analyzed as the structures constituting and completing the historical texture of the Iznik City. Proposals regarding the sustainability and development of the historical landscape of the city were made. Not only the historical structures are still being used today but also the effects of the historical features on socio-economic structure of the city in terms of tourism and culture still continues.

Iznik city has a significant cultural structure in terms of cultural tourism due to being a capital city, a karawane city, and a center of science and culture throughout history. Furthermore, the city is a center in terms of cultural tourism (focus on religion). For instance, in 2000 VIII. Council was assembled in Ayasophia Museum (Hagia Sophia Church) and a number of visitors came to Iznik. At the meeting held by 14. Patriarch in İznik, he announced the city as the pilgrim center (http://www.besiktasgazetesi.com/arsiv\_yazar/61.htm).

The remains of the ancient city Niceae is in the waters of Iznik Lake, which is among the important landscape values of the city. Iznik tiles, a decorative element symbolizing the city, began to be produced again in 1985 after a 300-year pause. The tiles has started to be used in modern structures and has gained its popularity again due to increasing tourism activities and interest in tiles. Therefore, Iznik tiles, which are famous world-wide, has an important place in the popularity of the city. Its contribution to the city economy is increasing. The production of tiles is academically supported and improved by the Vocational School at Uludag University. In the study, the problems faced in Iznik in sustaining touristic and cultural activities, preserving historical landscape values, historical features and the identity of the city were determined and solution proposals regarding these problems were offered (Kapuci, 2004).

### 4.1 Issues related to Preservation and Solution Proposals:

• The vibration due to heavy vehicles passing on the roads near the city walls damages them.

The traffic near the city walls and other historical structures should be reduced and the roads near the city walls should be closed to heavy vehicles. In appropriate places, pedestrian malls, urban green areas and buffer zones should be opened.

• In the city, the historical places were excluded in the city development planning.

Proprietary buildings in the historical city should be associated with their surroundings and one another. For example, pedestrian malls should be built between structures, such as Nilufer Hatun Museum, Green Mosque, and Sheikh Kudbettin Mosque that are very close to each other, and the structures should be related to the outside areas and communal areas should be created. Furthermore, neglected structures in the city should be restored in conformity with their identity and be used again.

### 4.2 Issues Resulting From Infrastructure Works and Solution Proposals:

• Unwise renovation during infrastructure works and covering the original roads with asphalt damages the historical environment. The city has 4-6 meters altitude differences from the original ground level because of the earthquakes and fires. Therefore, altitude differences between the enterances of the historical places and repeated ground coverings is increasing. This difference makes entrance to the buildings difficult and the buildings face flooding risks. The increasing levels of pavements and roads negatively influence the visual quality of the surrounding structures and the monumental historical structures (Ahunbay, 1999).

Since this situation in the city cannot be changed, in the ground covering and restoration works new altitude differences should be avoided.



### 4.3 Issues Resulting From Structure Intensity and Solution Proposals:

Increase in population, high density settlement and demands for secondary residence due to Iznik's being close to big cities, such as Ankara, Bursa, and Istanbul, leads to the loss of fertile agricultural soils.

The secondary residences should be planned suitable to the historical landscape of the city.

The concrete structures and irregular settlement in the city, surrounded by city walls, have a negative effect on the historical environment.

Iznik is on the south branch of the North Anatolian Fault line, which is still active today. Consequently, earthquake risk should be considered in the whole reconstruction plan and all stages of planning and designing.

### 4.4 Problems Faced Due to the Damage in Natural Structure and Solution Proposals:

The ecosystem of the lake has been negatively influenced by the waste and agricultural chemical substances from the villages near the lake.

The sustainability of the ecological balance of Lake Iznik and its environment should be maintained. The natural features of the city should be considered as a whole and the planning should be done accordingly.

# 4.5 Visual Issues Resulting From the Disharmony of Street furniture and Historical Sturcture and Solution Proposals:

The city texture in Iznik has traditional structure features. The structures in the city are generally different from each other in terms of colour, material and storey height. The street furniture are in disharmony with historical features of the city.

Importance should be given to choosing facade designs and street furniture in the current structures. The bilboards and signs negatively affecting the visual quality should be designed and renewed harmoniously with the historical landscape of the city using appropriate scale and material.

### 4.6 Issues Resulting From Planting Design Around Historical Structures and Solution Proposals:

Unwise planting designs around the historical structures and places have made the structures less perceptible. For example, high ever-green plants with a large diameter have been used around the Ayasophia Museum and Green Mosque, which camouflaged the building visually.

Around historical structures, appropriate types of plants harmonious with the structures should be used.

The sustainability of the historical landscape features of Iznik City, which is an open-air museum with its current state, should be maintained through a functional, natural and aesthetic landscape planning with a holistic aproach.



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# ARCHAEOLOGICAL SITE PRESENTATION AS AN APPROPRIATE AND USEFUL MANAGEMENT TOOL: THE EXAMPLE OF LIMAN TEPE PRESERVATION AND SITE MANAGEMENT MODEL, IZMIR, TURKEY

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This paper will take one Bronze Age site in central west Anatolia, Liman Tepe, as a case study. The development of a management plan for the site will be discussed on the subject of archaeological site presentation as an appropriate and useful management tool, the process of development, the objectives, impacts etc.

The Bronze Age can be seen as a crucial period in the determination of the prehistoric cultural landscape of central west Anatolia, evidenced by mounds on the alluvial plains of the rivers.

Among the prehistoric settlements of the region, Liman Tepe has a great deal of potential for telling us more about Bronze Age ways of life. So the main reason for the need to preserve the site is the survival of a unique complex of a Bronze Age settlement which has dominated in the region.

Within the scope of case study, Liman Tepe is evaluated according to the studies and researches made for analyzing its character as well as providing basis for interpretation and presentation of the site as a result of gathering important information to guide future decisions

# INTRODUCTION

This paper will take one Bronze Age site in central west Anatolia, Liman Tepe, as a case study. The development of a management plan for the site will be discussed on the subject of archaeological site presentation as an appropriate and useful management tool, the process of development, the objectives, impacts etc. Within the scope of case study, Liman Tepe is evaluated according to the studies and researches made for analyzing its character as well as providing basis for interpretation and presentation of the site as a result of gathering important information to guide future decisions for the management of the site.



Figure 1. Liman Tepe jutting out into the sea to its north, facing the Karantina Island, and spreading out into the plain to its south in Urla, İskele District. (M. Bahçeci 2001)



Historical development of the site

The Bronze Age can be seen as a crucial period in the determination of the prehistoric cultural landscape of central west Anatolia (İzmir, Manisa, and northern parts of the Aydın provinces), evidenced by mounds on the alluvial plains of Bakırçay, Gediz, the little and grand Menderes rivers (Meriç 1987; 1988; 1993). From the Bronze Age onwards the prehistoric landscape increasingly became an environment structured by humans, in which settlements, field systems and cemeteries are the best preserved elements of the archaeological record. Excavations and research undertaken within the framework of the İzmir Region Excavations and Research Project (IRERP) since 1992 have resulted in new settlements being brought to light with new information on settlement organizations and other archaeological questions (H. Erkanal 1999a).

# Aspects of cultural heritage between the Aegean and western Anatolia in this period

We know that in architecture, burial customs and artefacts of Aegean prehistory, west Anatolia stands somewhat apart from the rest of Anatolia. The natural connections of the coastal zone west Anatolia is generally with coastal mainland Greece and Aegean islands. Troy represents the beginning of Aegean Prehistory and serves as a reference point for studies related to comparative stratigrafic chronology, architecture, ceramics, small finds and technology (Mellink 1986). It is possible to see early examples of fortification systems with defence walls both in Anatolia and mainland Greece (Aktüre 1994). Early Bronze Age settlements, especially those in close proximity to the Aegean Sea, mainland Greece and Aegean Islands are surrounded by strong defensive walls. Lerna and Askitario in coastal mainland Greece, Aigina among the Aegean Islands and Melos, Siphnos, Syros in the Cyclades all possess fortified citadels. Chios-Emporio, Lesbos-Thermi and Lemnos-Poliochni on the eastern Aegean islands share similar characteristics (Caskey 1957; Vermeule 1964; Doumas 1972; Felten 1986; Parlama & Theochari 1997). During this period the above mentioned settlements reached an extra ordinary level of economic wealth as a result of increased economic competition in this region. Strong fortification systems are also characteristic of this period at Troy, Bakla Tepe, Kale Tepe (H. Erkanal & Özkan 1996; 2000) and Liman Tepe, which demonstrate the developed economic and social structures of the settlements in maritime zone of central-west Anatolia (H. Erkanal 1999b; 2001).



Figure 2. The fortification wall of Limantepe with horseshoe-shaped bastions (M. Bahçeci 2001)



# Development of a management plan for Liman Tepe

The detailed studies carried out since 1992 has indicated that among the prehistoric settlements of the region, Liman Tepe has a great deal of potential for telling us more about Bronze Age ways of life. So the main reason for the need to preserve the site is the unique survival of a complex of a Bronze Age settlement which has dominated in the region.

### Main characteristics of Liman Tepe

Liman Tepe is a major prehistoric settlement inhabited from the Neolithic until the end of the Late Bronze Age and continuing into the Classical Ages as 'Clazomenae' (A. Erkanal & H. Erkanal 1983). It is located on a peninsula to the south of the Gulf of Izmir and situated within the Iskele quarter of the Urla Municipality. Liman Tepe is located on a headland jutting out into the sea to its north, facing the Karantina Island, and spreads out into the plain to its south.(Fig. 1) The prehistoric settlement at Liman Tepe and famous Ionian city of Clazomenae are both within easy reach from town centre. Urla is located 38 km to the west of Izmir. It is a typical Aegean town and a regional administrative centre with 16 villages. Its population is 35,000. Agriculture, fishing and more recently tourism are main income sources for residents. It has a rich cultural heritage. Due to its closeness to Izmir, it is widely chosen by the local people especially for their weekend holidays.



Figure 3. Urla-İskele District (Klazomenai) Karantina Island (Nesos). Settlement: A) Liman Tepe



Figure 4. Liman Tepe Excavation Area

The excavations in Liman Tepe have continued uninterrupted since 1992 under the direction of Prof. Hayat Erkanal from Ankara University. The Early Bronze Age is quite well preserved and all the three main phases of this period are present at the site. All phases of the Early Bronze Age, Middle Bronze Age and Late Bronze Age as well as the Late Chalcolithic Period have been uncovered. The Neolithic and Chalcolithic settlements are so far represented only by ceramic finds, lacking any architectural context due to high water level (H. Erkanal 1995; 1996).



The need of the plan

According to İzmir Tourism Inventory and Development Plan (1998), Urla, Liman Tepe takes part on the tourism development line of Urla- Karaburun and Urla- Çeşme. To eliminate the disadvantages of the development progress of tourism, and to use the advantages of tourism in favour of the prehistoric site, the management plan has been required that can be a model for these settlements also because of the closeness to Bronze Age settlements in the Aegean islands and existence of the maritime connections.

The scope of the plan

The prehistoric site; Liman Tepe within the Urla, İskele district is subject to variety of pressures from modern life such as tourism, traffic and development of summer-housing as explained below. A management plan is needed in order to influence ongoing landscape changes so as to preserve the important archaeological features, while respecting the interest of owners and residents who live and work in the area.

Starting from this point, without disregarding the threats that the site faces, in order to make the enhancement and presentation of the site, Bronze Age settlements in the region which have similar characteristics with Liman Tepe have been taking into consideration and making a detailed research on the historical and cultural development of the region, in order to reveal the position of Liman Tepe within the Aegean prehistory.

Objectives for interpretation and presentation

In order to establish a management plan for the development of cultural tourism within the framework of the enhancement and presentation of the site, the following elements are necessary:

- Giving a clear picture of present situation with regards to the condition, management and visitor circulation patterns of the site.
- Specifying the particular elements that give the site its character and attraction, as viewed through the existing potential and infrastructure of the site and taking the necessary steps that will reinforce those elements.
- Seeking the changes that occur in the tourist market and then take the necessary steps to use those changes to our advantage.
- Seeking the pressures that occur against the cultural landscape and taking necessary steps to neutralize or minimize them. (Georgopoulou, Lilimpaki-Akamati & Petreas 2002)

Considering the amount of information required and produced for each site, clear heritage information –management policy is required. This is necessary also for the purposes of standardizing procedures, ensuring that the information is in a form that is compatible with that from other sources, and thus exchangeable- both in the national context, and at a regional or international level (Feilten & Jokilehto 1998:26).



# Statement of significance

The identification of the cultural significance of the site is the basis of the whole management plan. Sites and monuments may be culturally significant at different levels, some of World Heritage or international status, others of regional or local importance (English Heritage 1996). This approach should help to ensure the values that make Liman Tepe important; especially its "authenticity" is not diminished.

### Assessment of cultural significance of the site

Liman Tepe reflects an urban character during the EBA II period being one of the earliest urban settlements of the Aegean. During this period, the town is surrounded by a fortification wall with horseshoe-shaped bastions (Fig.2). Liman Tepe with its horseshoe-bastions and its protected harbour may have been, along with Troy, the most prosperous centre on the western coast of Anatolia. The similarities between Aegean and western Anatolia are visible in settlements patterns and planning (houses, communal buildings and fortifications), economic and social structures of these settlements (H. Erkanal 1999a). Recent investigations carried out under water at the northern part of Liman Tepe has shown that the EBA II fortification system surrounds the settlement in an oval shape and projects at the north-western end (currently underwater) forming a breakwater for the possible harbour facilities to its south. Portions of a monumental building again dating to the EBA II period have been uncovered during the past seasons. The structure reflects a well-known architectural plan known as a "corridor house" from certain sites in mainland Greece and Aegean (H. Erkanal & Günel 1996; H. Erkanal 2000).

# Comparisons to north eastern islands of Aegean

The north-eastern Aegean Islands, where large-scale excavations have been undertaken at the settlements of Poliochni on Lemnos, Thermi on Lesbos, Emporio on Chios and Hearion on Samos, provide a safe data base for the spatial organization in the successive settlements and of mechanisms that transformed these island communities into complex economic and socio-political structures during the third millennium BC (H. Erkanal & H. Hauptmann 1997).



Figure 6. North-Eastern Aegean Islands



These are, apart from Troy, the best investigated and best published settlements of the northern Aegean. At first, the natural conditions of the individual islands are portrayed (morphology, geology, climate, soil, vegetation). The focus of the investigation is the peculiarity of the regional structures which are analysed according to phases on the basis of settlement architecture (organization, buildings and function) and all types of finds. Thus, insights into the mechanisms of development of more complex economic, political, and social structures are gained which lead to the revision of the character, distribution, and definition of the cultural area formerly called "Trojan". Additionally, the contribution of the north-eastern Aegean to the cultural development of the second half of the third and the early second millennium BC in this region of eastern Mediterranean Sea becomes clear. The position of the islands in the trade network with Crete and mainland Greece and western Anatolia is seen from a new perspective (Davis 1992).

The architectural sequence of Poliochni covers the major part of Early Bronze Age. Thermi was inhabited only during the first half of third millennium BC, but Emporio and Heraion were inhabited continuously until the end of the Early Bronze Age like Liman Tepe. Beside Thermi and Poliochni, three later sites were settled again during the Middle Bronze Age. The above mentioned settlements provide, already from the early third millennium BC, evidence for the existence of a form of political authority, demonstrated by the erection of public buildings such as retaining and fortification walls, building of specalized function, systems for water supply or water drainage as well as new settlement planning. All settlements were enclosed by stone walls, which protected them from floods (Poliochni, Heraion) or other dangers. The defensive character of retaining walls is demonstrated by massive gateways flanked by bastions in Poliochni, Thermi IVB-V, Heraion and Liman Tepe (Kouka 1998).

All settlements were enclosed by stone walls, which protected them from floods or other dangers. Most of them are situated at coastal positions, on low hills or besides to natural ports for the service of maritime trade. In addition, they provide close cultivable fields so as to ensure self-sufficiency in agricultural and stock-breeding products.



Figure 7. Lemnos Island, Poliochni Settlement (Kouka 1999:61)





Figure 8. Samos Island, Bronze Age remains in Heraion Ancient City (Tsakos 2003:19) *The strengths, weaknesses, opportunities and threats of the site* 

Every site is unique, both in its present and past realities. The appropriate interpretation depends on the physical evidence that has survived. A successful presentation that is accurate, sensitive, and attractive takes into consideration the size of the site, its physical importance, and its aesthetic value. After evaluating these elements, decisions must be taken about the message that should be told, and the methods that will best allow this to be achieved. The optimal method of making a site hospitable and attractive is to begin by considering it in its entirety. Its presentation can be enhanced through the extensive use of the physical remains and the landscape that surrounds them to communicate the site's human history. (Georgopoulou, Lilimpaki-Akamati & Petreas 2002 ) When we think about the cultural landscape of Urla and Bronze Age site in Liman Tepe, Making a SWOT (Strength, Weakness, Opportunity, Threat) Analysis (Pedersen 2002; Feilten & Jokilehto 1998) can help assessing the information regarding the management of the site. In order to approach such a broad theme, we have formulated the following four interrelated fields of interest.

*Strength: <u>The structure of Bronze Age settlements</u>. Our model; Liman Tepe, for the structure of Bronze Age settlement has fragmentary but significant evidence. Although there are several questions we would like to address: For example; What a Bronze Age settlement? Which structures were normally parts of a fortification system? When and why did the long-house emerge? Why did people live in this area? What did the settlement system look like? Which were the settlement dynamics? How do they compare to those of Aegean Islands? We can easily answer to these kinds of questions depending on results of excavation and investigations.* 

*Weakness:* <u>The place of habitation in the physical landscape</u>. The development of physical environment through time also is an important factor because it conditioned the habitation and therefore may partially explain-aspects of settlement pattern and changes in it. Unfortunately, much of Liman Tepe is covered by modern buildings. The excavations are therefore carried out only in those areas which are still open ground. Re-constructions of the physical landscape of the region as a whole are therefore important as well.



The following matters are the factors of dangerousness of the archaeological sources of Liman Tepe;

- Lack of planning at site level and integration and separation of the site from the urban context.
- Lack of territorial infrastructures at the site.
- Lack of involvement of the population with respect to the value of the site, in relation to the territory.
- •

*Opportunities:* <u>Interpretation and Presentation</u> Although the excavated Bronze Age site in Urla Liman Tepe is the focus of the project, it is important to consider it as a part of broader cultural traditions and development. Therefore we are interested in the developments in the settlement patterns from the late Neolithic to archaic periods. The importance of town known as Clazomenae is to be an olive oil production centre of the antiquity. This is one of the opportunities for Urla, Liman Tepe.

Clazomenae was one of 12 Ionian cities belonging to a new civilisation which emerged in western Turkey three thousand years ago. Each city was important for different reasons, Clazomenae for its economic prosperity based on olive oil production. During the excavations of 1992 season an olive oil extraction plant of the 5 century BC was discovered. This is the first time that archaeologists have discovered a complete olive oil factory. Leader of the team, Prof. Güven Bakır of Ege University, says that at first they had no idea what it was they had uncovered, until local people familiar with olive oil production visited the site and pointed out similarities with traditional methods. It is planned to establish the Ancient Olive Oil Technology Museum here. As part of the project olive oil will be manufactured using the same technology as the Ionians 2600 years ago (Bakır 2000).

There are various findings about olive oil extraction process at the prehistoric settlements. At such settlements, carbonized olive pits, separating vessels and small crushing tools have been found. At the Urla-Liman Tepe and Menderes-Bakla Tepe excavations, similar tools were found dating back to 3000-2000 BC. However those findings are all portable which serve with a limited capacity rather than functioning as an installation. They can be exhibited in this museum to show the development of olive oil production process before ancient times. This is also another opportunity for Liman Tepe. Since 2000 underwater excavations have been conducted in the Liman Tepe district of Urla by archaeologists of Ankara University and Israel's Hayfa University. During the excavations headed by Professor Hayat Erkanal of Ankara University's Archaeology Department, interesting finds which were hidden in the blue depths for centuries have been discovered. They expect to discover very important underwater finds and that their greatest goal is to establish an underwater archaeology centre and museum in Urla. They found 4500-year-old breakwaters which are located in the sea (Artzy 2000). This is the most important opportunity for Liman Tepe.

As a result, the factors of opportunities of Liman Tepe can be summarized as follows:

- Immediate neighbourhood with the Aegean islands.
- Neighbourhood with the sites of tourist destinations.
- Concentration of multiple interests.
- Accessibility.



Threats: <u>Physical and economic aspects of the environment.</u> Liman Tepe has remained within in an urban settlement even it is not densely inhabited. Although site is legally registered as a 1<sup>st</sup> degree archaeological site, illegal construction works are going on and new settlement quarters are being formed. Modern technology, which is used in the old settlement areas, mostly causes the destruction of the cultural landscape and underground layers of culture. Liman Tepe is divided into two by the Izmir-Çeşmealtı road which is directly on top of the monumental Early Bronze Age II (EBA II) fortification system with is bastions . The site is under the pressure of enlargement of this road which is running from Urla to İskele District as a four- lane highway. In the case of any further expansions of Kabalak-Çeşmealtı road running through the site, important archaeological information can be lost.

# Management Objectives

- In order to manage the site, it is necessary to set principles and guidelines which will orient all relevant interest groups in Urla. Such a view on the future of Liman Tepe can be outlined as follows:
- Conservation and sustainable development of all aspects that create the site of Liman Tepe, together with its archaeological values, its landscape, and continuing inhabitancy nearby.
- Integration of decisions concerning Liman Tepe with other regional decisions, development plans and actions via collaboration with related authorities.
- An archaeological site where it is possible to present movable remains in addition to the architectural remains that are uncovered, with the establishment of a museum of Urla that gives information on Liman Tepe's historic development.
- Liman Tepe site is important part of the process of public education together with other prehistoric sites of the region.

Based on these overall aims, the long, medium and short-term objectives has been determined academically as a part of my doctoral thesis in order to provide guidelines for the future of the chosen case study area through management.

# Long-term objectives:

- To protect and enhance the visual impact, historic character, under water remains and remarkable geological formations, important building remains and to promote public understanding in the site.
- To establish a balance between archaeological research, demands of the landowners and future tourism activities.
- To incorporate the site to the modern social life.

# Medium-term objectives:

- To place the protection of the site and the safeguarding of significance at the heart of site management.
- To ensure planned and effective regimes for inspection, repair and maintenance.
- To enhance the historic character and visual qualities of the site.

Short-term objectives:

- To determine a long-term excavation plan.
- To consolidate remains of the structures.
- To establish a security system.



# Aims, organization and suggestions

The management plan for Liman Tepe: as an example for Bronze Age sites in the Aegean

It is a fact that each archaeological site is a case of its own, with its special features, problems, interest groups and provisions for conservation. However it should be realized that while each case should be treated according to their own data and conditions; all the efforts for conservation, especially when using management as a means, provide valuable information for sites of similar character and problems.

In the case of Liman Tepe such a structure can be proposed working not for Liman Tepe itself but for the other sites in the province (Clazomenae) and the regions included Bakla Tepe, Kale Tepe too. This structure is based on establishing a unit to enable the related bodies and advisory groups to work in collaboration.

The main target of management plan for Liman Tepe is to create a practical operational framework for the site and to find the means for establishing an appropriate balance between the needs of conservation, access sustainable economic development and the interest of local community. Besides, it can be an example for the Bronze Age sites in Aegean to develop cultural tourism (ICOMOS 1993) and to strengthen the concept of common Aegean Heritage using prehistory. The artefacts, physical remains and architecture of the important Bronze Age settlements in Aegean (mainland Greece and Greek Islands and western Anatolia) should be used as tools for developing an understanding of how prehistory contributes to our cultural heritage today.

Main goals of the management plan are to achieve;

- The development of strategies, methodologies and common tools for an integrated enhancement of the site and its promotion at an international level.
- The creation of international partnership and shared structures to establish network activities in order to develop cultural tourism.
- The creation of an intervention plan for the development of Territorial Cultural Systems.





Figure 9. Liman Tepe Bronze Age Settlement Site Planning Proposal

The management plan has helped the enhancement of the archaeological site in relation with networks of cultural tourism, local development and the employment. It must meet three criteria:

It must meet three criteria:

- To increase the popularity of the site will undoubtedly bring economic benefits to the immediate region.
- To provide better understanding and development of the site.
- To develop educational potential of the site.
- At present, it is difficult to regulate all the actions that take place especially in Urla and to carry out archaeological research, try to decrease the effects of the threats and eliminate the weakness of the site at the same time. Although it is important that the methodology of management, that includes sustainable conservation, revision, integration, information management and holistic approach should be adopted. In conclusion, the presentation /interpretation function of a prehistoric site takes on an ever more central role in the management of Liman Tepe in order to develop cultural tourism by reviving the cultural link which had been well-established in the Early Bronze Age between Aegean islands and west Anatolia.

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# RELATIONSHIP BETWEEN URBAN REVIATLIZATION AND SUSTAINABILITY IN HISTORIC URBAN QAURTERS: TOWARDS A SUSTAINABLE URBAN REVITALIZATION APPROACH

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The aim of this paper is to put forward the relationship between revitalization of historic urban environments and their sustainability for developing a model for the sustainable urban revitalization of historic urban quarters.

Based on this aim, the paper will be composed of three parts. In the first part, the theoretical background on urban revitalization and sustainability concepts will be presented. In the second part, the relationship between sustainability and urban revitalization will be put forward and in the third part the model for the sustainable urban revitalization of historic urban quarters will be indicated.

*Keywords:* Urban revitalization, sustainability, historic urban quarters

#### INTRODUCTION

Sustainable urban revitalization of historic urban quarters is viewed as a comprehensive approach that integrates several processes that is related to historic buildings and their physical urban context, together with the socio-economic environment within which the quarters exists and operates.

In order to be a successful process, urban revitalization would integrate economic revitalization, physical revitalization and social revitalization. Similarly, sustainability is the process that prevents the environmental, economic and social problems in order to improve the living conditions of the inhabitants and the future generations. Thus, sustainable urban conservation/ revitalization in historic urban environments, as similar with urban revitalization, involve three dimensions, such as conservation of the physical fabric, improving the economic base and maintaining the social structure.

The paper presented here is a part of a PhD thesis completed at Eastern Mediterranean University by one of the authors. Accordingly, it is based upon a detailed research on the topic, covering various methods such as literature survey, site survey and questionnaire survey. Yet, the part of the research that is presented in this congress is a result of a thorough literature survey. Based on the strong relationship between revitalization of historic urban quarters and their sustainability, the authors argue the merits of revitalization of historic urban quarters with the principles of sustainability provide all environmental, economic and social contexts for wider recognition. It is also argued that achieving a balance between revitalization and the sustainability of the historic urban quarters is possible if only revitalization includes physical up-grading, economical vitality and social security and equity.



Accordingly, the aim of this paper is to put forward the relationship between revitalization of historic urban environments and their sustainability for developing a model for the sustainable urban revitalization of historic urban quarters.

Based on this aim, the paper will be composed of three parts. In the first part, the theoretical background on urban revitalization and sustainability concepts will be presented with regard to the importance of conservation and revitalization for HUQs and types of revitalization. In the second part, the relationship between sustainability and urban revitalization will be put forward and in the third part a model for the sustainable urban revitalization of historic urban quarters will be proposed and discussed.

Importance of Conservation and Revitalization for Historic Urban Quarters

An historic urban quarter comprises not only historic buildings and landscapes and other physical survivals of our past, but also the history of all the communities who have made their home in a country. It is our physical and cultural heritage.

An historic urban quarter is part of our overall environment; it is the historical dimension, recognizable through the physical fabric of places. The "historic urban quarter" comprises all evidence of past human activity within the specific part of a historic city.

They contain mix-uses, traditional characteristics, functions, historical identity with unique local character, historic fabric and street pattern. Historic urban quarters are the centers of the social, economic and cultural life of the towns. Historic buildings and unique street patterns and urban forms/tissue, pedestrian- friendly streets and vibrant public spaces with mixture type of uses are the elements of historic urban quarters.

Historic urban quarters in many developing as well as developed countries are places of wealth and opportunity-vibrant historic centers of commerce and culture. Beside, they are places of decline, characterized by a disproportion of low-income neighborhoods, decreased economic opportunity, and damaged infrastructure and building stock.

Changes of use and redevelopment in historic urban quarters may lead to the irretrievable loss of heritage sites and to reduced housing options for the urban poor. Architectural environment has been undergoing various changes through time and space. These changes are not always positive yet they can be negative and even deteriorating. In order to prevent all these negative impacts of urbanization and improve the physical and functional structure of such areas, there is need for conservation and revitalization strategies.

Conservation is to retain a historic artefact, building or landscape protecting, as far as practicable, its fabric and character whilst putting it to some practical use in modern society. Conservation of the historic heritage has got a long history with its different types and application procedures.



There are two different approaches for the conservation of HUQs: static or dynamic. In the static approach the existing buildings of heritage value is preserved, and if possible, enhanced for future ages. In the dynamic approach, a historic area is developed as a part of integrated conservation in which the only way to make conservation activity as sustainable. This concept places emphasis on the incorporation of the principles of protection and management of cultural heritage into all decision-making processes, especially in the context of urban planning. Bizzaro and Nijkamp (1997) assert that integrated conservation provides visions for the use of the built heritage by introducing new functions or by rehabilitation of original functions. Integrated conservation is defined in the declaration of Amsterdam as the recognition that the protection and enhancement of architectural heritage is not separate from the economic, social, and cultural factors that shape the environment. Thus, it emphasizes the use of the built heritage as part of the social life of the community and for the benefit of present and future generations.

Revitalization is a straightforward conceptualization of conservation implies protection of historic urban areas as being mainly due to,

- certain intangible aesthetic value,
- architectural and environmental value,
- values as apart of cultural heritage,
- value of continuity of the memory of citizens/ communities.

Urban revitalization in the context of historic cores requires a proper understanding of the issues combined with creative approaches based on a mix of physical, economic, social, cultural and environmental initiatives, combined with holistic urban management. Some of the most effective regeneration results have been achieved through partnerships between public and private interests

Tiesdell, et al., (1996, p.20) argue that the revitalizing HUQs ".. involves both the renewal of the physical fabric and the active economic use- or utilization- of buildings and spaces. In other words, he argues that, revitalization is three sided process - physical economic and social revitalization. Physical revitalization is only valid in a short time whereas beside physical revitalization, economic and social revitalization are needed to get benefit from revitalization in long time period.

This argument of Tiestell et al. (1996) is also support the aim of integrated conservation where the conservation of historic environments includes not only the physical structure, it deals with improvement of physical, economic and social structures of such areas.

Types of Revitalization: Physical, Economic and Social

The revitalization is used to improve the urban environment of a place aim at adapting the historic parts of cities to the new needs of its population. The purpose of the actions is the renewal of infrastructures, improvement in the design of streets, accessibility, environment, and housing improvement so as to better their inhabitants' quality of life, enhancing accesses for cultural activities, supporting cottage industries and small trades, social programmes and improvement in the economic activity. In other words, revitalization is three-sided process, it includes improvements of physical structure, economic structure and maintaining the social structure of historic environments where it applied.



As mentioned before, revitalizing the historic urban quarters eliminates the problems or obsolescence that occurred from various causes. In order to be long life or successful, revitalization should apply through physical, economic and social structure of historic urban environments. Beside, determination of the most relevant strategic approach for such areas also takes major role to make the revitalization successful and sustainable (Doratli et al, 2005 and Doratli, 2000). For the determination of the most relevant strategic approach, analysis of the physical, economic and social structure of historic environment is required to be conducted in order to find out the type of obsolescence (physical, functional, locational, image obsolescence) and development dynamics (high, low static) of the historic environment. According to the result of analyses in other words level of obsolescence and development dynamics, the most relevant strategic approach for revitalization of a historic environment is determined (Table 1).

**Table 1:** Obsolescence through physical and economic revitalization diagram (Doratli, 2000, Doratli and Önal, 2000).



Physical revitalization is necessity when obsolescence occurs in the quality of building stock and the physical environment of the historic area.

There are three modes of renewal to improve the physical fabric of building and a site;

1. Refurbishments (conservation and consolidation) - it addresses the obsolescence of a building in the existing use.

2. Conversion (Adaptive reuse) - it is the adaptation of building to a new function or use.

3. Demolition and redevelopment- within the various dimensions of obsolescence (High, Static and Declining), there are variety of reasons why there may be desires to demolish historic buildings (Tiesdell-Oc- Health, 1996,31).

As mentioned above, to have successful, long term and sustainable revitalization, only the physical revitalization cannot be sufficient. Therefore, there is need for both physical, economic and social revitalization. Physical revitalization may be short-term strategy intended to induce a deeper economic revitalization in a long-term. Regarding Tiesdell et al. (1996), the physical revitalization of properties in an area will help to increase confidence in an area, but the maintenance of that confidence requires an economic revitalization.



Economic revitalization has three modes of renewal to improve economic activity (Tiesdel et al. 1996, Doratli, 2000, and Oktay, 2005);

1. Functional Restructuring: changes in occupation with new uses or activities replacing the former ones.

2. Functional Diversification- keeping the existing uses to some extent and introducing new uses is a more limited restructuring- which brings in new uses able to support the quarter's existing economic base.

3. Functional Regeneration- the existing uses remaining but operating more efficiently or profitably -. Functional regeneration entails maintaining and improving the competitiveness of the area's existing employment concentrations (Tiesdell et al., 1996,39).

Social revitalization aims to gain access to adequate housing and it should involve families as part of the revitalization process. It is also needed to the eliminate of mechanisms that are causing poverty and social exclusion- low income people, safety and affordable housing problems- in historic areas through cooperation between the public and private sectors, integrated multisectorial action and participation and joint responsibility of local groups and communities (Oktay, 2005).

#### Sustainability and Urban Revitalization

Urban revitalization process is needed when there is obsolescence in the physical, social and/ or functional structure of an area. It is implemented to reduce the amount of deterioration and to avoid further decay in the historic environments. As discussed previously, the urban revitalization process should deal with three systems- physical, economic and social- of the historic environments in order to be successful and long-term and as well as to be sustainable. This is the point that comes as the idea to relate sustainability or sustainable community with urban revitalization process. It is assumed that if the urban revitalization process is applied in those mentioned three systems to make them healthy and to have sustainable historic environment; sustainable community in such environments can also be handled with the help of urban revitalization. This idea comes from that sustainable community has also same three components/ systems of economy, environment and social (Figure 1).

Sustainable development or sustainability involves three broad interacting realms: environment, economics, and social equity. These three realms could be called the ecological imperative, the social imperative, and the economic imperative.

Sustainability according to the authors is a sort of a never-ending goal. It is something that we are always following. Sustainable community and/ or city can be achieved by improving and adapting economic, social and physical environments of cities to reach the requirements of the urbanization process in the world. Especially, historic environments lose of functional and economic viability has obsolescence in urban fabric and buildings, social polarization and exclusion. In order to prevent problems in historic urban quarters, it is necessary to activate economic and social process and finalize physical conservation (Tiesdell et al. 1996). This approach is a transposition of sustainable urban revitalization that means at the same time;

- Social equity and
- Environmental preservation and
- Economic development



At the end of the above discussions, two different concepts –sustainability and revitalization- is tried to be related. Depending on the three dimensional characteristics of sustainability and revitalization, the relationship between these two concept is explained in Table 2. Based on this relationship, sustainability of historic urban environments can possible with sustainable urban revitalization process. In other words, the improvements in the physical, economical and social life of historic urban environments will create sustainable environments in historic urban areas (see Table 2).

**Table 2:** Relationship between Urban Revitalization and Sustainable Environment (threedimensions) (Oktay 2005).



#### Sustainable Urban Revitalization Approach

As discussed above, sustainability is three sided process same as revitalization is, therefore after revitalizing the historic urban environments, these areas can also be sustainable. In order to support this hypothesis, different models of different authors are used to develop the model for sustainable urban revitalization for historic urban quarters.

The model is developed form the combined methods of Gibbson and Kocabas (2001, 2-3) and Doratli, (2000). Gibson and Kocabas defined urban regeneration as "a holistic, comprehensive and integrated approach that embraces the three aims for city and regional planning of 1) maintaining economic competitiveness, 2) reducing social exclusion and, 3) protecting and enhancing the environment". They suggested that a sustainable urban regeneration be based a national strategy for neighborhood renewal. Gibson's model helps to explain the development of the components of a model of sustainable urban regeneration sustainable urban revitalization (known as "the 3E"). The sustainable urban regeneration takes place at the intersection point of equity, environment and economy which are three dimensions of sustainability (Figure 1).





Figure 1: 3E model of sustainable urban regeneration (Gibson and Kocabas, 2001).

According to Doratli (2000), successful revitalization should involve three distinct processes in an historic urban quarter (see Figure 2):

- Protection of historic urban quarters, which focus on protection of cultural heritage;
- Economic development, which inherently involves maximization of profit, and sustainability of economic viability and competitiveness;
- Community development, focusing on social aspects and well-being of citizens;



Physical and Economic revitalization.

Figure 2: Set of three processes of revitalization (Doratli, 2000).

Accordingly, for the purpose of this paper, the Gibson and Kocabas (2001) and Doratli (2000) models have been combined into a single model as indicated in Figure 3. Thus, this is the proposed model for sustainable urban revitalization for historic urban quarters. According to this model, the revitalization should be sustainable at all three levels – economic, social, physical. Thus, this brings a new terminology on the relationship between sustainability and revitalization, as such: sustainable economic revitalization, sustainable social revitalization and sustainable physical revitalization.



Figure 3: The model for sustainable urban revitalization for historic urban quarters (Oktay, 2005).

A sustainable physical revitalization is intended to physical/environmental sustainability of the HUQs and addresses issues related to making minimum use of renewable and non renewable resources, reuse and recycling of resources, protect and enhance the built environment, safeguard the historic buildings, redevelopment of abandoned open areas, enhance the landscape and provide green spaces in historic urban areas, etc.

A sustainable economic revitalization is indented to lead to economic sustainability (competitiveness) that is related with preconditions for the fulfillment of human needs and for any lasting improvements in living conditions. This revitalization process addresses the issues that are related with having mixed land uses, tourism and high-income people with job opportunities.

A sustainable socio-cultural revitalization is intended to lead to social sustainability/equity or social cohesion and it is the one that addresses issues that related to social equality, justice, and freedom. Local inhabitants of a historic area need to feel and see that they are not a part of physical improvements of the built environment. They should be involved in conservation efforts in a participatory process that allows them to voice their opinions in reshaping their environment thereby increasing their trust in the institutional system.



Accordingly, the aims and contents of sustainable urban revitalization can be summarized as follows:

Maintaining and enhancing the community's cohesion through its neighborhoods;

• The protection of the special physical characteristics that enhance neighborhoods, maintain a sense of place, and sustain area identity;

• The preservation and rehabilitation of facilities and neighborhoods that are part of a community's diversity;

• The preservation of the community's local historic, archeological and cultural heritage;

• A commitment to community revitalization to prevent the decline of aging areas and to ensure that a variety of living, working, and leisure opportunities are provided in these areas;

• The preservation, enhancement, and revitalization of center's residential and commercial neighborhoods as the community continue to grow and mature;

• The redevelopment and reinvestment in the community's mature areas, through urban revitalization, innovative programs, context-appropriate infill development, and redevelopment efforts;

• Incentive programs that encourage context-appropriate infill development in more mature areas of the city.

According to those aims of sustainable urban revitalization and depending on the sustainable urban revitalization model, it can be argued that sustainable historic urban environments (or sustainability in historic urban quarters) can only be achieved through the revitalization of the three structures - physical, economic and social - of such areas.

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# COMPARISON OF THE INTEGRATED AND NON-INTEGRATED PATTERNS IN A SPATIO-TEMPORAL DIMENSION IN THE CONTEXT OF AN ISLAND

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Located in a legendary geography at the mouth of the Straits of the Dardanelles, Gökçeada, Turkey's largest island and more commonly known as Imroz, is a place comprises diverse cultural and natural patterns, and some unique problems due to transformation it has undergone. The main objective of this paper is to re-present how a coherent environment which was maintained for many years, has now been changed by a series of implementations and abandonment; and to compare these two situations in a spatio temporal dimension in the context of an island.

The island has mainly two different group of patterns: integrated and non-integrated. The indigenous and local patterns have been established throughout the history, based on coherent interrelations of nature and culture, including traditional settlements. On the other hand, Individual buildings and settlements have been developed recently in different character in comparison with the first ones.

Discussing the cultural and environmental meanings of the integration on the basis of the concept of 'place / placemaking' and 'sense of place', in addition to the representation of the elements of the integrated and non-integrated patterns mentioned above, this study includes some propositions for rehabilitation and development of the existing fragmentary environment.

#### **Introduction**

This paper consists of three main sections. In the first section basic terms and issues related to topics, such as 'integration and integrated patterns', 'place' and 'place as a whole' are briefly discussed. Secondly, 'integrated and non-integrated patterns' on the island are re-examined. In the conclusion, these two different structures is compared and discussed.

Gökçeada, known also as Imroz, is an island located on the west coast of Turkey, in the northeast of the Aegean Sea which has a unique topographical and historical development. Due to its strategical significance, it has been ruled by various states, and still has great worth because of its integrate geography. According to Lukerman places are integrations of nature and culture that develop in particular locations with links to other places through the movement of goods and people. (Cresweell, T., 2004 ;18) However, when the existing patterns are examined, the island of Gökçeada appears as a place where the cultural and natural values closely knit together even though, by its very nature, has a limited relationship with the outer world and some transportation problems.



'The essence of place theory in spatial design lies in understanding the cultural and human characteristics of physical space. If in abstract, physical terms, space is a bounded or purposeful void with the potential of physical linking things, it only becomes place when it is given a contextual meaning derived from cultural or regional content.' (Trancik, 1986-112) As it is well-known, Like Heidegger, Norberg-Shulz proclaims that the human existence means 'presence', and 'place should have a distinct character which reflects 'the 'genius loci' (unique presence), and architecture is a placemaking activity. (Abel, C.,2000) However according to Relph ,that meaning, the essence doesn't come from locations, nor functions that place serves, nor from the community that occupies it.. (Cresweell, T., 2004; 23) It lies in largely 'unselfconscious intentionality that defines places as profound centers of human existence' Today it seems impossible that a meaningful physical place with an intrinsic character not be influenced by hybrid culture which changes the meaning of 'presence'. Thus, this paper takes into consideration the term 'place' separate from that meaning due to the absence of the local people.

Integration can be used in different contexts which include very different meanings. Bachman defines the integration as 'bringing all of the building components together in a sympathetic way and emphasizing the synergy of the parts without compromising the integrity of the pieces. The focus includes a host terms that apply to integration: inclusive, assimilative, whole, complement, fit, appropriate, multipurpose, adaptable, flexible, comprehensive, and so on.' (Bachman, 2003; 16)

When we define 'integration( from the Latin integer, meaning whole or entire) as combining parts so that they work together or form a whole' (\*) In context of the 'sense of place' theory we can explain integration in a place through the terms 'whole, fit, appropriate, adaptable, coherence, harmony and unity'. The term place can vary from a place with certain boundaries to a place which reaches the whole universe. The parts that make up the whole contain various values starting from natural, socio-cultural, historical, functional and economical values related to the physical world to cognition and perception in a large spectrum. When focused on only architectural product, the factors that define integration might be evaluated from 'microscale' to 'macroscale' within different levels of integration.

Integration, in this work, indicates a 'coherent environment', the built environment and the human in the center, with its natural and cultural values which 'a 'sense of place and here' with its spatio-temporal roots. Besides the unique landscape of the island, the old villages with organic spatial layout, appear to be structures reflecting the spirit of place, the way of life and production process of the time. (Sahin,M,2004)

'The success of environments depends on their congruence with appropriate images' (Rapoport, A. 1977 ;53) In fact, The settlements on the island, the unique representations of vernacular architecture, by their very nature 'reveal images that manifest the 'here' of life... It therefore cannot help but be relatively static, and take on traditional aspects. As a tradition of building, moreover, it is based upon a typology that is variable in accordance with specific local relationships and times...Vernacular architecture is by its nature determined by its place, and is therefore immobile' (Norberg-Shulz C.,2000;12)



This approach might be associated with 'the integral design theory' which focuses on selfsufficient places and 'integration of architecture and ecology... principles and patterns that earlier cultures have known and applied.' (Jenks, C& Kropf,K.,1997;136) just as happened on the island.

One of the major principles of ecological design is to begin with the intimate knowledge of a particular place. (ibid. ;167) According to Klotz, every single structure must be considered to a much greater extent in relation to its surroundings: 'architecture is ecology!' (Schrimbeck,E. 1987; 5) How can we make the architecture an integral part of a bigger ecological whole , a coherent environment?

Environmental coherence stem from the strong bonds between physical, visual and functional integration in every sense. 'Presence... indicates... the space of everyday living in which each thing has its own place, and all of these 'places' collaborate in the creation of that environmental whole that allows life to take place.' (Norberg-Shulz, 2000; 27) The human factor that is 'a key ring' of the integrity and correspondence and dynamic interaction of all the ecological variables: climatic factors, land forms, material building tradition and other cultural norms which makes building tradition unique to place or ecological system. (Karaman, A.,1983;22)



Fig I. Representation of new and old settlements.

In Gökçeada, poetic integration of architecture with the existing natural environment could be easily observed when examined the traditional patterns which are concrete evidence of survival and integrity. These patterns contain evidences of a self-sufficient economy and the coherent environmental relationship with the past. Therefore, Its unique geography and urbanization existed in the past might be considered as precious data in terms of sustainable development.



### **Integrated Patterns of The Island**

Gökçeada has a long history dating back to the Bronze age. The island which has been under the rule of the Ottomans for about 500 years following the rule of the Pelasgs, who are early inhabitants, the Persians, the Athenians, the Romans, and the Byzanthinians, was captured by the Venetians for a short period, and then by the Greeks before the I. World War. Gökçeada was one of the two Aegean Islands became part of Turkey under the Lausanne Treaty in 1924.Among the traditional villages, Kaleköy (Kastro) and Dereköy (Shinodou) are the oldest settlements which was acknowledged to have existed as fortified settlements in the 15th century by writer Eugenikos. They also registered between the16th and the 19th Century in Ottoman records besides six others.(Emecen, 2002,63-66) The population of the island, which was 7,166 in 1,886 and 8,500 in 1895 has decreased since the beginning of the 20th century. ( ibid)

Especially since the 1960's the local population has continued to abandon the island for some socio-economical and socio-political reasons. Only the elderly people have continued residing in the villages because the younger generations immigrated to other parts of the world. Today emigration -immigration and abandonment can be accepted as a major landmark in terms of social -spatial continuity and integrity of the island .( Sahin, M., 2004) In summer, people immigrated from the island and /or their relatives visit the island and gather for festivals, so there happens a dramatic change in the population mainly for touristic reasons.

There are various types of rock and stone on the island because of its volcanic structure and due to its plentiful water sources, various types of flora and fauna live there. The island seems like an unwelcoming place with naked hills when approached from the sea. However, in the inner space of the island there are plains with small lakes- reservoirs and fields. 'The natural environment, of course, provides the context within which placemaking occurs.' (Stea&Turan,1993;264) The economy of the island is mainly based on agriculture, fishing and sheep-raising. The traditional village settlements where the island's local knowledge and everyday life take place are situated on slopes which overlooking the agricultural fields. These villages possess strong regional identity are in a state of dilapidation as a result of immigration and the destructive effects of time and the climatic conditions. (ibid)

Gökçeada, as a result of coherent relationships of its geographical position, geological structure, socio- economical and the built environment, has become an entity in which cultural and natural features exist for long years in unity. The vernacular settlements based on an agricultural economy and life style which has been self-sufficient for many years. The settlements have features which reflect that they are each a part of a web that have different structures with one particular character. We can call the relationship between the parts of this unity "well-patterned" ("Kroebler"indicates that systemic patterns can be addressed with this name). The relationship between these parts, with the similar relationship with their environment, and with the similar responses they give to their needs altogether point to the nexus which keep them together and whose aim is to protect and sustain 'a basic life plan.' (Kroebler,A.L.; 1963;121)



Traditional settlements, like in many vernacular examples, exist generally on the slopes of the hills which are in a southern orientation ; and they overlook the flat, green areas which are the island's agricultural spots. Their topological structure, typological variety and landscape features show that these villages are not only integrated with the ground but also with themselves, and that they share the same regional identity.

The island that is a target of severe winds looks arid and naked from the outside, but the inner areas are green and fertile. *Gestalt* features such as hill-plain; fertility-arid, land-sea, bluebrown form the island's intrinsic character. The local architecture, containing similar contrasts and harmony, sustains a similar aesthetic significance.

Every village creates an original pattern by interacting with the site (a typical feature of organic patterns). Design principles, material and construction technology, street and square layout, house shape and groupings are based on everyday life that are the results of a strong bond between social and physical organization. The settlements give an expression that they interact with place and born from place due to their colours and topological relationships and strong typology. Villages are made up of small-scale buildings and look as though they are suspended on a hill. This gives the impression that one is reaching a place of sublime beauty.

In settlements, there is an organic and hierarchical order and privacy : the plain (fertile)- the settlement (group form)-road-small square(s)-church-fountain/laundry-shop-road-house(s)-courtyard/garden -hilltop (generally has a barren landscape). They appear as if each village has the same soul or the same content is constantly changing form. This is the strong unity in diversity. Details and design principles are the same. The cubic form of these stone-built houses within emotional patterns is based on a rational usage of material and the way of life.



# $\label{eq:comparison} \textbf{Table I}. \ \textbf{Comparison of the integrated and non-integrated patterns}$

	past		р	resent		
INHABITANTS	Local Homogeneus	Abondonement	Abondonement	Local		
	Internal migration			Heterogeneous		
BUILDING	rural / regional domestic / agricultural / industrial	deterioration / decay	y	rural /regional		
TYPES	addition	dwelling tourism administrative		rural +urban		
HOUSE FORM	home local materials stone + timber - pitched roof			dilapidated empty houses		
			cinc	various oncrete - painted dustrial materials		
GROUP FORM	geomorphic / place based unity unplanned			deterioraiton loss of integrity		
	new rural and urban development planned-monotonous settlement patterns					
PRODUCTION	agriculture self sufficent system					
			sma	agriculture tourism II - scale trade		
IMAGES						



These patterns have various building types in 'domestic, agricultural and industrial categories' (Brunskill,R.W.; 2000) which are inextricably bound together. The 'strong typology' of traditional settlements increases the vividness of the spatial pattern and creates a language suitable for place. Repeating, but not monotonous, rhytm of houses, shops, laundries, temples, production areas, schools, windows, doors, roads, small squares, and material and the details strengthens the feeling of 'here'. Moreover, the windmills, and olive oil, soap and wine workshops that remain today show that what nature offer has been used in the most efficient way in the past.

Reflecting a sense of 'shared space' and 'shared image' and 'a sense of interconnectedness at any level'

(Lynch, K.; 1960), common building types with common features, continuity of the local building materials and the path layout are the representations of the physical, visual and social integration of the settlement into the existing environment. 'It is total orchestration of these units which would knit together a dense and vivid image, and sustain it over areas' (ibid; 108) of the whole island.

#### Non-integrated Patterns

New Patterns that have become physically a part of the island in recent years are very different from place's character. Constructed in compliance with relevant codes and regulations, new settlements and individual buildings share the most common features related to low-profile buildings that can be seen anywhere and lack a sense of 'here'. (Sahin, M; 2004) These recent developments can be categorized in three groups:

1. Villages that the Anatolian immigrants with agricultural background were settled. -New rural development

- 2. Low-rise houses Housing development
- 3. Buildings such as hotels, guestrooms and guest houses- Tourism development

In spite of the fact that traditional settlements, generally constructed in the plains, are unplanned with organic patterns, these new buildings are planned. ( ibid) The new buildings are constructed in a short time for the purpose of tourism and housing development on the island. Most of these are different from the hierarchical and organic order (street-square-street) of curved, stone-paved paths in old villages; and there is a dominant monotonous unity in these patterns. Parallel straight streets are between uniform buildings paved with asphalt and precast concrete units. Because of the spare space between the buildings, two- three storey buildings in human scale are insufficient to form a humanistic space. Even though the topology, morphology and typology of the old patterns reflect a homogeneous character of agricultural society, new patterns inserted into the place are low-profile anonymous structures, based on heterogeneous typology, in which there are houses and accommodation buildings such as hotels and guest houses. The new buildings at the centre of the island, the limited accommodation facilities on the coast and inner areas, the physical and cultural patterns -the way of life, materials and their construction techniques, and form compositions- reflect a language different from the island's indigenous patterns in physical, visual and functional terms. Before, these buildings differing from the traditional ones, and the local buildings developed in two separate structures. However, in recent years, both the buildings built in & near the old villages and the pavement of the paths with precast concrete units destroy this definite Gestalt quality of space.



In all buildings, industrial materials like concrete and brick were used instead of the natural materials like stone or wood; unlike the traditional settlements. Their facade painted white duplicate the new Mediterranean vernacular (!) with narrow windows and dimensions. Although it does not look like a threat now, transportation will develop in the near future and seems like it will be a tool as rapid development which will damage the island's natural unity.

Due to changing needs, it is, of course, inevitable that new buildings are built and new types are added to the environment. However, something which must be kept in mind is that 'environment and development are not separate challenges; they are inexorably linked. Development cannot subsist upon a deteriorating environmental resource base; the environment cannot be protected when growth leaves out of account the costs of environmental destruction'. (Sattertwaite,D.,et.al; 1996)

#### **Conclusion:**

- Integrated patterns which have a spatio-temporal roots have appropriate natural and cultural images which reflects 'the local relationships and times'. However, non-integrated patterns which are added afterwards are far from being a part of the place and its suitable images.
- The patterns defined as integrated which includes shared natural and cultural values of the island are becoming non-integrated in the course of time due to the absence of the local people, the major factor of the placemaking activity. The fast decline of the local population greatly influence the all agricultural production process and damage the wholeness of the island. (We know that, the abandonment of the rural environment is not just the case for this particular island. According to United Nation's Global Report on Human Settlements(1996), between 1959 and 1989, the rural population and the number of rural settlements have declined in most regions of Eastern and Central Europe. ) It may take time for people to return to the traditional settlements. In order to 'transform the empty houses into home', to prevent the destruction of these humanistic structures and to add appropriate patterns to the island new integrated projects should be developed, considering different levels of participation.
- In fact it may seem normal that there is a contrast between two major patterns on the island physically. Because 'vernacular buildings that are 'the antithesis of modern architecture take advantage of locally obtainable construction materials-such as wood and stone in this context-which not only confer an aesthetic appearance of appropriateness and harmony, but often are environmentally advantageous... Such architecture uses perforce little energy, for when energy is scarce, society uses enough ingenuity to evolve a balance with supply...' (Goodland,E; 1976;186) These patterns could be accepted as a model, especially in developing countries like Turkey with energy problems, as to how scarce energy sources and material could be used in the most productive way with as little possible as destruction of the natural environment as possible.



- Renewable energy sources such as wind which was used in the past through windmills should be re-evaluated in a modern sense and seen as an opportunity as tools to reconstruct 'the friendship with the environment.' It is a very needless effort to adapt the island to the contemporary work of rediscovering the 'ecological' lifestyle. Today, because the newcomers are stimulated to do ecological agriculture, agricultural production which had almost come to a halt on the island has started again. However, compared with a long-lasting integrated 'place-making' activity, these 'rural improvement' efforts seem like nothing but some naive enterprises. The reason is, Gökçeada has proved how the continuation of an environment could be, and how a place could be created by adapting life, architecture and nature in unison with no major destruction, and how necessary energy is drawn from environment without ruining it.
- If the coastal and village settlements of new buildings is situated far away from historical- archeological sites and seashore, a big proportion of the degradation of the natural and built- environment can be prevented.
- Today it is comparably easy to overcome the problems which has been created by poor development and implementations, and also the island has a limited popularity because of the transportation problem and climatic conditions. Yet, over the long term all these should be re-evaluated in order to provide an integrated development considering all elements of the environment.

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# ECONOMETRIC ANALYSIS OF WORLD HERITAGES' INFLUENCE ON TOURISM DEMANDS

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From 1970,U.N. bagan to discuss to protect heritages and in 1972 ratified an international treaty called <sup>¬</sup>the Convention concerning the Protection of the World Culture and Natural. According to this Agreement, in 1978,UNESCO designated 11 sites as the World Heritages at first and has added up to 812 sites by 2005. Two kinds of the correlational analyses are studied. Firstly,coefficients of the regressional analysis of correlations between the number of the World Heritages and international inbound tourist numbers is 0.2611. Secondly,coefficients of regressional analysis of correlation between the number of the World Heritages and the total amounts of payments by the international inbound ourists is 0.5693. Tertiary, from the above two regressional analyses, it is concluded that tourists pay 3% more when they visit sites of the World Heritages than the sites not designated.

#### Key words: Tourist Demand, World Heritage

#### 1.Introduction

There are many heritages both of cultural and natural in our world. These heritages from the past are our legacies in which we live and those we have to pass on to future. These heritages have some particular properties. Every heritages are unique, not replaceable, and make the people rejoice.

UNESCO seeks to encourage the identification, protection and preservation of cultural and natural heritages around the world considered to be of outstanding value to humanity. In 1972, member countries ratified an international treaty called the Convention concerning the Protection of the World Cultural and Natural Heritage. Each country is able to request to this organization of her own cultural treasures and scenery sites to be designated as the World Heritages. In 1978, she designated 11 as the World Heritages at first and has added up to 812 by 2005 as shown in <Table 1>.

This system makes member countries become aware of the intrinsic value and be proud of their heritages, and also encourages the domestic populations to participate in preservations. In addition to these domestic effects, foreign people could understand culture, history, and scenery of the other country. These mutual understandings may decrease any conflicts of neighboring countries.

By the designation of the World Heritages, quality of international tourism is promoted and the pattern of tourists expenses is changed. Consequently, this system brings more fruits to the world economy.



There are some qualitative researches to study the influences of the World Heritages on environments rather than quantitative perspects, and, also, to study the influences on the restricted area or on one country rather on the world(Hall,C.M.,et.al.,2002, Bruce,D.,2006, Klimpke,U.,et.al.2006).

This study is focused on the influence of the World Heritages on the world economy in three points of view as follow.

Firsly, there will be some relations between the World Heritages and the number of world tourists. To prove this hypothesis, regressional analysis of correlations will be processed. There is a research to study how the governmental investments into cultural and tourism industry creat tourism demands in European Commission (Richards,G.,1994,1996).

Secondly, there will be also some relations between the number of the World Heritages and the total amounts of expenses of the international inbound tourists. And, also, a regressional analysis of correlation will be processed.

Tertiary, from the above two regressional analyses, some conclusions that how much tourists pay more

when there are the World Heritages will be drawn with the simulation method.

In this study, statistics of the tourist expenditures prepared by International Monetary Funds and the World Tourism Organization are utilized for the analyses of the correlation between the World Heritages and the world expenditures of tourism. These statistics employing actual market price rather than real price is the range of this study (IMF 2006).



						/	
<u>Year</u>	<u>Africa</u>	<u>Oceania</u>	Asia	<u>Europe</u>	America	Total	Cumulative Sum
1978	3			3	5	11	11
1979	10		6	13	6	35	46
1980	11		5	6	4	26	72
1981	8	2	3	7	7	27	99
1982	8	1	4	2	7	22	121
1983	1		4	15	7	27	148
1984	5		7	2	6	20	168
1985	7		11	4	5	27	195
1986	6		7	12	2	27	222
1987	4		10	9	13	36	258
1988	5	1	6	9	4	25	283
1989	4	1	1	3		9	292
1990	1	2	5	7	2	17	309
1991	3	1	8	7	4	23	332
1992	2	2	7	7	4	22	354
1993	3		12	11	6	32	386
1994	4	3	7	13	3	30	416
1995			7	12	7	26	442
1996	6		6	20	3	35	477
1997	7	2	7	21	4	41	518
1998	3	1	7	17	3	31	549
1999	5		10	23	11	49	598
2000	10	1	15	30	10	66	664
2001	7		9	17	5	38	702
2002	2		2	5	2	11	713
2003	5	1	11	5	5	27	740
2004	4	1	17	16	2	40	780
2005	4		12	11	5	32	812
Total	138	19	206	307	142	812	

<u>< Table 1>World Heritages (Aggregated)</u>

<Source: UNESCO, who unescolorg, as of March 3, 2006>

#### Definitions of terminologies are as follow

Inbound Tourist is the resident of foreign country who arrives a country and reports to the immigration office of his(her) trip purpose as a non-business. Who stays more than one night and who arrives multiple times in a year are included (WTO 2006).

Tourism Receipt is the expenses that the inbound tourist pays to buy tourism services (hotel, food and beverages, transport, trip, recreation, and etc.) and commodities during stay within one year. This statistics is prepared by the governments of the arrival countries on the basis of actual market price. Tourist, as a consumer of tourism services, is sensible to the actual market prices rhan the real market prices(Yoon 2006, 2005).

#### 2. Econometric model building

UNESCO has designated about 10 sites yearly in average from 1978 to 2005. By the continent, Europe occupies 43.8 % and Asia 25.3% as shown in <Table 2>. The World Heritages are categorized in to Cultural, Natural, and Mixed Heritage. Natural Heritages occupy 77.3% of the World Heritages and Europe occupies 44.4% of Cutural Heritages.

Continent	Cultural	Natural	Mixed	Sum
Asia	158	42	6	206
Europe	279	22	6	307
America	89	50	3	142
Africa	101	33	4	138
Oceania	1	13	5	19
Sum	628	160	24	812

#### <Table 2>Distribution of the World Heritages

The Cultural Heritages including the Mixed Heritages occupy 80% of the World Heritages. UNESCO designated 7 sites in Korea (South) as the World Heritages as shown in <Table 3>.

#### <Table3> The World Heritages in Korea (South)

# YearSite1995Jang-Gyeong Panjeon in Haeinsa Temple (the,depositories for the Tripitaka Koreana<br/>woodblocks) Jong-Myo Shrine, Seok-Gul-Am Grotto and Bulkuksa Temple1997Chang-Deok-Gung Palace Complex, Hwaseong Fortress2000Dalman Sites (Coachang Humann, Canachang), Changnain, Ama

2000 Dolmen Sites ( Gochang, Hwasun, Ganghwa ), Gyeongju Area



< Table 4>International Tourists Arrivals					
<u>Year</u>	<u>Arrivals( million persons)</u>	<b>Change over previous year(%)</b>			
1977	249.2	8.91			
1978	267.0	7.14			
1979	283.1	6.02			
1980	278.2	-1.73			
1981	287.6	3.38			
1982	277.1	-3.65			
1983	282.1	1.80			
1984	306.9	8.79			
1985	320.2	4.33			
1986	330.5	3.22			
1987	359.8	8.87			
1988	385.5	7.14			
1989	410.2	6.41			
1990	441.0	7.51			
1991	443.9	0.66			
1992	481.4	8.44			
1993	494.7	2.76			
1994	519.5	5.01			
1995	538.1	3.58			
1996	569.6	5.85			
1997	592.5	4.02			
1998	611.6	3.22			
1999	634.1	3.68			
2000	680.6	7.33			
2001	680.4	-0.02			
2002	700.4	2.94			
2003	689.7	1.52			
2004	783.2	13.56			

<Source:World Tourism Organization(U.N.),www.world-tourism.org>

In 2004, UNESCO designated capital cities and 40 tombs of the ancient Koguryo Kingdom. 14 imperial tombs and 26 of nobles are belong to the Koguryo culture, named after the dynasty that ruled over parts of northern China and the norther part of Korean Peninsular from 37BC to 668 AD. During the last 25 years, international inbound tourists increased 4.3% over the previous year in average. In more details, for the 13 years between 1977 and 1990, increasing rate over the previos year is 4.6% in average and for the 14 years between 1991 and 2004 is 4.0%. In case of service demand, the independent variables of the demand functions are price, income, quality of service, and etc. And, to prove explicit any correlations between the number of inbound tourists and the number of the World Heritages as a quality of tourism services, econometric model is built as following formular.



$$T_t = \beta_0 H_t^{\beta_1} \mu_t \quad \text{------} \square$$
$$\mu \sim N(0, \sigma^2 I)$$

 $T_t$  is number of the international inbound tourists and  $H_t$  is number of the World Heritages of "t" period.

Equation is regressed after both  $T_t$  and  $H_t$  being transformed to natural logarithm as following formular.

$$\ln T_t = 11.47 + 0.261 \ln H_t \cdots 2$$

The explanatory power is 67% and the remaining is the level of income, price of tourism service, and etc. And the significant level is 99.9%.

Implementation of this coefficient is that every 10% increase in the number of the World Heritages results 2.611% increase of the number of the international inbound tourists.

The second model is built to study as following formular ③ whether there is any correlations between the number of the World Heritages and the amount of the expenses payed by the international inbound tourists.

$$E_t = \beta_0 H_t^{\beta_1} \mu_t \dots \Im$$
$$\mu \sim N(0, \sigma^2 I)$$

 $E_t$  is amount of the expenses payed by the international inbound tourists in "t" period as shown in <Table 5>.Equation ③ is regressed after both  $E_t$  and  $H_t$  being transformed to natural logarithm.

#### $\ln E_t = 9.066 + 0.5693 \ln H_t \cdots 4$

The Explanatory power of this equation is 74% and the remaining is the quality of service (fairness of foreign currency exchange rate, level of prices, infra-structures of tourism) in the arrival countries. And the significant level is 99.9%.

Implementation of this coefficient is that every 10% increase in the number of the World Heritages results 5.693% increase of amount of expenses of the international inbound tourists.

The results of simulation analysis results of the influences of the World Heritages on to the behavior of expenses of inbound tourists is as shown in <Table 6>.

When number of the World Heritages (second column) increases 10% in one year supposedly, number of tourists (column 1) increases 2.611% from the equation 2. When number of the World Heritages increases 10%, total expenses (column 2) increase 5.693% from the the equation (4)

The increasing rate of the expense per tourist ( column ③) is the difference of increasing rates between the total expense and the number of tourists.

Therefore, when there are the World Heritages, international inbound tourists expend 3% more than when there are not.



		<u>Change over previous</u>		
<u>Year</u>	<u>Receipts( billion U.S. \$)</u>	year(%)		
1977	55.6	25.1		
1978	68.8	23.3		
1979	83.3	21.1		
1980	106.5	27.9		
1981	108.1	1.5		
1982	104.3	-3.5		
1983	104.9	0.8		
1984	113.7	8.4		
1985	120.8	6.2		
1986	146.6	21.4		
1987	181.1	23.5		
1988	210.2	16.1		
1989	230.0	9.4		
1990	273.2	18.8		
1991	286.0	4.7		
1992	328.7	14.9		
1993	334.9	1.9		
1994	366.0	9.3		
1995	411.3	12.4		
1996	447.5	8.8		
1997	452.3	1.1		
1998	448.9	-0.8		
1999	462.0	2.9		
2000	479.2	3.7		
2001	467.0	-2.5		
2002	481.6	3.1		
2003	524.2	8.8		
2004	622.7	18.8		

#### <Table 5>International Tourism Receipts

<Source:World Tourism Organization(U.N.),www.world-tourism.org>

<u><table 6=""> Expense per Tourist</table></u>					
	<u>Number of</u> <u>Heritages</u>	Number of Tourists	<u>Total</u> <u>Expenses(U\$)</u> ②	Expense per Tourist (U\$) ③	
Base year	100(100.0%)	100,000(100.0%)	10,000,000 (100.0%)	100.00(100.0%)	
1 year later	110(110.0%)	102,611(102.6%)	10,569,300 (105.6%)	103.00(103.0%)	
2 years later	121(121.0%)	105,290(105.2%)	11,171,010 (111.7%)	106.09(106.0%)	



#### **3.**Conlusions

Economic influences of the World Heritages is that every 10% increase of the World Heritages draws 2.611% increase of international inbound tourists and 5.693% increase of the total international tourism receipts. Consequently, in the case of existences of the World Heritages, international inbound tourist expends 3% more than the case of inexistence. These results induce that the expectations of UNESCO to bring more fruits to the world economy with this system are able to be accomplished. UNESCO further their activities to designate any cultural treasures of the member countries and any hidden sceneries to the World Heritages. With these efforts, tourists consume good quality of travel services and also trip more frequently. When the travelers trip more, they understand the alien cultures more. And this mutual understanding will promote peace. One of the limits of this study is from the statistics of international tourism receipts prepared by the International Monetary Funds. This organization this with the reports submitted from the governments of member countries who gather source data on the base of actual market prices. Increasing rate 3% of expenses of inbound tourist in case of existence of the World Heritages will be diluted by the inflation.

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# THE PHRYGIAN ROCK-CUT ALTARS AND THEIR RESTORATION AND CONSERVATION PROPOSALS

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Phrygians migrated from Thracia and Bosporus to Anatolia about 1200 BC and after establishing temporary settlements in the south and southeast coast of the Marmara Sea, they moved into central Anatolia<sup>6</sup>. By the late ninth century, and certainly in eighth century, the Phrygians had established an organized kingdom and their capital was Gordion (*Fig.1*).<sup>7</sup>

The Phrygian's expansion field hasn't determined certainly but archaeological and epigraphical evidences demostrate that spread out at the east of Halys Çorum, Tokat and Kırşehir; at north Samsun, at south Niğde and Konya; at southwest Burdur and Elmalı Plain; at west Bandırma<sup>8</sup>. The major concentration of monuments lies in the highlands of Phrygia, the mountainous country near the upper reaches of Tembris and Sakarya rivers, within roughly triangular area defined by modern Turkish cities of Eskişehir, Kütahya and Afyon<sup>9</sup> but new Phrygian settlements and rock-cut monuments have found in researches outside the Highlands of Phrygia at the recent years<sup>10</sup>.

Phrygian believed to a goddess, who had her origin in Anatolia. The mother goddess had been worshipped since 7<sup>th</sup> millennium BC in Neolithic period<sup>11</sup>. The goddess, who has been known as nature and fertility herself and mistress of animals, has a very important role in the Phrygian religion. Her most frequent animal attribute is the hawk or falcon<sup>12</sup>. The most information to be gained from the Paleo-Phrygian inscriptions is the goddess's Phrygian name, Matar, which appears ten times in Paleo-Phrygian inscriptions. Lexical parallels with other Indo-Europen Languages indicate that matar meant, "Mother"<sup>13</sup>. The Phrygians, who was agriculture society, became identical with nature their mother goddess. They had believed that their goddess was lived in the rock. Therefore, rock-cut monuments were dedicated to the Mother Goddess. These monuments are monumental rock façades, stepped altars and niches. They were open-air sanctuaries and the Phrygians worshiped the Goddess Matar for wideness abundance and protection in front of these monuments<sup>14</sup>.

<sup>&</sup>lt;sup>6</sup> Sevin 1997:148; Carrington 1977:117 ; Mallory 1989:30

<sup>&</sup>lt;sup>7</sup> DeVries- Kuniholm 2003.

<sup>&</sup>lt;sup>8</sup> Sevin 1985: 248; Prayon 1987: 23; Mellink 1991: 623; Tüfekçi Sivas1999: 34.

<sup>&</sup>lt;sup>9</sup> Sevin 2001:195.

<sup>&</sup>lt;sup>10</sup> Sivas 2002:285.

<sup>&</sup>lt;sup>11</sup> Çapar1979:210.

<sup>&</sup>lt;sup>12</sup> Roller 1999:109.

<sup>&</sup>lt;sup>13</sup> Brixhe and Lejeune 1984: matar: M-01 c, M-01 d I, M 01 d II, M-01 e, W-01 b, W 03, W-06

<sup>&</sup>lt;sup>14</sup> Haspels 1971:73;Tüfekçi Sivas 2002: 336.



Matar Goddess is depicted both anthropomorphic and schematic in Phrygian cult monuments and Phrygian relieves. The anthropomorphic representations of Mother Goddess display certain features. She is always shown as a mature woman, standing upright, with her head, body and legs frontal. Her arms are usually bent across her body and hold various objects. The goddess usually wears a tall, tiered headdress, the so-called polos, from which a long veil extends to the hem of her skirt (Fig. 2).<sup>15</sup> Schematic depicts of Mother Goddess are idol generally in the shape of a circular disc, placed directly on a rectangular body.<sup>16</sup> Idols appear either, in relief on rockwalls<sup>17</sup> and or as stone figurines<sup>18</sup> (Fig. 3-4). In addition to this, they also appear behind the steps of altars (Fig. 5).

The rock-cut altars are among the most frequent cult monuments in Phrygia as numerical density. Throughout the ancient times, altars indispensable to worship and cult fields, with different architectural forms in different cultures<sup>19</sup>, have been depicted as a place where people pray to gods<sup>20</sup>. Stepped altars constitute the most suitable monument groups in respect of this depiction among the Phrygian rock-cut monuments. They are three-dimensional monuments carved out in isolated rocks. They are composed of steps and one or sometimes more idols, which symbolized the goddess<sup>21</sup>. Rock-cut altars are distributed numerically according to the provinces: 41in Eskisehir, 10 in Afyonkarahisar, 42 in Kütahya, and 1 on Corum/Alacahöyük Kalehisar Hill in east of Kızılırmak. 45 altars are new established in the region.<sup>22</sup> The most characteristic feature of Phrygian rock-cut altars is rock- cut stepped and in this step's behind arrangement. According to arrangement, they are finished off at the top; the altars can be divided into three main groups and subgroups (Fig. 6).

The first group is stepped altars with an idol at the top. This group has 3 subgroups:

Type I a: Stepped Altars with Single Idol (*Fig.* 7).

Type I b: Stepped Altars with Double Idol (*Fig.* 8).

Type I c: Stepped Altars with Twin Idol (Fig. 9).

The second group is Stepped Altars with Arch Shaped Stylized Idol. This group has also 3 sub groups:

Type II a: Stepped Altars with Arch Shaped Stylized Single Idol (Fig. 10). Type II b: Stepped Altars with Arch Shaped Stylized Idol and lions (Fig. 11).

Type II c: Throne Altars (*Fig. 12*).

The third group is Stepped Altars with a Platform at The Top. It has 4 subgroups:

Type III a: Stepped Altars with Flat Platform (*Fig. 13*).

Type III b: Stepped Altars with a Socket on The Platform (Fig. 14).

Type III c: Stepped Altars with a Base on The Platform (Fig. 15).

<sup>19</sup> For altar samples in different cultures; Galling 1925; Yavis 1949.

Type III d: Stepped Altars with a Niche on The Platform (Fig. 16).<sup>23</sup>

<sup>&</sup>lt;sup>15</sup> Roller 1999: 71.

<sup>&</sup>lt;sup>16</sup> Roller 1999: 72.

<sup>&</sup>lt;sup>17</sup> For idols on rock-walls; Haspels 1971:97; Tüfekçi Sivas 2002:337.

<sup>&</sup>lt;sup>18</sup> Idols were founded 15 in Gordion and 4 in Boğazköy . For idols in Gordion; Young 1951: pl. VII, fig. 2; Kohler 1995: 20no: Tüm B 33, Tüm B 34, Tüm B 35, pl. 11 A-B, 12 H-M.; for idols in Boğazköy; Bittel 1963: fig. 2.

<sup>&</sup>lt;sup>20</sup> Reisch 1894: 1640; Brandenburg, 1906: 695; Der Kleine Pauly 1964: 279-280.

<sup>&</sup>lt;sup>21</sup> Tamsü 2004: 33.

<sup>&</sup>lt;sup>22</sup> Assistant Professor Taciser Sivas and her team at surface survey newly find the 45 altars in between 2001-2005. <sup>23</sup> Tamsü 2004: 36-37.



The rock-cut altars are generally situated on high plateaus in the entrance of settlements and fortress on the rocks and necropolises. It shows that the Mother Goddess has a feature of protecting the city against the enemies<sup>24</sup>. In addition to this feature at Mother Goddess, she will bring abundance to these fields and protect them. These necropolises are Phrygian settlements in Zey village with belonged to Sivrihisar <sup>25</sup> and in Köhnüş Valley in Ihsaniye County, Afyonkarahisar. In necropolises these altars can be interpreted as the goddess would help them and protect their soul after they, who believed her, had died<sup>26</sup>.

The rock-cut altars have been in use as a cult place in Anatolia since the Early Iron Age. These altars have been revealed by archaeological excavation and surface survey. For example in Eastern Anatolia in the borders of the Kingdom of Urartian,<sup>27</sup>in the borders of the Neo-Hittite states in South-eastern Anatolia<sup>28</sup> and Isauria<sup>29</sup> and Lycia<sup>30</sup> on the South. In Mysia<sup>31</sup> and in Ionia<sup>32</sup> on the western coast of Anatolia, rock-cut altars were found.

The rock-cut altars have also seen in different cultures outside Anatolia (*Fig. 17*). Similar rock altars were found such as in Palestine<sup>33</sup>, Jordan<sup>34</sup> and Iran<sup>35</sup> on the east and on the Aegean Islands such as Chios<sup>36</sup> and Samos<sup>37</sup> on the west. Also Thrace, Bulgaria<sup>38</sup> and central Italy<sup>39</sup> there are similarities between the rock-cut stepped monuments in both in the different cultures and in Anatolia in which are the steps going up and the libation holes, which for liquid offerings, on or around the monuments. In this state, steps can be interpreted as symbol the relation to between gods or goddess and their believers.<sup>40</sup>

<sup>&</sup>lt;sup>24</sup> Tamsü 2004: 100.

<sup>&</sup>lt;sup>25</sup> Tüfekçi Sivas 2005: fig. 8-9.

<sup>&</sup>lt;sup>26</sup> Tamsü 2004:101.

<sup>&</sup>lt;sup>27</sup> For the altars at Kaleköy in the Urartian Kingdom provinces; Işık 1995: 31-32, fig.111-12, for altars at Harput in the Urartian Kingdom provinces, Işık 1995: 138, fig. 53; for altars at Bostankaya in the Urartian Kingdom provinces; 1995, 33, fig. 125; for altars at Divriği in the Urartian Kingdom provinces; Işık 1996, 63; for altars at Pertek in the Urartian Kingdom provinces; Işık 1996: 63; Işık 1999: 7, fig. 17.

<sup>&</sup>lt;sup>28</sup> Bier 1976: 115; Mellink 1979: 252.

<sup>&</sup>lt;sup>29</sup>Bahar 1999: 18; Zoroglu 1994: 302 –303.

<sup>&</sup>lt;sup>30</sup>Miller, 1995: 41; Akyel and Kolb, 1995: 145-47;Yılmaz-Çevik 1995: 196; Işık 1995: 116.

<sup>&</sup>lt;sup>31</sup> Beksac 2000: 118; Beksac 2003:149.

<sup>&</sup>lt;sup>32</sup> For the altars at Ephesus Meter Sanctuary on Panayir Mountain, Naumann, 1983: 214, Roller 1999:199-200; Soykal, 2002: 3.

<sup>&</sup>lt;sup>33</sup> For the altars at Gezer in Palestine; Ottosson 1980: 94.

<sup>&</sup>lt;sup>34</sup> For the altars at Petra in Jordan; Curtiss 1900: 350-53.

<sup>&</sup>lt;sup>35</sup> For altars t Naqşi-Rüstem in Iran; Schippmann 1971:187, pl.28-30; Schippmann 1971:1971; Von Der Osten 1956:.85, pl.78; Erdmann 1949: 6.; Würfel 1970:4.

<sup>&</sup>lt;sup>36</sup> Naumann 1983: 151.

<sup>&</sup>lt;sup>37</sup> Işık 1999: 4, fig.4.

<sup>&</sup>lt;sup>38</sup>For the altars at the south Bulgaria; Naydenova, 1990:85-87.

<sup>&</sup>lt;sup>39</sup>The Rock thrones at Tarqunia; Prayon 1979:89 - 91, 95, 97-98, pl. 6, 7.1-2, pl. 8.1-2, pl. 9.1-2; Rock thrones at Gabii; Prayon 1979: 10-13.

<sup>&</sup>lt;sup>40</sup> Tamsü 2004: 112.





Fig. 1: Map of Phrygia Region.



Fig.4: Idols on the rock from Yazılıkaya/Midas City.



Fig. 2: Relief of Phrygian Mother from Gordion.



Fig.5: Altar at Dümrek Kalebaşı.



Fig.6: Typology of the altars.



Fig. 7: Altar at Yazılıkaya/Midas City.



Fig. 8: Altar at Yazılıkaya/ Midas City.



Fig.3: Aniconic idol from Gordion.



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Fig. 9: Altar at Fındık Asarkaya.



Fig. 10:Altar at Menekşe Kaya.



Fig. 11: Altar at Köhnüş Valley.



Fig. 12: Altar at Dümrek Kalebaşı.



Fig. 13: Altar at Fındık Asarkaya.



Fig. 14: Altar at Yazılıkaya/ Midas City.



Fig.15: Altar at Yazılıkaya/ Midas City.



Fig. 16: Altar at Yazılıkaya/ Midas City.



Fig. 17: Distribution of Rock-cut altars in different cultures on the map.



Fig. 18: Altar at Fındık Asarkaya.



Fig. 19: Altar at Fındık Asarkaya.



There is difference between Phrygian rock-cut altars and other similar ones found in Anatolia and in other cultures. This difference is behind of the steps identification of Mother Goddess Matar as an idol. Probably, these steps have a symbolic function. They were made as to reach the Goddess symbolically. So, people used to feel themselves spiritually closer to the Goddess with the offerings put on the steps during the cult rituals, namely they were reaching to the Goddess. At this point, we can describe rock-cut altars and facades as different cult monuments which reflect the same religious belief, but different in meaning and function alike<sup>41</sup>. So, it could be said that the altars not only special places where offerings were made but they were open shrines<sup>42</sup>.

In the territories of Eskişehir provinces, rock-cut altars were founded in Yazılıkaya/Midas city in Tekören village and Phrygian settlements in Zey village with belonged to Sivrihisar; in Phrygian settlements of Kalebaşı site near Dümrek village belonged to Mihalıçcık county; in Kohnüş Valley in Ihsaniye county, Afyonkarahisar; Menekşe Rocks in Demirli village and near Buyuk Kapıkaya Monument in Döğer town; in Fındık village Asar Kaya Phrygian settlement, a part of the central County, Kütahya<sup>43</sup>. The altars have unprotected since long years on the ground. Because of serious reasons, these altars have been destruction.

The altars have been carved volcanic tuffs, which is soft and permeable structure, apart from altars in Dümrek/Kalebaşı Phrygian settlement<sup>44</sup>.

The altars in Dümrek Kalebaşı Settlement have been cut out of granite rocks harder than tuffs. Due to this reason, altars have more sound in Dümrek Kalebaşı settlement than other settlements (*Fig. 5, 12*).

It is observed both physical and biological deformations on almost all the altars. Steppe climate has dominated in the region where summer month is hot and winter month is very cold. That is to say, there are differences of warm between the day and night and seasons. These warm differences make the deformations of the altars faster. Dilated rocks freeze because of cold weather starts getting tired and deformed.

The rains are one other important reason destruction of Phrygian altars. Due to rains and snows which are leak to splitting on rocks, in structure of rocks has been observed massive loosen and deep splitting. Moreover, it is observed cutting, corruption and structural weakness on the soft rock structure with impact of rain and wind (*Fig. 14*).

On the other hand physical destructions done by treasure hunters have also increased in recent years. The altars and other rock-cut monuments such as monumental façades, niches were unfortunately the target of treasure hunters, who exploded both monuments and altars with dynamite. They think there is within the rocks treasure and treasure hunters harm to these monuments.

<sup>&</sup>lt;sup>41</sup> Tüfekçi Sivas 2002: 339-40.

<sup>&</sup>lt;sup>42</sup> Tüfekçi Sivas 1999:197.

<sup>&</sup>lt;sup>43</sup> For these altars, Tamsü 2004.

<sup>&</sup>lt;sup>44</sup> Tamsü 2004: 84.



Although the region, in which there are Phrygian rock-cut altars and other monuments, was protected by law antiquity area, there are stone quarries in this area. Because of the fact that these stone quarries were exploded with dynamites, vibrations occur in the region and this vibration causes to becoming wide of splitting on the altars and other monuments.

In addition, we have observed on the Phrygian altars moss, liken and fungus in the region<sup>45</sup>. These kinds are of biological destructions. They generally spread on the places that are wet and have no sunlight. In addition to this, the other affect causing to deformation is the roots of plants herbaceous and ligneous. Plants seeds going into the splitting and fissures by wind grow in time. So, the splitting and fissures on the rock block, where the altars is carved, are separated from each other and they break the rock block (Fig. 16, 18).<sup>46</sup>

While it is seen to splintering, erosion and mossy territories of Eskişehir in the Yazılıkaya/Midas City (*Fig. 7- 8, 14-16*), Zey and Tekören, it is observed erosion, fungus and flaking in Mihalıçcık/Dümrek Kalebaşı Settlement (*Fig. 5, 12*). Physical destructions are far too much observed at altars in Afyonkarahisar (*Fig. 10-11*).

Altars in Kütahya have been more affected from physical and biological conditions than altars in Eskişehir and Afyonkarahisar. At this place, at the same altars, both physical destruction and biological destruction are dense (*Fig. 9, 13, 18*). The rock structure of the region is softer than the rock-structure in Eskişehir and Afyon region. Moreover cattle breeding are made in this region. Shepherds graze animals at this area. Thus, altars are eroded and due to deposits of droppings from animals on the altars, they destroy the rock (*Fig. 19*).

Biological and physical destructions to decrease environmental conditions must be evaluated and measures must be determined<sup>47</sup>. Generally, chemical substances are used against fungus and likens on the stone works<sup>48</sup>.

However, according to the altars, which are in the open area, these applications should be regularly every year. For the physical destructions, such as cracks, breaks, splintering, which are seen to altars; completing related to architectural specialities, reinforcing, restoration and conservation studies as to being glued of broken parts can be applied.

In restoration studies, historical works were made from rock and different stone types. Because of heavy and big, these works couldn't be strong enough to glue with soluble gluing. Therefore, not soluble epoxy type gluing is used rather than this kind gluing<sup>49</sup>. Restoration is necessary for the cracks on the altars. It must be applied as filling rather than gunning. For filling suitable materials can be applied by injectors that consist of hydrolyzed lime and finely grain washed stream sand. The plants must be removed due to expansion of cracks<sup>50</sup>.

<sup>&</sup>lt;sup>45</sup> For liken and bacterium on the stones; Caner 1984: 52.

<sup>&</sup>lt;sup>46</sup> Fritzner and Heinrichs: 1995, 64

<sup>&</sup>lt;sup>47</sup> Polat 2005(in press).

<sup>&</sup>lt;sup>48</sup> For biological harms such as fungus and likens: Eskici 1997: 387.

<sup>&</sup>lt;sup>49</sup> Anom-Samidi 1993: 859.

<sup>&</sup>lt;sup>50</sup> Caner and Saltık 1999:122; Polat 2005(in press).



To prevent the destructions done by treasure hunters, firstly, people must be educated and historical conscious must be given to them. Furthermore, the researchers, who have been studying in the region, should explain the importance of historical monuments to the residents of the region. In addition to this, laws related to treasure hunting must be examined again. Thus, these destructions could be prevented or could be diminished.

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### AMATEUR ARCHAEOLOGY AND ARCHAEOLOGICAL PARK MODEL AT PEDASA: THE MAIN SITE OF THE LELEGIAN CIVILISATION, ON BODRUM PENINSULA

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The key aim of the model will be to save and preserve for future generations one of the most important archaeological sites of the region, the Lelegian settlement of Pedasa, which currently has no protection whatsoever and is therefore seriously threatened.

Surface examinations and excavations are planned to gather data about the little-known Lelegian civilisation and its capital Pedasa and unique remains, taking the necessary measures to promote and protect the site. The project will focus on the restoration of buildings and other remains under the leadership of archaeologists and other specialist groups. Tourists will be encouraged to participate, directly or indirectly, in the restoration work under the guidance of specialists for daily or weekly periods and the resulting income will be used towards research, restoration and the protection of other ancient cities. Business models will be created for the local population to enable them to earn a living from the site.

According to terms defined by institutions such as ICOMOS and UNESCO, Pedasa is a unique cultural heritage site, preserving the remains of a civilisation many thousands of years old. Support for this model will help to promote knowledge of such civilisations, cultural continuity and pass this heritage on to future generations.

It is one of the declared aims of the model to involve voluntary individuals and institutions in the groundwork to create a model that can be applied to similar projects in other locations in Turkey.

The model will provide continuity and the organisation of amateur archaeology over the long term, as well as the archaeological park. So, making a successful start will have positive implications for the future of the model.

In addition, the model hopes to establish, even if modest, a 'Research Centre for Pedasa Lelegian Archaeology'. The concept of such a centre is to apply laboratory principles to the object of the research by involving architectural, sociological, anthropological, botanical and geological sciences, as well as creating the potential for the involvement of the arts. A further short term objective of the project will be to encourage other national and international projects aimed at the protection of Turkey's cultural inheritance.

Justification for the model

Except for the key centres, Turkey's archaeological sites are almost unknown. In order to increase the number of recognised archaeological sites and their rate of adoption, in addition to large financial sources, there is a need to develop awareness of the role that archaeological and artistic works play in social, cultural and economical progress. The current lack of interest that people demonstrate towards their archaeological inheritance constitutes a basic problem, apart from the ever-present lack of financial resources,

This problem may be solved by starting widespread archaeological activity. In order to avoid a bottleneck and to professionally manage archaeological projects, financial resources are needed. With the right financial resources it should be possible to disseminate the levels of knowledge and interest found especially in large cities to the country at large, and raise the general level of interest in cultural inheritance.

In order for this project to be successful, the local people of Konacık and in particular those who own land within the borders of the archaeological site, will need to benefit. The indirect social, cultural and artistic benefits will, of course, be much broader. The target groups that should culturally benefit from the model are not only in Turkey but across the whole of Europe. The models's target groups can be defined as regional, national and international.

All Turkish and European universities, especially their fine arts, history of art, architecture and city planning departments can contribute to the project's relevance by participating in research or excavations.

The promotion of the model should be done by a professional communication and promotion agency. We aim at recruiting a company with proven professional skills in this area as a project sponsor, willing to act as a consultant and take responsibility for promotion of the model. With this professional support, it should be possible to raise interest and attention in local and national media. Within the framework of the communication programme, progress of the Konacık (Pedasa) works will be documented from the start, and regularly shared with local and national media in written and visual forms.

A final film and a book that will document the entire project will be produced and distributed free of charge to all universities, museums, major art studios, arts and artists' organisations and any other institutions in Turkey (and other target countries) expressing interest. This will enable the maximum number of people to benefit from the model and its results. The main reason for choosing an archaeological area is that ancient settlements are one part of the cultural inheritance in Turkey that raise least interest. But in addition, the fact that one of the project's basic criteria is its international appeal, it should contribute to the development of a common language between different cultures. Meetings and research taking place recently in the region indicate that the interest of local people in such activities has significantly increased. Recent interest in international activities in Turkey in general points to increased potential for the project.

Because levels of awareness about the importance of cultural inheritance are underdeveloped in this geographical region of Europe, and because of the current voracity for the profits that can be made from real estate, especially on the Bodrum Peninsula, the location selected for the programme is particularly pertinent and significant.



In addition, Bodrum Chamber of Commerce, Bodrum Chamber of Architecture, Konacık Municipality, Mugla University, NGO's and individuals have already taken part in preliminary meetings, expressing serious interest in the project. Representatives of the various associations have pledged contributions, and a group has been established to coordinate contributions. The high level of interest expressed on a local level, even before the project has officially begun, and growing public awareness is encouraging, and shows that similar projects might also succeed in other parts of Turkey.

#### Model Area

The project area can be defined as Pedasa Castle and the surrounding area, encompassing the most important artefacts of the Lelegian Civilisation on the Bodrum Peninsula, which remain something of a mystery, due to the lack of research and excavations.

In Turkey's master plan, the Bodrum Peninsula has been designated the priority region for high quality cultural tourism. The peninsula appeals to all kinds of tourist groups. It is rich in both natural and archaeological assets One of the Seven Wonders of the Ancient World, the Mausoleum of Halicarnassus, is here Bodrum Castle houses the world-class Underwater Archaeology Museum The peninsula is easily accessible by air or sea.

Because

The region is authentic and original, nothing similar can be created anywhere else. The region meets the needs of the target group, in other words, hands-on, real-life It's appropriate for the customer's need and orientation.

#### What Has Been Done So Far:

- Under the leadership of Prof.Dr.Adnan Diler, a team has carried out archaeological survey in the town of Pedasa and the surrounding area between 2002 and 2006.
- In order to create a database for use in later research, a public survey was carried out to determine the problems associated with archaeological sites.
- Members of Mugla University's Sociology Department carried out preliminary studies on the sociological structure of the site and its surroundings.
- In co-operation with Bodrum Underwater Archaeology Museum, a rescue excavations of a very important tomb, dating from the proto-geometric period on Sivriçam Hill, was undertaken and the results published.
- Meetings were held with land-owners living within the boundary of the archaeological site. A "Pedasa Festival" has been established with the support of the people of Konacık, the modern settlement closest to the Pedasa ruins. Meetings and seminars have been organized in Bodrum about Pedasa and the Lelegians.

• In order to promote the project, press conferences were convened and radio and TV programmes organised at various times.



#### What We Plan To Do Now:

Sociological Inventory: A collection of data from the local population including education, social structure and gear, diet, handicrafts, music, folklore and infrastructure that might be relevant within the project. This information will be monitored for its relevance to the project at each stage.

Natural inventory: The area of the project is one of Bodrum Peninsula's best preserved natural areas and the vegetation is unique. A data bank will be established particularly for species that figure in the Red Data Book as threatened indigenous species, to summarise the habitat of plants and animals, and to create a herbarium (collection of dried plants) and plant catalogue.

Cultural inventory: All movable cultural remains within the of project boundary (such as pillars, pieces of architecture, ancient work tools, bowls and earthenware) as well as immovable remains (walls, tombs, temples, agricultural terraces and other architectural remains) will be documented and their position recorded using GPS.

- Acquisition of topographic maps 1/1000 and 1/5000 from satellite images.
- Continuation of the surface research, and evaluation of the results. Park models to be established and research intensified in these areas.
- Environmental organisation, Determine which remains of Pedasa Castle and its territory are at most risk of disappearing, preparing restoration and conservation projects and putting these into action.
- Research appropriate accommodation models for visitor groups and put these into practice.
- Research appropriate models for educating visitors about the cultural inventory, the Lelegians, research, measurement and excavation techniques, in order to involve them in the work under the control of archaeologists and apply these.
- Ensure that various tourism sectors will benefit from the Project.

#### **Expected Results**

The model aims to explore the site of Pedasa, the main settlement of the local and still littleknown Lelegian Civilisation and its unique ruins, with the participation of interdisciplinary groups of specialists, to carry out excavations, to promote and protect it.

Initially the Project will organise the direct and indirect contributions of daily and weekly visitors to the archaeological work. They will be trained by archaeologists or other specialists, and assist in the restoration of the remains using the financial means that the visitors themselves contribute. This will enable the continued protection, research and conservation work in Pedasa and the creation of business models for the local population which will enable them to earn a living from the site The financial contributions of the visitors will be used to create funds that will ensure the protection of the cultural heritage and the continuation of the archaeological research and an ongoing management plan.



The promotion of the Lelegian Civilisation constitutes a major part of the project. Even from what we know so far, it is obvious that the research of the Lelegian settlements is of major importance in the understanding of the basis of the Caria region's history. Research into Pedasa, the most important of the Lelegian sites known since the time of Homer, is the most important stage of the project. The ancient city of Pedasa has been inhabited since prehistoric times because of its favourable location. The inner castle, placed at the highest point of the city, formed the nucleus of the settlement and further development can be followed from here step by step.

As well as its role as the central city of the Caria region, where urbanisation can best be observed, Pedasa is equally important as a Lelegian settlement, preserving all the characteristics of Lelegian architecture. This is why Pedasa is considered to be the centre of the Caria region, where answers to questions of ancient history, as well as more recent times and the urbanisation process, can be found.

The Caria region, having one of Anatolia's highest concentrations of ancient settlements, has attracted interest for the last 200 years. Its importance is largely due to the fact that both Eastern and Western civilisations conglomerated here. Two different societies, Carians and Lelegians lived side by side. They were famous both for being excellent seafarers and under Mausolos' reign, jointly became Hellenistic. Obviously, the Carian region offers many more subjects for research. In this context a thorough, long term research of the ancient city of Pedasa and its environs will be of great importance.

As a result of this research, concrete facts can be obtained about the earliest relations between the Carian, Lelegian and Hellenistic societies, the societies of Caria, the ancient settlements and their relationship with their surroundings, the process of urbanisation and becoming Hellenistic, the organisation of social life, the economy and the religious structure.





### INTEGRATION OF HISTORICAL MONUMENTS INTO MODERN ENVIRONMENT AND LANDSCAPE IN GERMANY

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This paper presents examples of integration of Roman architectural remains 1) in the city of Trier, situated in the valley of the river Mosel close to the border between Germany and Luxembourg, counting approximately 100 000 inhabitants; 2) in the small-sized Mosel-valley town Winningen and 3) in a 500 kilometer-long stripe of landscape between the rivers Rhein and Donau known as *Limes*. **Trier** was founded as *Augusta Treverorum* in the Mosel-valley in the end of the 1<sup>st</sup> cent. BC and functioned in late antiquity from ca. AD 290 to 394/95 as one of the imperial residential towns and capitals of the Roman West (Ill.1; 16) hosting especially members of the Constantinian and Valentinian imperial dynasties.<sup>51</sup> Today Trier is part of one of the 16 German federal states, Rheinland-Pfalz, and "capital" of the district Trier-Saarburg. It has preserved a remarkable amount of historical monuments. Five of them shall be introduced as examples of careful preservation, modern use and a thoughtful integration into the modern town: the *Porta Nigra*, the *Aula Regia* (Basilika), the Amphitheatre, the Imperial Baths, and the baths at the "Viehmarkt"-square.

These monuments are under the control of and preserved by the federal state institution "Burgen, Schlösser, Altertümer Rheinland-Pfalz" (=Castles, Palaces, Ancient Monuments), a department of the federal ministry of culture. In 1996 the federal government in collaboration with the above mentioned institution and the departments of antiquities developed a touristic concept according to which historical monuments, especially the ones in Trier, should be used as background for cultural events like theater performances, concerts, special exhibitions and even private events. Purpose was to attract more visitors by special cultural offers. At the same time such events would create a helpful PR-effect for the necessity of preservation of the city's cultural heritage. The organizational responsibilities for such special events, however, would be left with professional event managers.<sup>52</sup>

The *Porta Nigra* (III. 2-3), the North gate of the town, was erected in the second half of the  $2^{nd}$  cent. AC together with the city walls. The name "Black Gate" developed in the Middle Ages before the building was transformed to a church and dedicated to the local saint Simeon – the reason why its preservation is so outstanding: the demolition of the building had already begun concerning the third upper storey of the east tower and was stopped due to the new function. Due to the secularization during the French Revolution and the personal order of emperor Napoleon I. almost the original outline had been given back to the building in the beginning of the 19<sup>th</sup> cent. Outside just the Romanesque apse at the east side reminds of the church.<sup>53</sup>

<sup>&</sup>lt;sup>51</sup> K.-P. Goethert, Römerbauten in Trier (=Burgen, Schlösser, Altertümer, edition 20) (Regensburg 2003) p. 7-22.

<sup>&</sup>lt;sup>52</sup> Th. Metz, Das touristische Nutzungskonzept für die Trierer Römerbauten. In: Rettet das archäologische Erbe in Trier. Zweite Denkschrift der Archäologischen Trier-Kommission (Trier 2005) p. 53-54; W. Brönner, Probleme der Nutzung der Trierer Römerbauten. In: Op. cit. p. 51-52.

<sup>&</sup>lt;sup>53</sup> Goethert, op. cit. (footnote 1) p. 23-33.



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1: Map of Roman Trier with modern street plan in the background; 4: *Porta Nigra*; 6: *Aula Regia*; 7: Imperial Baths; 1: Amphitheatre; 9: Baths at the "Viehmarkt".

Being part of the Unesco-World-Heritage since  $1986^{54}$ , the *Porta Nigra* is not only a touristic highlight but still a visible division between old and new Trier: The traffic is led out of the old town around the east side (apse) as it used to be in the Midddle Ages (III. 3); along the north side the streets follow the course of the medieval city walls and go back to the alleys of the  $19^{th}$  cent. During that period of industrialization the old town of Trier (as countless other old towns of Europe) became to small and the areas outside the medieval core were densely settled – often divided from the medieval town by broad, representative alleys. The monument is as well place of historical theater perfomances using the interior as background for the plot taking the audience to a journey through the whole building.

<sup>&</sup>lt;sup>54</sup> Rettet das archäologische Erbe in Trier. Zweite Denkschrift der Archäologischen Trier-Kommission (Trier 2005) p. 102.



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2-3: Trier, Porta Nigra, south (town) side today and in 17<sup>th</sup> cent. as church St. Simeon.

The *Aula Regia* (Ill. 4-6), audience hall of the late-antique Roman palace of the 4<sup>th</sup> cent. AC, was integrated into the later Renaissance- and Baroque-palace which host today the regional government of the district Trier-Saarburg. The Aula is therefore part of an almost 2000 years lasting continuity of residential usage. The Aula itself, however, is used today as a Protestant church. The east wall of the Aula is not preserved originally, it was reconstructed in 1856 under the Prussian rule. Since 1986 the building is protected by the Unesco.<sup>55</sup>

The square in front of the Aula was designed by the German architect Oswald Mathias Ungers in 1987 after a competition with Gottfried Böhm and Max Bill. It was the first of three projects by Ungers for Trier until today. As ideal solution he planned a slightly lowered square with a circular shaped limitation to the north-west corresponding with the course of the street. A highly elevated arcade in the south, a gate building in the west, additionally an arch and a tower were meant to flank the square – that is closed in the east by the west wall of the Aula. Only little of the project was realized: the lowered square itself and the classical portico with a colonnade in a – typically for Ungers – sober, strict and geometric design as southern limitation. The result provoced some negative critics both in public and in the press<sup>56</sup> although the slight classicism of the portico fits well to the Roman monument.

<sup>&</sup>lt;sup>55</sup> Goethert, op. cit. (footnote 1) p. 17-20; Rettet das archäologische Erbe in Trier. Zweite Denkschrift der Archäologischen Trier-Kommission (Trier 2005) p. 70-73.

<sup>&</sup>lt;sup>56</sup> http://eng.archinform.net/projekte/14068.htm?scrwdt=1024. Concerning Ungers in general: O. Winkler, Oswald Mathias Ungers. In: Ullrich Schwarz (ed.), Neue Deutsche Architektur. Eine reflexive Moderne (Ostfildern-Ruit 20002) p. 272-277.







4-5: Trier, Aula Regia (Basilika), original north and west side; square and *Portico* by O. M. Ungers (1987).



6: Trier, palace area; Aula Regia, reconstructed east side; L-shaped Renaissance wing; Baroque wing on the left.

The "Kaiserthermen" (Ill. 7), the *Roman Imperial Baths* are an outstanding site of the modern town due to the still impressive size of the trikonchos of the *caldarium* (hot bath area) on the east side. The building was erected from the end of the  $3^{rd}$  cent. AC onwards, belonged to the late-antique palace and was probably not planned for public use. Orientated itself on an east-west-axis covering a space of 250 m x 145 m the monument lies as the *Aula Regia* on the

north-south axis of the palace area (III. 1). In the Middle Ages the building was part of the city walls (III. 7, on the right) and therefore not demolished totally, one of the arched windows used even as town gate. Other medieval additions had been removed in the 19<sup>th</sup> cent. Since 1986 the baths are protected by the Unesco-World-Heritage program.<sup>57</sup>

The building provides a fitting background for the annual Classics festival, a theater event concentrating on classical plays dealing with ancient Roman or Greek topics. Apart from concerts are worth to mention as well the "Roman-culture-days". During these kind of events the building is able to host maximum 2500-3000 visitors eight times a year.<sup>58</sup>



7: Trier, Imperial Baths, Classics festival 2001, from north-west.

<sup>&</sup>lt;sup>57</sup> Goethert, op. cit. (footnote 1) p. 125-133; Rettet das archäologische Erbe in Trier. Zweite Denkschrift der Archäologischen Trier-Kommission (Trier 2005) p. 81.

<sup>&</sup>lt;sup>58</sup> Metz, op. cit. (footnote 2) p. 54.





8: Trier, Imperial Baths, entrance building by O. M. Ungers under construction in summer 2006, from south.

The east and south sides of the monument are surrounded by streets following the course of the medieval city walls and going back to the alleys of the  $19^{\text{th}}$  cent. (compare with the *Porta Nigra*). A new entrance building by the architect O. M. Ungers will lead the visitors soon into the ancient ruins. It flanks the whole north side of the monument fronting the small lake of the palace-garden (III. 7-8). Ungers' design shows a similar classical, geometric architectural language as the example of the portico in front of the *Aula Regia* – corresponding therefore with the architecture of the Roman building. His project was chosen from seven contributions to a competition in  $2003^{59}$ .

The Roman *Amphitheatre* (Ill. 9-10) was part of the Roman city walls and therefore not built before the second half of the 2<sup>nd</sup> cent. AC. Its size suggests a capacity of approximately 16000-20000 seats. Since 1986 it is part of the Unesco World Heritage.<sup>60</sup>

<sup>&</sup>lt;sup>59</sup> www.medienfabrik-trier.de/login/presse/bsa/2006/pm\_kaiserthermen.doc.

<sup>&</sup>lt;sup>60</sup> Goethert, op. cit. (footnote 1) p. 59-70; Rettet das archäologische Erbe in Trier. Zweite Denkschrift der Archäologischen Trier-Kommission (Trier 2005) p. 97.





9-10: Trier, Amphitheatre, from south; gladiator show in the arena 2005. Besides the annual Classics festival the Amphiteatre hosts as well the gladiator show "Brot und Spiele" today (Ill. 10) which is a main touristic attraction. Maximum 5000 seats ten times a year are available for these events apart from the normal touristic usage.<sup>61</sup>

The third Ungers-building in Trier functions as protection, entrance and display window at the same time: the glass-cube (III. 11-13) in the middle of the lively "*Viehmarkt*"-square covers another Roman bath that was partially preserved and separated from an adjoining underground garage. After a competition in 1989 the construction was realized in 1990-96. Ungers himself understood the building as a window into the past.<sup>62</sup> Effectful is the diagonal corridor that passes through the cube from one side to the adjoining side; inside the cube this corridor makes the impression of a glass container inside a glass container (III. 12).



11-12: Trier, Viehmarkt-square with marks of ancient street system and glass cube by O. M. Ungers; inside the cube the remains of a Roman public bath.

<sup>&</sup>lt;sup>61</sup> Metz, op. cit. (footnote 2) p. 54.

<sup>&</sup>lt;sup>62</sup> <u>http://eng.archinform.net/projekte/2382.htm;</u> Winkler, op. cit. (footnote 6) p. 275.





13: Trier, glass-cube by O. M. Ungers

**Winningen**, district Mayen-Koblenz, is a small historical town down in the valley of the river Mosel with appr. 2500 inhabitants – famous for its wine products. On the upper terrace above the Mosel-valley a Roman villa-complex of appr. 100 m x 150 m extension was situated. It was excavated, scientifically recorded by the department of antiquities at Koblenz and then almost entirely removed during the construction of the motorway A1 (Köln-Mainz) in 1971-73 (III. 14-15). The villa, in fact a farm, consisted of three bigger stone buildings (a-c) enclosed by a stone-wall that were erected around 200 AC.<sup>63</sup> Only the few remains of the main building **a** were preserved within the exit to a parking lot (III. 15). The monument deteriorates since years. Responsible for preservation is theoretically the department of antiquities, but practically the motorway-department as the site belongs to the motorway area today. Apparently there is a certain lack of interest to care the remains. Even worse: the motorway and with it as well the monument is separated from the surrounding landscape by a fence, the villa only being accessible from the parking-lot. Due to this fact the historically interested people of the town are not able to take care of the monument and tourists visiting the town can reach it only via the motorway.

<sup>&</sup>lt;sup>63</sup> H. Eiden, Ausgrabungen an Mittelrhein und Mosel 1963-1976. Tafelband. Trierer Zeitschr. Beih. 6 (Trier 1982) p. 112-136; Marko Kiessel, Die römische villa rustica "Auf dem Bingstel", Gemeinde Winningen, Kreis Mayen-Koblenz. Untersuchungen zu Befunden, Fundmaterial und Besiedlungskontinuität. Dissertation Universität Trier 2005 (print in 2007).





14-15: Winningen, excavation site on upper terrace above the Mosel valley, from north west; preserved structures of main building **a** within exit from motorway to parking lot, from south east (1971/73).

The ancient landscape between the rivers Rhein and Donau was characterized by the Roman *Limes*, a fortificated line between the provinces Raetia and Germania Superior of the Roman Empire and the "free Germania" (Ill. 16; 18-19).<sup>64</sup>

The protection of the biggest landscape-monument in Middle-Europe<sup>65</sup> is divided between the German federal states Rheinland-Pfalz, Hessen, Baden-Württemberg and Bayern, their departments of antiquities and related municipalities. The monument has become part of the Unesco World Heritage in July 2005.<sup>66</sup>

The research by means of excavation began already in the 18<sup>th</sup> century and still continues. It is taken out today by several institutions, first and foremost by the "Römisch-Germanische Kommission" (RGK) with seat in Frankfurt/Main, a department of the "Deutsches Archaeologisches Institut" (DAI), which is itself a department of the German Ministry of Foreign Affairs, of course supported by the departments of antiquities of the concerned federal states, by the "Saalburgmuseum" and the financial help of the "Deutsche Forschungsgemeinschaft" (DFG). Around 900 towers and 170 castles protected the border from the end of the 1<sup>st</sup> to the second half of the 3<sup>rd</sup> century A.C.<sup>67</sup>

<sup>&</sup>lt;sup>64</sup> B. Rabold, E. Schallmayer, A. Thiel, Der Limes. Die Deutsche Limes-Strasse vom Rhein bis zur Donau (Darmstadt 2000); L. Wamser (ed.), Die Römer zwischen Alpen und Nordmeer. Zivilisatorisches Erbe einer europäischen Militärmacht (Mainz 2000) p.49-79.

<sup>&</sup>lt;sup>65</sup> Rabold et al., op. cit. p. 8.

<sup>&</sup>lt;sup>66</sup> Unesco heute online, edition 8 (August 2005).

<sup>&</sup>lt;sup>67</sup> Rabold et al., op. cit. p. 10-12.





16-17: *Limes* (appr. 200-260 AC), Roman provinces in South-West Germany (left side: Trier; black squares: frontier castles); west of Altdorf: the course of the *Limes* is clearly visible.

A lot of single elements of the *Limes* have been excavated, preserved and even restored like the watch-tower near Grosserlach-Grab. It makes the latest phase of the fortification during the first half of the 3<sup>rd</sup> century AC understandable which consisted of a stone-tower, rampart, trench and a wooden palisade<sup>68</sup>. The famous castle "Saalburg" near Frankfurt/Main hosting the "Saalburgmuseum" is the oldest and probably the most famous reconstructed example. The foundation stone was laid by the German emperor Wilhelm II. on the 11<sup>th</sup> of October 1900. (III. 20).<sup>69</sup>



18-19: Reconstructed watch-tower near Grosserlach-Grab; reconstruction of the borderline (drawing: D. Baatz).

The whole monument is part of a coherent touristic concept that makes its history and meaning visible and understandable. On approximately 700 km the "German Limes-street" follows as close as possible the course of the ancient fortificated border. The preserved sites in the landscape are accessible by foot from specially arranged parking-lots. Explanation is provided by signs containing illustrations, suggestions for reconstruction and historical information.

<sup>&</sup>lt;sup>68</sup> Op. cit. p. 16-17; 90; E. Schallmayer, Der Limes in Obergermanien und Raetien bis zum Ende des 2. Jahrhunderts n. Chr. In: Wamser (ed.), op. cit. p. 64-74.

<sup>&</sup>lt;sup>69</sup> Rabold et al., op. cit. p. 37.



Most of the single monuments are part of a trail system as well. The "Limes-bicycle-path" – connecting the four federal German states - will be completed soon.<sup>70</sup>



20: Limes-castle Saalburg (Hessen).



21-22: Aalen (Baden-Württemberg), "Roman-culture-days", reconstructed Roman crane and soldiers of the Ala II Flavia.

In order to attract tourism several towns/cities with a Roman frontier background organize regularily "Roman-history-days" - presenting Roman (military) culture in a very lively and easy manner. The town Aalen in Baden-Württemberg is one of the outstanding examples (Ill. 21-22).<sup>71</sup> These examples make clear that technical preservation of ancient monuments only as happened at Winningen is not satisfying. To admit, Winningen is an extreme case of disintegration. Less negative, but negative examples can be found everywhere in Germany: preserved ground plans of Roman buildings without relation to modern environment.

<sup>&</sup>lt;sup>70</sup> Rabold et al., op. cit. (footnote 14) 9.

<sup>&</sup>lt;sup>71</sup> Rabold et. al., op. cit. (footnote 14) p. 102-103.



But for a sustained preservation a meaningful *integration* into modern environment is as necessary as any form of *modern use*. The introduced (monumental) Roman monuments in Trier as the maybe less impressive Roman sites of the *Limes* are not in danger to be forgotten and deteriorate. They are part of a coherent preservation-, tourism- and usage-concept. Especially Trier shows how successful ancient monuments can become in a real sense part of a modern town by means of modern architectural design.

The question is if ancient monuments which lack (or are expected to lack) both, integration and modern use, are worth to be preserved after being scientifically recorded. Financial resources could be concentrated on less but more promising objects.

List of illustrations:

1-3; 9; 11: Goethert, op. cit. (footnote 1) Ill. on pages 6, 23, 25, 60, 107.

6-7; 12: Rettet das archäologische Erbe in Trier, op. cit. (footnote 2) Ill. on pages 78, 52, 87.

- 16; 20: Wamser, op. cit. (footnote 14) Ill. 56, 51.
- 17-19; 21-22: Rabold et al., op. cit. (footnote 14) Ill. on pages 9, 90, 17, 104, 103.
- 14-15: Eiden, op. cit. (footnote 13) Plates 88,1; 87,1.

4-5; 8; 10; 13: Marko Kiessel.



# THE INTERACTION DYNAMICS OF WATER AND THE ENVIRONMENT

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The Iranian plateau is largely desert. Most of Iran apart from the humid coastal parts in southern shores of the Caspian Sea, and areas in the northwestern provinces, receives only 150 to 250 mm of rainfall a year. So water regarded as a treasure and vital factor in these areas in which the lands are thirsty and salty and the temperature is sometimes over than 45 to 50 C°. But the old Iranians could overcome these problems by inventing a special method of groundwater capturing. Qanats or Kariz are underground horizontal tunnels that tap groundwater in an alluvial fan and transport it to human settlements or agricultural land without any pump or other lifting equipment. The Qanats are a heritage of the Persians, who developed them about 3000 years ago. The worldwide spreading of Qanats is a good reason for the role of this water-excavation structure in the development of human civilization. Qanats are used for irrigation in arid zones of Iran, Pakistan, Afghanistan, Xinjiang in West China, the Arab Peninsula, North Africa, South America and parts of Europe. Water is transported underground for several kilometers, in many cases up to 50 km. Qanats are composed of dug or horizontal wells for capturing the water, a tunnel having a series of vertical shafts used for digging out the excavation debris and for respiration, and the downstream diversion structure that provide for the distribution of waters into different canals. Qanat, is one of the most spectacular manifestations of structural engineering and creativity of Iranians. Including full adaptation with the environment, and is a useful and powerful means of water excavation and transmission, preventing water evaporation during the transmission. This structure is the result of the environmental conditions and the intelligence of its creators. Qanat is an important factor in formation and survival of ancient civilizations as well as the development of large cities, especially those situated near the deserts. Developing cultivation lands and improves vegetation cover without a biological change in vegetative society, persistence of life along with long life and human health are local achievements of the Qanat. Obtaining clean water through Qanat, and preparing food and nutrition for the society that has Qanat, providing desirable continuation of life for humans, plants and animals without any negative effects on the neighboring ecosystems, protects the environment. Preparing clean drinking water, lack of poisonous chemicals, decreasing contamination for not needing to chemicals, and complicated materials and fossils fuels is the main difference between this kind of water supply with others. Of course, in utilizing this ancient method, use of modern technology implementation and noticing the limitations of this system is of great concern. This way of transferring water to the thirsty lands and villages both for irrigation and people's consumptions regarded as a masterpiece of engineering which unfortunately are going out of use and drying because of careless usages of nearby mechanical deep wells. This paper tries to talk about the high environmentally advantages of Qanat's ways of irrigation in Iran and its desert lands with some case studies.

#### Key words: Qanat, Water, Irrigation, Iran, Environment



#### Introduction

Nowadays, one of the main concerns of scientists and managers of most countries, including Iran, is the limitation of fresh water resources and rain falls, inappropriateness of place and time of rainfalls, and the decreasing in subterranean water level, which are all related to water and its excavations. The Qanat include some wells and one gallery with slope less than earth surface which drainage water from saturation layer or river or wetland by gravity power, in this method electrical energy do not used. There are Qanats all over the world but the most of them is located in salt deserts of Iran. Since Qanat is a very accurate structure for hydrological balance in the region, it can be utilize as a powerful means for water excavation for the urban, industrial and agricultural use. In fact, it can be said that Qanat is one of the most favorite systems of water storage and excavation from subterranean resources; therefore, discussing about Qanat and its merits and demerits is a discussion on water. In any age, whether ancient, modern, or post modern, Qanat is the main concern in the survival of the civil life and the allaspect development of Iran. This structure is the result of the environmental conditions and the intelligence of its creators. Of course, in utilizing this ancient method, use of modern technology implementation and noticing the limitation of this system is of great concern. Since water supply projects should be considered environmental issues, therefore the objective of this study is to evaluate of Qanats impacts on the environment.

#### The effects of Qanats on plant colony

Continuation of plant colony life depends on the existence of nutrition, environmental conditions and human activities. With the start of farming and gardening and increase of plants, the new ecosystem without having bad effects on the neighboring ecosystems, causes recovery of the area around the Qanat. The nature with its self-setting power adapts itself to the new environmental conditions, and this variation with having the needed water makes the continuation of plant life. Some scarce species, native species with outstanding genetic features, genetic sources, scarce sights, and natural qualities of land, old trees, and so on regarding to the environmental conditions has been survived and these plants which had to die for lack of water will survive, too. Protecting Qanats in sanctuaries for protecting and keeping plants, life variations, and preventing extinction of plants like juniper, hair, barberry, wormwood, rowan, walnut, santonica, nitora and many herbal plants, is needed.

#### **Effects on animal colony**

It is obvious that having the Qanat water in all seasons, domestic and wild animals of the area, will have no problem for finding food and water. Therefore, the new conditions are effective on increasing the number of animals without cutting their natural ways of contacts, they continue their life and there will be no extinction for different species. In addition to decreasing the charges for making roads for wild animals the areas of Qanat can be a safe shelter for birds and animals that run away from dry land for their survival. The Qanat doesn't have any interference with the living of animals in their shelter, in a sanctuary with the natural environment and the special conditions in dry for semi-dry places. Keeping and renovating Qanats in dry and semi-dry places and in sanctuaries decreases the expenses to supply water for animals with tanks and so on. Furthermore, natural water supplying without washing much energy helps animals to live and to have better conditions. In Qanat which have enough water with good conditions for growing fish, we can select suitable fish species to grow and help the economy of the area. Also with having clean water and a healthy environment for growing domestic animals we can have high quality meat, dairy and poultry productions without diseases caused by polluted water and soil.



#### Effects of the Qanats on the climate

With the increase of greenhouse gases in the past century and global warming that resulted in climate changes on rainfalls variations, temperature, radiation; increase of temperature has caused changes in hydrologic cycle so that based on forecasts, decrease in rain and snow in the next 90 years will be about 10 to 20 percent.

Therefore, with rare precipitation and inappropriate spread, preparing water through native easy and cheap methods without spending much energy especially in dry and semi-dry places in necessary.

Qanats as an engineering masterpiece of our ancestors is one of the native structures which without damages to the fragile structure of the nature especially in dry places which have very fragile ecosystems with little capacity for conformity against human interference. With preparing water in addition to possibility for farming and gardening, makes the area appropriate for growing native plants, animals and prevents animals from drying if there is lack of water supplying. However increase in plant areas will prevent erosion and increasing desert phenomenon.

#### Social, Economical & Cultural effects

The intelligence combined with the Iranian art obtained from the native rich knowledge with the invention of Qanat in dry places, is solved the biggest challenge of life, preparing water for drinking and farming. So settlements, farms and gardens were found in dry and semi-dry places and civil life through farming in villages and urbanity in an evolutionary was developed.

Khorasan farmers (in the north east of Iran) with a 300 years background have experienced living in salty desert and absolute dryness. In challenging with this natural phenomenon with the help of his native knowledge they have been careful in getting water and best optimize use. Therefore they have prepared food security and ease with physical and mental health. Because the structure of the Qanat was easy for people to understand and adaptation to native capacities. It's been one of the best techniques adapted to the climate for obtaining water cheap and easy which doesn't damage contacts between human and the environment. But if the Qanat gets dry, the equation of the environment is gone and a dryness effect on people's relations unlike other disasters like flood and earthquake which makes people gathers together and helps each other, makes them apart.

The Qanat can't supply much water for increasing farms and just gives water for running people's life cycle through the annual expenses of reconstruction, improvement and sweeping sediments and other material needs of the society will be prepared through handicrafts and animal husbandry.

On the other hand the possibility to accept new people in the society that has Qanat will reinforce the native and local culture and there is no social and cultural challenges because of different in local and traditional cultural. This happens when strange people enter the area and especially workers who come for the jobs due to water and spend their money for their needs, materials, makes rents, foods and washers, and so on. So the native society and finally the living of some people may be endangering.

Small size of production elements and little surplus of productions of Qanat in the past, made no place for benefit- making of governors and their exploitation.

By force for more productions and getting more taxes. Private property relying on public cooperation with high ideological values, without need to an expert super court, was away form strong governors and never caused reinforcement and stability of governors. It always forms hardly but is kept easily.



For dividing Qanat water form natural ways like sand clock, sun clock and other very simple and natural tools are used.

The wage of water distributors was prepared from water shares and in all these divisions they tried to have justice to protect the right of manufacturer against hostile interferences and gradually the traditions become more stable. They had vaster area so that found a way to the law books. The laws ruled over Qanats were made by needs through years and were necessary to be observed years and were necessary to be observed which itself makes native traditions and culture kept. The management models based on these traditions had been very important in environmental programming. In such management with the least challenges, exploitation of natural sources was made easy.

Autogenic cooperatives and social passion in such hopeful society helped them to run the goals, which was a main and faithful movement. This cooperative work system shows the cultural growth of the people who with accurate knowledge have invented special management systems, which sound to distinguish them as best compared to other civilizations in the history. The economy based on small size ownership, handicrafts, and business, basically having a peaceful economy, seeks peace and benefit which makes special features during time.

In the subterranean canal civilization for the direct dependence of landlords to water for production, there is need to face communication of people together and to water distributors and attendance of all partners in decision making which reinforces the culture of negotiation and delegation and because all landlords and share no one was stronger than others, quarrels were settled easily which was form a culture of interaction and easy going.

Satisfaction of well diggers about their jobs who knew themselves the owner of the most technical jobs in the society, respect to water distributors and on the whole respect to people gave them enough motivation for their cooperation in the society, try to live better with efforts to protect the paternal land with protection and respect to the nature without making changes in the ecology and negative biologic changes in the area accompanied by economic and social growth is the unique features, in a society with Qanat.

From the cultural viewpoint, devoting Qanat and in supervised management, causes cultural growth and positive effects. Also shallow parts in the structure of Qanat are good shelters from the sun heat in the desert summers and in the wars. They are good places for hiding and are of defending structures.

Of the social problems in the current time in the societies having Qanat is the number of owners and their disagreement and consequently local quarrels, unwiring of some of these who make half- deep and deep wells, landlords who don't have enough money and land owners who don't live in the area or have incomes form other sources and finally not paying attention to reconstruction, restoration and sweeping the sediments. It is hope that the authorities will prepare the necessary things to decrease the problems and to improve the situation and with reinforcing the social, economical and cultural relations, the stability of the big civilization which we have inherited from our ancestors will increase so that there will be no challenges when delivering such works with national values to the future generation. The structure of the life of our ancestors has made the stable civilization of the current Iranians dependent to Qanat and as the basis for economical, social and cultural life, distinguished from other ways of water supplying can be a very good introducer for our culture, history and art among other subcultures of the world, and for its protection and stability against the modern civilization which tries to unite the cultures.



#### **Biologic effects**

Digging the Qanat is the most environmental popular way for taking and providing the drinking water and water for agriculture. It can be improve plants cover, continuation of wild life, increasing public health and preventing outbreak of disease in the area. In general conservation of environment for animals spices, plants, meadows, protection for aquatic in the case of fish raising, protection of native and immigrant birds to the area, and finally improving life conditions which is resulted by it.

Digging the Qanat, is not only a hurt on the nature, but also is motive arteries of the life on it. It is create primary and secondary positive effects on the ecosystem, by biological change of the environment in favorite direction. A Qanat provide the needs of the human society and it will improve ecological, economical and social conditions.

In a society with Qanat, the basic problem of the people for providing the fresh water will be satisfied without endangering the environment, and the fields for more growth of the people also will be provided.

A normal, active and self- sufficient society with Qanat is working for a favorite development along with use of sources in hand gloriously. The Qanat prevent migration to the cites, pending works and border residence around the cities, and the other caused problems, by reinforcing public hope to life and providing occupations in agricultural fields, creating roads and social and economical expands, based on growth and development in local and national dimensions by decreasing dependence to the other countries and finally enhancing life level of the people.

The water structure of the Qanat and nature aren't 't opposed to each other and if Qanats are reinforced by restoration and sweeping the sediments annually, the society having them, and the nature will always benefit form the definite advantages and good effects over each other. Digging Qanats especially on a big scale in absolute dry places will increase the good effects and make important changes in the rural and agricultural society and always with ecological and biologic changes in the area will cause friendly transformation with the environment.

Qanat with technical and economical justification, without spending bonds and using complex and special equipment for construction, adapts to the environment, keeping ecological and biologic equation. With economic development, without any awful effects on the environment and the neighboring ecosystems can approach the stable development.

Also, with protecting the environment and biologic and agricultural variations, removing deserts, management of water resources, lack of harmful chemicals and regarding to the vast area which is being covered by Qanats, good exploitation of water for doing the basic water and land projects can have an important role in the stable development in terms of national aspects.

Also in a society having Qanats, with culture of high understanding, there is no injustice for distributing food and such an important factor causes all people have the right food as they need and in this fair system, the poor don't get poorer and the rich don't get richer because of unfair distribution. Therefore, the Qanat is a system that has adaptation to the natural position of the area so by exploiting the natural sources, the natural potentials will charge to economic values and with keeping food security, a stable society will be made.



#### Chemicals contents in Qanat water

In the natural state the mines of lead, manganese, copper, zinc, aluminum, mercury, or radioactive springs near Qanats have little local effects on fishes, animals, plants and humans and on the environment. Since digging Qantas doesn't 't interfere with the mines and water transfer is through underground routs, it is kept from explosions of mines and hard metals, don 't get into people 's food and they are away from diseases like cancer, osteoporosis, and mental diseases caused by heavy metals and radioactive ...

Also, because in an Qanat the rain doesn't 't gets into it, and because evaporation happens in the kiln, residues from evaporation like salt which makes water salty, are much salt much salt remain in the soil. In addition to obtaining underground water it makes it fresh, too.

For not storing water of the Qanat in one place with a high volume the process of Euthy Phicatias which duplicates in dry and semi-dry places, don't happen, which occurs in high depth as a result of gathering of food material and activities of micro organisms and spoils water or decreases the quality. Preventing this event, with preparing water through Qanat has mush importance.

The minerals existing in water of the Qanat, don't lead to oxidation mechanisms, therefore in compensating damages to the environment are prevented.

Also the needed amount of oxygen for plant, animals, human, and its appropriate combination with other gases in the Qanat water prevents from harmful environmental changes. Density of Do (solution oxygen) in the needed level is necessary for survival- in the case of protect Qanats from the floating sand and floods with constructing cement walls around the wells which the doors should be open, there is no entering of floods having salts like chlorine, sulfates, and carbonates.

#### Advantages Qantas for making drinking water

From the %97 of all water of the world, including oceans and seas which have slat, only %3 are fresh and according to the estimation of environmental association of the united states about one-third of the water of the world is polluted and the quality is gone.

Yet, the climate is always changing and the population is inalterably growing. It not only endangers food security but also has made preparing drinking water hard. Since 1940 the population of the world has doubled and using drinking water has become six times more, and the capita use of fresh water in Iran in the next 10-15 years will approach a crisis. From all the world population one- third are farmers and bout 24 millions in our country live in villages that a large number of them live in dry and semi-dry places.

With the increasing demand for making products of fresh water in villages and cities, machines for making drinking water form seas and getting salt from salty water, have developed since 30 years ago from zero to 20 millions cube meters.

In this regard, ignoring foundations making fresh water using fossil or electricity, MCV systems with long hours of work which are connected to wind generators and don't use fossil fuels use high speed of wind in the area, are in use to fresh the water of seas and lakes.

Although water of lakes and seas and the high speed of wind is ready, making fresh water in this system in dry and semi- dry places, with the expense of first foundations, expenses of fixing and keeping each year, even very little and need to technical experts are necessary which paying for them isn't possible for the owners of Qanats who their income of farming is just enough for their living.



Obligation to make these systems for spreading villages in dry and semi- dry places is one of the main problems and if is produced in the cultural places, the expenses of transfer, is the other side of the coin which obtaining clean water with appropriate temperature in comparison to making it far from Qanats isn't economic.

However, the problem of the society having Qanat water for getting drinking water form the other way discussed, endangers the peace and decreases health.

In face the main problem of water crisis for people on the Earth is the problem of its quality decrease and unjust distribution and usually the most is in dry and semi- dry places which has the least water.

Therefore, with preparing needed materials for storing the water of Qanats in non farming seasons and preventing water from wasting and saving it and also by covering the route in places which there is possibility of pollution are of the most important steps to protect the environment and the users of the water are kept away form epidemics which are form the water of Qanats. Some of the diseases are parasitic (liptospiraectro hemorac) which is know as Yawl fever, kinds of worms like Askaris Tricosfal ... which enter the body from polluted water or soil and virus disease and cholera.

If the water of Qanat is polluted, ignoring the high expenses for purifying, complete purity isn't easy and economic and the process of purification will have harmful residues.

In Qanats there is no waste in the routes, therefore no fresh water comes back to the hydraulic cycle which regarding the high volume of Qanats is dry and semi-dry places in comparison to statistics of fresh water sources are one of the world, is an outstanding amount. Fresh water sources are one of the main indicators of an ecosystem and a main part of hydrosphere of the earth, which in hydraulic cycle face different hydraulic outcomes. Fresh water is not only a vital element in human's life but also HS quality is an important factor in health and survival of domestic and wild animals and plants. So, hydrologic, chemical, and health protection of water and preventing it from pollution is necessary, and preventing clean water form Qanats with the right temperature, increase the level of public health and situation and is a way to challenge local poverty.

#### The situation of agriculture in the area of the Qanat

In most places in Iran, one of them Khorasan Province, agriculture without artificial irrigation, due to lack of constant and seasonal rivers, isn't possible and in Khorasan all farms are being irrigated with underground water.

Agriculture started 1000 years ago in different civilization, and then evolutions came. Now about half of the world population is working in agriculture which is the oldest and biggest industry on the environment are inevitable and problematic In fact agriculture as a non point source pollutants, with endless developing of technology and inappropriate exploitation of underground sources has made irretrievable problems for the environment. Decreasing the amount and quality of water sources, salty and alkaline soil, more desert, decrease of plant varieties and genetic sources, increase of air, water, and soil pollution, thinning of the ozone layer, are the outcomes of this industry.

In an abstract comparison to assess the share of Qanat farming bad effects, we see the Qanat in dry and semi- dry places with protecting the natural and farming plant cover, restoration of fertile plains, which weren't planted for lack of water, balances salt of soil, prevents collection of salt in the soil, lack of nutrition and minerals, improve the quality of farming, increases fertilization which prevents from the process of desert making, saltiness of water and soil source, sedimentation of underground water, and attrition of farm lands, and finally producing better products and making remarkable effects in the food chain of the society.



Not decreasing the speed of water and not wasting in through penetration to depth of land for growing weeds in the rate of transfer and not decreasing the quality of water and no need for cleaning the route, are the advantages of water transfer through Qanats.

In such irrigation because agriculture isn't mainly productive, and doesn't 't try to interfere the strategies of nature for more production, as discussed, saltiness of land and water, attrition of soil, pollution of surface and underground water because of using chemical, plant poisons, ... for more production, are prevented.

Therefore irrigation by Qanats with observing good models of cultivation based on obtained water, preparing food needs of the society, coordination of natural and human factors, increases the development of living technology in the area and doesn't, t share the bad effects of the current industrial agriculture and its developing technology.

The structure of the Qanat with need to any pre- assumptions for its exploitation uses the moist potential and with growing of farming in the area, has done for centuries. It is important to know our farmers are now old and we should find a practical way to keep and transfer their native knowledge to the future generation.

#### **Reducing of environmental pollution**

The standard of water is in cases like: storing water, making drinking water, fun water, farming, industrial uses, fish growing, cattle uses, preparing water for wild life and immigrant birds, keeping the quality of surface and pound water, and the health security of different waters, for humans and other creature.

If we care for the route of the Qanat, no garbage, chemicals, minerals and other polluted and poisonous materials can enter it.

In Qanat water because of sediments from attrition process there is no outcome of decreasing depth of water transfer system in the route, darkness of water and threat for life of fishes. However, for direct contact of water in High Mass with free space, especially in dry and semidry places, parasites and microorganisms don't have the chance to grow. So epidemics like Schistasomiasis, Hepatitis, and Jaundice are prevented.

For not using fossil fuels for preparing energy needed to obtain Qanat water and using nature only for earth gravity to deliver water, freshness comes to the area and there is no rate for changing chemical combination of air, increasing temperature, greenhouse effects, and damaging the ozone layer.

In the approach for not using noisy complex tools and machinery, there is no noise pollution, therefore the society with Qanats doesn't have any physical and mental problems and there is no decrease in exploitation at work or rest.

Doing water projects also causes negative changes on the ecosystem in different ways. After excavation soil, the attrition will increase 2000 times more than the natural state and with changing topography and gathering water insects will grow and increase. Also construction materials with making dust will have effects on area of the project.

However, increase in human force causes making garbage average daily 500 gr for each person which right removal of it without polluting water and soil has many expenses. Doing the construction projects makes the sight ugly which has negative effects on human societies.

Yet, in the construction phase of the Qanats using native people as technical experts of well digging with very simple and local tools and not using material with destroying physical and chemical effects, noisy or contaminating, ... don't make negative changes on the ecosystem.

Therefore, in obtaining water through Qanats, form the sanitation viewpoint, Qanat water sets to the defined standards and on the whole for not having environmental pollution, the society will have physical, mental and spiritual health with peace and hope.



#### **Qanats and Groundwater**

For weakness of water potentials of dry and semi- dry places, for lack or irregular rain, most seasonal rivers and constant rivers have little water and generally don't have insured surface water. In these areas, most lands are irrigated with underground water and often rely on underground water and obtaining through deep or half- deep wells, makes quarrels among farmers for distributing water.

On other problem is to feed underground water sources in the current conditions, developing of cities, roads, ..., which prevents feeding underground sources that has the greatest effects on lack of water for farming and some believe a great part of the aquifer refers to this important factor. Among different ways for obtaining underground water Qanats is the secure system of extracting and transferring water as an exact regulator for underground water, with keeping the natural hydrologic conditions of aquifer without having pressure and negative effects on aquifer and changing its natural diet when it is full of water and drainage areas because of rising of underground water acts as water shed and prevents from saltiness of water and expenses for drainage and when there is little water with less exhaustion, adopts itself to the conditions aquifer, and for the type of exploiting water of Qanats behavior of people follows same ideological traditions, therefore unlike problems of the wells, there is no special problem in distributing water.

#### Lessening the bad effects of fossil fuels in obtaining water Qanats

Qanat water, without getting energy, only with the help of earth gravity force which is from nature, finds its way and goes on the reach stability, that is earth gravity force = clean water.

Density of Co2 with the spread of %7 in the current situation has increased and in comparison to 20 years ago it has doubled and if this goes on in the next 20 years it will be more, at least %50.

Since 100 years ago, Co production has been more than what nature could absorb, so that most of it remains in the atmosphere. Increase in the earth temperature, air pollution, green house gases, are the direct effects of increase in Co2 which are all the outcomes of using fossil fuels. About 6 billion people are living on the earth and rapid population growth makes energy needs more.

If we continue using oil energy without a substitution, the world will face a great disaster. Obviously energy sources are limited and the main future challenge will be energy. If we were supposed to get water, through pumps, the problem is shortage of or lack of energy for pumps to provide enough energy for obtaining water for animals and birds to continue like, ignoring the damaging effects to the environment.

Therefore omitting energy- needed ways and reinforcing traditional ways to obtain easy and cheap water, without using fossil energy and with target of environment, can have great effects on the conditions of lives of creatures.

Anyway, the society and environment are paying the great expenses of fossil fuels.



#### **Rise tourism industry**

Usually constructing tourist places has much basic expenses in addition to current expenses of preserving and preparing for stabilizing tourism attractions.

Native people can't afford the high expenses, so investors of other places become the masters and the ex- farmers become new workers. Cultural differences between natives and tourists may have some negative effects, so with appropriate programs and knowing this in tourist places a lot of water is used. We should have tourist attractions in the area of some certain Qanats and using them, we can both pay for the expenses for restoration and sweeping the sediments each year, and the rest of the income will go to improve the social, cultural and other situation of the area with making schools, libraries, clinics and so on.

#### Conclusions

Obtaining clean water through Qanat, and preparing food and nutrition for the society that has Qanat, providing desirable continuation of life for humans, plants and animals without any negative effects on the neighboring ecosystems, protects the environment. Preparing clean drinking water, lack of poisonous chemicals, decreasing contamination for not needing to chemicals, and complicated materials and fossils fuel is the main difference between these kinds of water supply with others. With reconstruction and sweeping the sediments the society can settle in the area continually and use the benefits.

Native structure is fragile and susceptible. If combined with modern technology, with geographic and environmental adaptation, without damaging social and economical tissue of the society, water obtaining will be increased. With increasing governmental credits for some projects such as sweeping the sediments and restoration, water harvesting would be improved as well. Using scientific approaches in cropping systems, covering the conveyance of water routes to farms to prevent of water loss, protecting Qanats from entering of floating sands and floods, storing water in off seasons, unification of lands, reconstruction, using scientific irrigation systems according to the area situation, will increase production per unit area.

If we do these, in addition to satisfying the material needs of the society of Qanat, the number of Qanats will be increased. Also high volume of water with good quality will be achieved in dry and semi-dry places. This can bring economical development in national level with the easiest, cheapest and friendliest way to the environment.

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### SOME INFORMATION ABOUT NEAR EAST UNIVERSITY

Near East University was established in 1988 and since then has grown to become one of the fastest growing universities in the world setting itself the strategic goal of joining the "top 500 universities in the world".

From 1988 until now, the University has managed to expand its physical infrastructure and improve its quality of education and scientific research to meet international standards. Near East University is a member of the European University Association, the International Association of Universities and the Federation of the Universities of the Islamic World. The University has over 3,000 staff, of which 1,000 are academic personnel. 17,000 students from 53 different countries are attending 14 faculties and more than 60 departments at the university. It has luxury halls of different sizes which in total cover an area of 350,000m<sup>2</sup> and have the capacity to hold a total of 5,000 people. There are also 14 dormitories with a capacity of 5,000 students, but the construction of new dormitories is also planned.

Near East University has adopted life long education as its main mission. Thus, we begin with our Kindergarten, Junior College and Secondary High School which have a total number of 2,000 students. The faculties and departments offering undergraduate and graduate degrees are as follows:

### **FACULTIES**

- 1. Faculty of Architecture
  - Architecture
  - Interior Design
- 2. Faculty of Arts and Sciences
  - English Language & Literature
  - Mathematics
  - Turkish Language & Literature
  - Psychology
- 3. Faculty of Economics & Administrative Sciences
  - Banking & Finance
  - Business Administration
  - Computer Information Systems
  - Economics
  - European Union Relations
  - Human Resources Management
  - International Business
  - International Relations
  - Marketing
  - Political Sciences
  - Information & Records Management



- 4. Faculty of Communication
  - Radio-Television-Cinema
  - Motion Picture Production
  - Journalism
  - Public Relations & Advertising
- 5. Atatürk Faculty of Education
  - English Language Teaching
  - Computer & Teaching Technologies
  - Pre-school Teaching
  - Elementary Teaching
  - Turkish Language Teaching
  - Guidance & Psychological Counseling
  - Human Resources
  - History Teaching
- 6. Faculty of Engineering
  - Civil Engineering
  - Computer Engineering
  - Electrical & Electronic Engineering
  - Mechanical Engineering
  - Biomedical Engineering
- 7. Faculty of Fine Art & Design
  - Graphic Design
    - Plastic Arts
- 8. Faculty of Maritime Studies
  - Department of Deck
  - Maritime Management
  - Marine Engineering
- 9. Faculty of Law
  - Law
- 10. Faculty of Performing Arts
  - Dramaturgy & Dramatic Authorship
  - Acting
- 11. Faculty of Pharmacy
  - Pharmacy



- 12. Faculty of Dentistry
  - Dentistry
- 13. Faculty of Health Sciences
  - Nutrition and Dietetics
  - Nursing

14. Faculty of Medicine

### SCHOOLS

1.School of Physical Education & Sports-Coaching Education-Physical Education and Sports Teaching-Sports Administration

2.School of Tourism & Hotel Management -Tourism & Hotel Management

3. School of Maritime-Deck-Marine Engineering-Maritime Management

### **INSTITUTES**

-Institute of Education Sciences
-Institute of Sciences
-Institute of Social Sciences
-Institute of Health Sciences

With the opening of the NEU Grand Library in December 2005, the University has passed a new and critical mileage stone entering truly the information age. The Grand Library is fully computerized and linked to many major world libraries and research institutions throughout the world. The library has a collection of more than 600,000 printed materials and access to more than 110 million electronic articles. The library has recently been elected as the central library for the Turkic world and now serves universities of several different countries such as Azerbaijan, Kyrgyzstan and Turkmenistan. The library is open 24 hours a day serving not only the university but the whole community.



The University has until now organized 14 International Conferences & Congresses and many local and regional conferences, seminars and panel discussions on a variety of subjects. Near East University believes that the role of the University is not merely to provide formal education but to establish close relations with the wider community. As such, it places special emphasis on strengthening and developing campus-community relations. The University set up a Lifelong Education Centre (YABEM) which provides a wide variety of adult education courses. The University also makes the use of its facilities for cultural, sports and recreation activities available to the public.

As you can see, NEU is one of the fastest growing Universities of the world. The last two years has been devoted towards Health Sciences. This year, we began education in the Faculty of Dentistry, Faculty of Pharmacy and Faculty of Health Sciences. Another important improvement that has been made in our university regarding Health is that in September 2008, education has begun in the Faculty of Medicine. The Faculty of Medicine Research Hospital will be opened in July 2009. The Hospital will have a capacity of 500 beds with a 4,5000m<sup>2</sup> closed area. The faculty will be giving full service but a special emphasis will be given to researches on Oncology and Cardiology.

NEU does not have boundaries in development. Therefore, a protocol was signed with IBM International in June 2007 for the construction of the NEU Innovation Centre. The building having a closed area of 8,500m<sup>2</sup> was opened last year. It consists of 3 sections: NEU-IBM Innovation Centre, NEU-IBM Advanced Research Centre and the NEU Technopark. The 'super computers' used in the building have a capacity of 12 trillion processes per second. The research areas consist of Global Warming, Earthquake Stimulation, Defense Research (military), Space Research, High Physical Energy, Nanotechnology and Biotechnology research and product design, Medical, Pharmaceutical, Microbiological, Health Science and Social Sciences. NEU Innovation Centre is unique with its facilities in Eastern Europe, Middle East, Central Asia and Northern Africa.



### BRIEF INFORMATION ABOUT TURKISH REPUBLIC OF NORTHERN CYPRUS

**History:** Cyprus has been occupied successively by Assyrians, Babylonians, Egyptians, Persians, Romans, Lusignans and Venetians who have sought the island's wealth of minerals and timber since the 8th century BC. The Ottoman Empire conquered the island in 1571 and ruled it until the island was leased to the British Empire in 1878. In 1963, the Republic of Cyprus was established by the Turkish Cypriot and Greek Cypriots, based on political equality. The Turkish Cypriots were forcefully ejected from the state mechanism in 1963. Intercommunal clashes which broke out in 1960 continued until 1974. A military coup by Greece in 1974 aiming to annex the island to Greece was aborted by the intervention of Turkey, which was one of the Guarantor Countries. Following the Exchange of Populations Agreement in 1975, Turkish Cypriots moved to the north and Greek Cypriots moved to the south of the island. Consequently, the Turkish Cypriots established their own administration and in 1983, the Turkish Republic of Northern Cyprus was proclaimed.

Negotiations between the two sides under the auspices of the UN started in 1968, with the aim of finding a comprehensive settlement in Cyprus. The latest negotiation process came to an end when the compromise plan, Annan Plan, prepared by the then UN Secretary General Kofi Annan, was overwhelmingly rejected by the Greek Cypriot people. During the referendum held on 24 April 2004, whilst 65% of the Turkish Cypriots voted "Yes", 75% of the Greek Cypriots voted against the plan; thus, eliminating the possibility of establishing a new partnership republic. Despite their obstructionist attitude, the Greek Cypriot administration unilaterally entered the European Union under the usurped title of the "Republic of Cyprus", on 1 May 2004. The then UN Secretary General Kofi Annan, expressed his regret and noted that "he hoped ways would be found to ease the plight in which the (Turkish Cypriot) people find themselves through no fault of their own" (24 April 2004). In his report to the Security Council, he called upon the international community to "cooperate both bi-laterally and in international bodies to eliminate unnecessary restrictions and barriers that have been the effect of isolating the Turkish Cypriots and impeding their development" (S/2004/437). The current UN Secretary General Ban Ki-moon also referred to the economic and social isolation of the Turkish Cypriot people in his report to the UN Peacekeeping Force in Cyprus (UNFICYP) in December 2007, pointing out that promoting the development of the Turkish Cypriot people would make the reunification of the island "occur in as seamless a manner as possible." Observing the injustice against the Turkish Cypriots, who have been experiencing all kinds of inhuman restrictions for years, the EU also expressed its will to enhance the economic development of Turkish Cypriots through an aid package. The EU Commission adopted a proposal, which had foreseen the transfer of 259 million Euros financial aid. However, the Turkish Cypriots have not been effectively benefiting from the EU aid due to Greek Cypriot administrations' pressures.

After the Presidential elections in February 2008 on the Greek Cypriot side, President Mehmet Ali Talat has reiterated once again his readiness for a new process of full-fledge negotiations and expressed his sincerity towards a solution.



**Places to visit:** In Lefkoşa (capital): Selimiye Mosque, Mevlevi Museum, Sultan Mahmut Library, Dervish Pasha Mansion and Lapidary Museum. In Gazimağusa: Antique Ruins of Salamis, Kantara Castle, Othello Castle, Lala Mustafa Paşa Mosque, Canbolat Museum, Ruins of Ayios Philion, St. Barnabas Icon Museum and Apostolos Andreas Monastry. In Girne: Kyrenia Castle, Bellapais Abbey, St. Hilarion Castle and Buffavento Castle, and in Güzelyurt: Soli Ruins, St. Mamas Monastry and Vouni Palace.

**Nature:** North Cyprus hosts over 1,600 plant species (22 are endemic), 350 species of birds (7 are endemic), and there are 26 different species of reptiles and amphibians. Every year, 250 different kinds of birds, around 100 million, migrating from Europe to Egypt pass through North Cyprus. The country also became home to some 50 different varieties of butterflies. Visitors are amazed to see that there are 30 different varieties of orchids on the island, 7 of them unique to North Cyprus. Rich underwater plant life and 200 different types of fish are making the blue Mediterranean waters attractive for sea lovers. 30% of the turtles in the Mediterranean, amongst them Carretta Caretta, Chelania Mydas (Green Turtle) and Dermachelys Corniacea, come to the coasts of North Cyprus for breeding.

**Life-style, Culture:** Turkish Cypriots are well-educated, social and hospitable people. North Cyprus is popular with its handicrafts, cuisine, traditional music and folk dancing. The Turkish Cypriot Cuisine is famous for its kebab dishes and starters called "mezes". Daily fresh fish, meat, vegetables and fruit used in the Turkish Cypriot cuisine make the dishes both tasty and healthy. Local alcoholic drinks include rakı, brandy and red and white wine. Baklava, kadayıf and katmer are deserts favoured by most and Turkish Coffee is a must at the end of every dinner. The cultural and art facilities make the country attractive both for the tourists and foreign students. During the hot summer months, people prefer to relax by the sea whereas during the fall season, people go on picnics and long walks in the mountains and countryside. Indoor activities like exhibitions, cinemas, theatres and concerts are always available.

Electricity: 240 volts A/C. 50 Hz.

**Traffic:** Driving is on the left and international traffic and road signs are used. Maximum speed on highways is 100 km/hr. Vehicles entering North Cyprus must be insured upon arrival. Please refer to the Turkish Embassy or TRNC Representative Office in your country to check visa requirements.

**Climate:** North Cyprus enjoys a Mediterranean climate with long, dry summers and short wet winters. The average annual temperature is 19°C. The weather in winter is very mild with temperatures ranging between 9°C-12°C. Average annual rainfall is 500mm.

**Emergency telephone numbers:** Fire 199, Police 155, First Aid 112





# NEAR EAST UNIVERSITY





















