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Future Narrative Cultural Landscape (NCL)
Acupunctural Strategies in Innovative Multi-Criteria NCL Revitalization
Case study: Bisotun Epic- Romantic Cultural Heritage, Kermanshah, Iran

Curriculum *Architecture/IDAUP Topic n. 1.5 Cultural heritages. Innovations and ICT processes for cultural heritages use and conservation. (Area 08/C1 – SSD: ICAR 12)*

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Dedication

To my parents, who encouraged me to follow my dreams; and with the deepest gratitude to my loving best friend and spouse Reza and to my wonderful eight-year old son Kamyar, who learned the Italian language during these years, and has been my best cheerleader.

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Abstract(Italian)

Le opportunità di valori autentici, sia tangibili che intangibili, da una parte, e le minacce dirompenti dall'altra, si trovano entrambe nel Bisotun Cultural Landscape in modo molto evidente. Ricercatori hanno discusso negli ultimi cinquant'anni in merito al fatto che il sito abbia perso la propria coerenza e la relazione fra la sua integrità naturale e culturale, a causa delle pressioni legate allo sviluppo. Il presente studio vuole determinare come rivitalizzare gli strati intrecciati del Paesaggio Narrativo Culturale grazie a una pianificazione complessiva composta da vari criteri. Tre domande cruciali di questa ricerca servono a capire le indagini teoretiche, strategiche e pratiche. La prima riguarda la dottrina molto diversa sul significato della cultura nella lingua persiana, la quale necessita di approfondimento in merito a svariate definizioni di paesaggio culturale e pone la domanda: come può la concezione astratta della cultura nell'analisi terminologica persiana definire la nuova interpretazione del termine di paesaggio culturale, il quale può aprire a nuove voci nel rilancio dei valori comuni del paesaggio? La seconda domanda riguarda la diagnosi di una strategia di rivitalizzazione che sia olistica ed efficiente: come si può applicare una strategia agopunturale per soffiare nuova vita nelle strutture di Bisotun NCL? Infine, basandoci sui risultati ottenuti con tecnologie innovative nel recupero degli strati immateriali dei Paesaggi Culturali Nazionali, la terza domanda è: come si possono utilizzare nuove tecnologie per rivitalizzare i livelli narrativi del Bisotun NCL?

In questo contesto ciò che in questa ricerca viene considerato un paesaggio culturale è un insieme ibrido di (I); paesaggi naturali, (II); resti storici tangibili che si sono succeduti nei secoli e (III) grandi narrazioni letterarie che sono intrinsecamente e perennemente legate con il contesto. I generi letterari nascosti nel Bisotun NCL sono un "filo d'oro" nella lettura creativa di questo paesaggio. Investigare e capire le narrative letterarie significa, da una parte, esplorare gli indizi nel recupero degli strati fisici del paesaggio culturale che sono stati turbati; dall'altra parte, in un mondo che cambia, questi strati letterari legati al paesaggio dovrebbero mantenere vivi e valorizzare i valori intangibili.

Questa ricerca ha inoltre studiato in dettaglio il possibile ruolo delle tecnologie immateriali per la rivitalizzazione del paesaggio culturale. Diversi casi di best practice sono stati analizzati per definire alcune raccomandazioni pratiche nell'applicazione di queste specifiche tecnologie per la restituzione virtuale delle strutture architettoniche originali oggi in rovina e per rivitalizzare gli strati nascosti del paesaggio.

Il metodo analitico-descrittivo è stato applicato per codificare i principî della rivitalizzazione. Collezionando dati e creando conoscenze, i metodi di ricerca quantitativi hanno sostenuto questa ricerca, seguita dalla revisione scrupolosa della letteratura. I metodi qualitativi di ricerca di rilevamento sul campo comprendono una descrizione dettagliata del lavoro svolto (includere le opportunità e i pericoli); osservazioni approfondite del campo; interviste e questionari applicati all'argomento della ricerca, che sono stati somministrati coinvolgendo le comunità locali. La profonda ricerca sull'eredità degli strati del paesaggio del Bisotun è stata condotta in tre aree: quella naturale, quella storica e quella narrativa. Per questa ricerca sono state applicate metodologie miste, considerando il contenuto interdisciplinare dei campi relativi all'argomento.

La tesi è strutturata su quattro assi teoretico-analitici, sulle buone pratiche miscellanee e su uno studio locale. Le assi analitiche includono 1) Un nuovo approccio al concetto di Paesaggio Culturale; 2) La tassonomia della narrativa del paesaggio culturale: Epico e Romantico; 3) Principi agopunturali di rivitalizzazione nel sistema cibernetico del Paesaggio Culturale; 4) Paesaggio culturale e tecnologie innovative.

I principali risultati attesi della presente ricerca coinvolgono: (I) La derivazione di sottocategorie degli argomenti nel paesaggio culturale usando l'estrazione dei generi letterari Epico-Romantici, e riempiendo le lacune nella tipologia del NCL; (II) Pianificazione del progetto di maggior rivitalizzazione per la protezione, valorizzazione e ricostruzione di tre zone di studio del Bisotun NCL.

La sintesi delle discussioni teoriche e strategiche, le linee guida delle competenze e le politiche per rivitalizzare il Bisotun NCL, così come sono state misurate nel progetto BAMFAR, vogliono essere la guida per portare questa ricerca a un risultato concreto.

Questo progetto ha aperto e spiegato i seguenti principi e vuole tramutarli in piani di azione: 1) Contesto legale; 2) Piano di rigenerazione della biodiversità; 3) Impatto economico del turismo e del suo indotto; 4) Programmi di sensibilizzazione rivolti alla comunità; 5) Indicazioni riguardo alla collaborazione delle parti interessate; 6) Rivitalizzazione degli antichi festival e celebrazioni e organizzazione di nuove feste; 7) Determinazione delle tematiche dei Sentieri Culturali; 8) Ricostruzione dei punti di riferimento architettonici; 9) Determinazione dei sentieri narrativi in percorsi nascosti; 10) Rivitalizzazione dei rituali correlati alla narrativa letteraria.

È necessario continuare la ricerca per valutare i valori storici e naturali del Bisotun, per rafforzare l'efficacia delle misure di rivitalizzazione al fine di proteggere le sue unità ed identità e restituire un paesaggio sempre fiorente.

Abstract

Opportunities in tangible and intangible authentic values in one hand and disruptive threats, on the other, stand on the ultimate level in the Bisotun Cultural Landscape. Research has discoursed that during the last fifty years, the natural-cultural integrity of the site has lost its coherence and connections under the pressing development issues. This study aims to determine how entwined layers of a Narrative Cultural Landscape can be revitalized through comprehensive multi-criteria planning. Three critical questions of this research figure out in Theoretical, Strategical, and Practical Inquiries. Firstly, regarding the different doctrine about the meaning of culture in the Persian language, delving back on several definitions for the cultural landscape term and asks: How can the abstract concept of culture by Persian terminological analysis of this word, define the novel interpretation of the cultural landscape term, which can open new entries in landscape communal values revival? Secondly, to diagnose a holistic, efficient revitalization strategy, it asks How can acupuncture strategy be applied in breathing new life into the Bisotun NCL structures? Finally, based on the innovative technology achievements in the recuperation of the immaterial layers of NCLs, it asks: How can new technologies involve in revitalizing the narrative layers of Bisotun NCL? In this context, what is considered as Cultural Landscape in this research is a hybrid collection of (I) Natural landscapes, (II) Tangible continuous historical remains, and (III) Literary grand narratives interlocked with the context perpetually. The literature genres hidden in Bisotun NCL are a “gold thread” in the creative reading of this landscape. Investigating and understanding the literary narratives on the one hand cause to explore the clues in recovery the physical layers of CL that are disrupted, and on the other hand, in this changing world, the literature layer bound to the landscape should keep alive and valorized as authentic intangible values.

The role of technology in revitalizing the intangible values of the cultural landscape has also been studied meticulously in this research. Several good practices analyzed to point out the practical recommendations in applying technologies in virtual refurbishing the ruined architecture structures and revitalize the hidden layers of the landscape.

The descriptive-analytic method has applied to codify the principles of revitalization. By collecting data and creating knowledge, quantitative research methods supported and scrupulous literature review followed up. Qualitative method detecting field survey encompasses a detailed description of fieldwork (including the content of opportunities and threats), in-depth field observations, interviews, and filling the questionnaires involving local communities applied to the case study site. The profound research about Bisotun heritage landscape layers has carried out in three zones Natural, Historical, and Narrative. This research applied mixed methodologies as considering the interdisciplinary content of the fields related to the subject.

The thesis is structured along the four theoretical-analytical axes and miscellany of good practices and a local case study. Analytical axes include 1) Novel approach to the concept of CL, 2) Taxonomy of narrative Cultural landscape: Epic and Romance, 3) Acupunctural revitalization principles in the CL cybernetic system 4) Cultural landscape and innovative technology.

The main expected results of this research involve: (I) Deriving subcategories in the cultural landscape topics by extracting the Epic-Romantic literature genres and filling in the gap in NCL typology (II) Planning the master revitalization project due to protection, valorization, and reconstruction the three study zones of Bisotun NCL.

By synthesizing the theoretical and strategical discussions, the know-how guidelines and policies in revitalizing the Bisotun NCL measured in the BAMFAR project, which is addressing the pragmatic outcome of this research. Following principles opened and explained in action plans recommended in this project: 1) Legal Framework, 2) Biodiversity Regeneration Plan, 3) Tourism and Cross-Sectoral Economic Impact, 4) Community Awareness Programs, 5) Action Steps in Stakeholders Collaboration, 6) Reviving the ancient festivals and celebrations and organizing new feats, 7) Determining the Thematic Cultural Routes, 8) Reconstruction of Architectural landmarks, 9) Determining The narrative paths in hidden laneways, 10) Revitalizing Rituals Correlated with Literary Narratives. Further research is needed to scrutinize in Bisotun natural and historical values, to strengthen the effectiveness of revitalization measures to protect its unity and integrity and render a thriving continues landscape.

LIST OF ABBREVIATIONS

<i>Abbreviation</i>	<i>Description</i>
<i>CL</i>	Cultural landscape
<i>CH</i>	Cultural Heritage
<i>NL</i>	Natural landscape
<i>NCL</i>	Narrative Cultural landscape
<i>AR</i>	Augmented Reality
<i>VR</i>	Virtual Reality
<i>IoT</i>	Internet of Things
<i>BNP</i>	Bisotun National Park
<i>GP</i>	Good Practice

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CHAPTER 1: RESEARCH STRUCTURE

1.1 Where, When, Why

“Cultural heritage is our bond with the past come to life in the present. It shapes our thinking and identity, our environment, and the places we live in.¹” Cultural Heritage (CH) interpretation as the continuous, integrated, and living phenomenon is the core concept of the paradigm in this study. In particular, the Cultural Landscape (CL) analyzed to critically extracting past experiences to define the practical solutions for future policies. Cultural Landscape of the future will be the focal point in Multi-criteria, subjects such as cross-border cultural dialogs, recovery the past knowledge for future innovation, “circular economy²,” inspiration to resolving the universal challenges (globalization disadvantages, radicalism, and climate change), encouraging communities to “play a vital co-creative³” role, innovative technologies to protect and valorize local cultures, fostering democratize practicing in society and drawing the new directions in collective memories.

“From a global perspective, cultural heritage is threatened by multiple factors, such as war, illicit trafficking, mass tourism, and limited budgets. All of these can severely compromise the consumption and enjoyment of heritage by future generations.⁴” Furthermore, “instead of urban growth, other forms of development, agricultural expansion, and potential future mining⁵” are critical threats in several cultural landscapes. Joining the CH around the globe in a common data platform for sharing experiences, skills, and methodologies to protect and rebirth the cultural heritages is a priority step for surviving many under threat sites. From this point onward, applying the valorization strategies and democratize access to CH universally make more balance for the effective management of these landscapes. Undoubtedly overlooking and destruction deliberately as the most pressing threats have roots in the ideological interpretation of cultural values that “strike a balance between top-down and bottom-up approaches to safeguarding intangible cultural heritage.⁶” The CH of the future should be a pillar of peace in any area beyond the artificial political boundaries. It is becoming increasingly apparent that the cultural heritage of the future should be a dynamic source for practicing democracy and unified actions to preserve them as a source of inspiration for future generations.

Increasingly, cultural landscape valorization requires conceiving beyond their disciplines to develop analysis, strategies, and design concepts with other fields of expertise to overcome socioeconomic challenges that threaten its integrity. Cultural Landscape revitalization, focusing on regeneration, plays a crucial role in reconnecting tangible and intangible aspects with considering the natural, historical, and narrative values in a cognitive master plan. "There are many reasons why communities must be clearly linked to the conservation of heritage. Some of these reasons are not directly connected with the conservation of heritage but rather pertain to understandings of what is understood by the ideal of human rights, social development, and/or basic ideals of citizenship."⁷

This research emphasizes the principles of the cohesive action plan to converge protection and valorization concepts according to valuable layers of CL as an asset for all humanity and future generations. With the multi-criteria approach, considering a multitude of factors, the CL of the future will be preserved for long-term benefit.

Due to achieving the more practical local approach, one of the most critical and complex cultural landscape in Iran as an "examination lab"⁸ for theoretical viewpoints of this discourse have selected: Bisotun cultural heritage.

Iran, as antiquity and ancient land, preserved many testimonies and milestones during human inherited civilization, belonging a time-honored history and several cultural landscapes that can proposition tremendous unique case studies in this field. The impact of Iranian culture is widespread beyond artificial boundaries not only geographically, but also culturally. Several research results confirm this profoundly extensive effect. "For sixty known centuries, the Iranian plateau has contributed ideas and techniques which have helped to sustain and humanize mankind. Writing, numbers, the arts of agriculture and working metals, the sciences of astronomy and mathematics, the beginnings of religious and philosophical thinking -these all come from the Near East, and the fountainhead of much of Near Eastern culture was on the Iranian plateau."⁹Iranian interpretation about nature and cosmology reflected in a variety of arts, literature, architecture masterpieces, and landscape design. Diversity in climates and ecological features

created different grounds for emerging distinct aesthetical- technical methods in landscape architecture in Iran.

The central case study in this research is located in the Zagros Mountains chain, western Iran. On the sacred mountain of Bisotun, Kermanshah province, situated along with one of the main ancient routes (Shahi=Royal Road), linking Persepolis with Mesopotamia. The several historical inscriptions and bas-reliefs, remarkable ruined architectural structures, and archaeological landscapes are sustained in Bisotun CL. The most well-known historical evidence of this site is referred the Achaemenid (Persian) king Darius I, which is shown a life-sized relief sculpture and exceptional multilingual inscription, carved on a limestone cliff of Bisotun mountain at about 60m above the plain. "Bisotun" site as irreplaceable evidence in the long history of Iranian civilization is inscribed in the ICOMOS world heritage list (2006, No 1222). "The monument created by Darius I the Great in Bisotun in 521 BCE is an outstanding testimony to the important interchange of human values on the development of monumental art and writing.¹⁰" This site is a scene for the variety of mysteries by the unique place spirit. Mysteries in cultural landscape appeared when the landscape preserved its coherency and interconnections.

In this research, before achieving the action policies and advent design strategies in protecting the integrity of Bisotun CL, the essence of the concept of the cultural landscape studied meticulously.

1.2 Thesis Content Overview

The materials of this dissertation organized into six chapters:

1. The first chapter is the introduction and a brief clarification of the thesis content. Explains the research framework and structure: the core questions, aims, objectives, limitations, an extensive explanation of methodology, research phases, domain and position, and expected results. It is imperative to indicate the inspiration for choosing the Bisotun heritage site as a case study of this research. This topic discussed in the 1.11 sector (Why Bisotun Heritage Site Chosen as The Case Study?)
2. The second chapter outlines the underlying concepts and theoretical foundations that punctuated in this multidiscipline research field. "The current state of the art of knowledge and the latest findings, also including theory and methodology contributions relate to the main topic of the literature review.¹¹"Terminology in core keywords paved the path to define the correct terms in this research keynotes. Comparing different interpretations of the cultural landscape in a diversity of disciplines and defining the meaning of this phrase according to the objectives of this research is the conclusion of definition sectors in chapter two. Diagnosing the interconnection between Cultural landscape and literature and determining the new subcategories in the associative CL is remarkable sectors of this chapter. The taxonomy of contents in a Narrative Cultural Landscape (NCL) addresses two significant literature genres: Epic and Romantic, to investigate the interlinks between content and context in NCL. Although, there are enormous scholarly books, articles, reports, international guidelines, and convention's declaration in the sphere of the cultural landscape field, this chapter points out the part of these studies that are compatible with this research's structure and aim. It is worthy to note that chapter 2 not only encompasses the background review about the NCLs but also creates new concepts and definitions, which are the theoretical achievements of this research.

3. The third chapter involves two sectors. Firstly, studies about detecting an effective strategy in revitalizing the NCLs. The Acupunctural Strategies meaning and aim introduced as the most sustainable decent strategy for minor interventions in Bisotun CL.

Relevant examples and experiences support the discussion in applying Acupunctural Strategies in a variety of regeneration planning projects. The second sector of this chapter refers to identifying the advanced tools in recalling and rebirthing the narrative layers of the landscape. This sector debates cutting-edge technologies (such as Virtual and Augmented reality and high-level IoT developments) in protecting and valorizing the intangible layers of NCL. Furthermore, due to pinpoint the frontiers of knowledge in this subject area, addresses best practices employed these technologies in CLs.
4. The fourth chapter focuses on Bisotun cultural landscape multi-criteria studies. The results of research in knowing the Bisotun NCL classified into three sectors. This chapter commences with analyzing the Bisotun Natural Landscape, environment, ecological features, mountain, river, plain, flora, and fauna. The second research phase refers to the historical layers (National and World defined buffer zones) studies, and the last one encompasses the Narrative literature stances of the case study. Last but not least, these multi-discipline studies are not only a collection of gathering previous data about Bisotun, and eventually builds the bridge between literature and historical remains, but also, defines a new approach to reading this landscape and turns on the light on its unknown aspects. In this way, the theoretical achievements of the research case study arise.
5. Chapter five dedicated to the Future Acupunctural Strategies in Bisotun NCL revitalization planning project labeled: " BAMFAR Bisotun," which for the first time suggested by this research. Action plan in refurbishing the tangible critical points and extended explanation about action steps for each study zone declared in this chapter.
6. The sixth chapter concerns conclusions analyzing, and synthesize the results. The real values of this research and summing up the studies spotlight, represented in this final chapter.

1.3 Research questions

“Often, new and original research questions are born from previously unknown gaps in the literature itself: the scholar applies the final category, creating to develop non-expected connections.¹²”The discussion herein turns to focus on the critical questions of this research.

➤ **Theoretical Questions**

- What is the meaning of culture as a core concept of Cultural Landscapes?
- Regarding the different doctrines about the meaning of culture in the Persian language, is it possible to extract the concept of culture from this spectrum to define the novel interpretation of the cultural landscape term? (Deriving the features of Farhang (Culture) from the Persian translation meaning of this term)
- How reading the narrative layers lied in the cultural landscape can define the principles of the narrative, cultural landscape as a particular subcategory?
- How the epic and romantic literature genres perceived from the narrative CL context?
- What are the primary principles of epic and romantic narrative, cultural landscape?

➤ **Methodological and Strategical Questions**

- How can acupunctural strategies imply in revitalizing the cultural landscape structures?
- How can two pivotal turning points of this research (theoretical-analytical phase and practical fieldwork studies) be merged cohesively?
- How innovative technology adopted to revive the CL narrative values in similar practices?

➤ **Theoretical and Practical Questions about Case study**

- What are the Strengths, Weaknesses, Opportunities, and Threats of Bisotun Natural Landscape?
- What are the characteristic and challenges of acupunctural points of Bisotun historical landscape
- Which type of literature genres bound to the Bisotun cultural landscape?
- Is it possible to find Iranian literature genres (Epic (Pahlavani) and Romantic (Asheghane)) narrations characteristics in Bisotun NCL?
- How can acupunctural strategies be applied in revitalizing the Bisotun NCL?
- How can new technologies involve in reviving the narrative layers of Bisotun NCL?

1.4 Research Goals

Considering the three pivotal questions of this research, the following aims determined:

1.4.1 Theoretical Goals

- Setting a novel approach to the concept of Cultural Landscapes: Investigating the concept of culture in Iranian civilization by critical review in the terminology of the culture term due to deriving a particular definition aligns with Bisotun intangible values.
- Underlying the narrative, CL characteristics due to valorizing and recalling the story/history narrated layer as a critical intangible layer entwined with tangible traces.
- Finding out the taxonomy of narrative Cultural landscape: Epic and Romance literature genres to push the borders of NCL and Creating a novel typology in this subject.

1.4.2 Methodological and Strategical Goals

- Investigating the acupuncture revitalization principles in the CL cybernetic system due to obtaining the proper strategy in the revitalization scenario.
- Providing the synthesized framework as the bridge between two wings of this research.
- Exploring the position of advanced tech in revitalizing the intangible values of the narrative, cultural landscape by surveying the remarkable practices in this field.

1.4.3 Theoretical and Practical Goals of Case study

- Delving deep in the Iranian literature genres in Bisotun to categorize this site as a remarkable hybrid NCL to produce a new subcategory. Creatively reading the Bisotun landscape narrations, to diagnosing the hybrid dialectics in the case study.
- Extending the acupuncture strategy principles in CL revitalization for determining the local policies and action plans according to this systematic strategy.
- Recommending the proper cutting-edge virtual technologies applicable to the recovery of the narrative layers in the case study.

1.5 Global Interest in This Research

Heritage is our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration. They are our touchstones, our points of reference, our identity. ^{13.}”

Today, the cultural landscape valorization concept is acknowledged in many cases in developed countries. On the other side, in several sites around the world, cultural landscape integration and authenticity threatened by depriving the holistic policy and sustainable management. “Although the links between nature and culture have been clarified through this new attention to cultural landscapes, many countries and their bureaucracies have not yet adopted these new perspectives.”¹⁴ The World Heritage Conventions (WHC) and international charters about protecting and valorizing the heritage sites are not respected in many cases. Most of these guidelines are neglected and skipped in several WHC planning around the world. There are different culprits behind this ignoring. For instance, the “one-size-fits-all” approach in some of the world conventions causes ineffective planning, which cannot respond to the local issues. The ideological conflict about CL memories is another culprit in forming this unbalanced situation. There are a huge gap and difference between countries around the world about how they are dealing with cultural landscapes.

Considering the recurring issue of preserving the tangible and intangible values, the priority of diagnosing the grounded knowledge of cultural heritages to protect and sustain them is undeniable.

During recent decades in parallel to endeavors in protecting and regenerating the cultural landscape, mostly, we witness the tremendous dilemma in collapsing them deliberately by ignorance. In this situation, “Our cultural heritage for the next generation is trash and climate change,”¹⁵ and we need global interest, unity, and coalition to preserve and revive them.

“No cultural landscape on this continent can and should be preserved or developed only locally (which has) a great potential to strengthen democratic institutions and civil society.”¹⁶ Revitalization

strategies are urgent need in Europe as in Africa or Near East or Brazil or India. The overarching interest in this research refers to the concept of CL studies due to rebirth and providing a circumstance to play its unique role in society and the environment, clearly this concept is in demand and needed universally.

“All cultures and societies are rooted in the particular forms and means of tangible and intangible expression which constitute their heritage, and these should be respected. It is important to underline a fundamental principle of UNESCO, to the effect that the cultural heritage of each is the cultural heritage of all.¹⁷”

“Cultural landscapes should remain safe for future generations to enjoy and learn to care¹⁸” as an irreplaceable asset for all humanity. With the revitalization approach, CL will be preserved for long-term benefit and “transform the monumental glories of civilization into essential, relevant parts of our shared human culture once again.¹⁹”

Studies about the future of cultural heritage are one of the most crucial subjects for research globally. Sharing experiences and methodologies in this field; result in connecting different cultures, circular economy, and more peace and stabilization in the world.

“Ultimately, our landscapes, and the interconnected local partnerships and organizations we create to manage them sustainably and inclusively, can be lifeboats for us in a turbulent world.²⁰”

The following points assert the justifications about the Global interest revolve around the subject of this research. The methodology of studying the Bisotun layers and recommended policies stated by this research can be valuable for similar investigations.

A. Rehabilitation of the Bisotun Natural Landscape (NL) is a primitive action necessity that is studied and declared in this research: Considering the natural environment as the context of historical and cultural layers, reviving of the NL is the primary concern in all likewise condition in the world. “Protection of cultural landscapes can contribute to modern techniques of sustainable land-use and can maintain or enhance natural values in the landscape. The continued existence of

traditional forms of land-use supports biological diversity in many regions of the world. The protection of traditional cultural landscapes is, therefore, helpful in maintaining biological diversity.

21"

B. Recognition of the intangible layers, ancient traditions, and rituals are influencing factors in sustainable planning for the future: Reviving the intangible layers, cause to promote life meaning for local communities and reduce social harms and immigration to cities.“ Responding to the current and future challenges in the site and defining new functions and activities in the framework of cultural heritage values²².”Strengthening the immaterial values of the CL could be a creative solution for retrieving these sites.

C. Prospering sustainable cultural tourism and ecotourism and improving the connection between nature and culture in any cultural landscape is a fundamental decision.

1.6 Stakeholders of the research

Cultural Heritage revitalization projects provide immense benefits for a variety of users and the environment. The integrated approaches about the synergy of various stakeholders focus on the vision “*all its uses belong together*,²³” which means there are several contributors that influenced by CL rehabilitation profits.

Stakeholders that may collaborate in this research are the Cultural Heritage, Handicrafts, and Tourism Organization of Iran, the Cultural Heritage Organization of Kermanshah, UNESCO, ICOMOS. Optimistically it is possible to create new partnerships between the various interest groups, potential entrepreneurship, private sectors, non-governmental organizations, financial institutions, and local communities near the site who can be responsible stewards of cultural heritage.

The multi-criteria analysis in this study can open new doors for collaborating various research centers in future comprehensive projects. The governmental or private research centers in Bisotun region environmental subjects or historical inquiries can contribute as stakeholders in this site. On

the other hand, by illuminating the narrative layers studies in this dissertation, the innovative idea in creating virtual and augmented reality applications regarding impressive content of the Bisotun site evokes. The literature extracted from this NCL can be employed as unique content in serious games and multimedia contexts, which is useful for ICT/IoT/V.R. developers in Iran and other virtual centers. The action steps of how the stakeholders of Bisotun CL can collaborate in future projects are discussed extendedly in chapter 5, the action plan sector in zone 1.

1.7 Research obstacles and limitations

As further studies are carried out on the Bisotun site, its complexities and buried layers are more revealing. This discourse is the first one in comprehensive, cognitive policies for reviving the natural, historical, and intangible values of this cultural landscape. This research is "about turning ancient ruins into something that makes people money instead of taking it away, about environmental and cultural security and empowerment, in a word it is about the future."²⁴ In this way, I tackled various obstacles. In the following sector, the complications in the research route explained, and finally, the limitation of this study figured out.

1.7.1 Obstacles

Shortage in the research budget impacts on data gathering process: The process of data surveying in this research, faced with various sorts of obstacles that affected the evidence-based policymaking process as well. The overlooked position of continuously organized researches in the cultural landscapes of Iran, which causes scanty in classified data, is the most critical issue in data gathering in any research process. "Iran Cultural Heritage, Handcraft and Tourism Organization (ICHHTO) is an educational and research institution overseeing numerous associated museum complexes throughout Iran²⁵." This governmental organization is responsible for research, excavation, restoration, protection, and other related activities in the cultural landscapes.

Considering the relatively low-budget dedicated to spending on all of these activities, it can be assumed that how much of this budget could be devoted to research projects and scientific surveys.

The contribution of ICHHTO in the 2018 state budget was less than 0.6 percent of the total government budget. Obviously, by this low financial budget, this administration cannot take on the needs of several projects across Iran vast land, which are required research funds. The same state of affairs is for the Department of Environment, the Governing body of protected natural sites that suffers from a shortage in the research budget as well. Absolutely the origins of this shortage and deliberately neglect, are not the financial budgets of the government, but also indicate the government's political vision about natural and historical heritages.

Before the 1979 Islamic revolution, Iran was a pioneer in cultural and natural landscape protection in the region. Iran was one of the first countries registered in the WHC (World Heritage Convention). Three years after the adoption of the UNESCO General Conference in 1975, Iran joined the UNESCO World Heritage Convention²⁶, and in 1979, the Tchogha Zanbil heritage site and Persepolis were the first cultural landscapes added to the UNESCO World Heritage List from Iran. On the other hand, the international convention about the natural landscape of the Ramsar Convention ²⁷as one of the most significant conventions held in the north of Iran (Ramsar) in 1971.” The Convention on Wetlands, called the Ramsar Convention, is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources. Since then, almost 90% of UN member states, from all the world's geographic regions, have acceded to become “Contracting Parties”²⁸ in this convention. Alas, despite practical policies and effective decision makings about the cultural landscape before the Islamic revolution (1979), nowadays, there are several critical crises in managing and governing in this subject area in Iran.

Apparently, the inner and outside reasons that cause to “turning off the lights on culture” is not the focus point of this research, but with describing this circumstance the current obstacles of gathering data about this case study can be lighter. “Challenges faced in the collection, processing, analysis and dissemination of reliable, timely, accessible and sufficiently disaggregated data,²⁹” were the most significant obstacle in this research.

Bisotun CL research projects have generally been ignored, and during recent decades faced conflictual management and financially constrained in the research budget. So, in the surveying

process, decision-making, and policies, the lack of an integrated approach is apparent. According to this situation, I collected the sporadic researches that full-field in the Bisotun research center and all scientific papers and research reports about today's situation of this site and enhance them by more field studies. I tried filling the gaps by parallel studies in a diversity of areas that revolve around this research subject.

1.7.2 Limitations

Regarding the complexity of the multi-disciplinary context in cultural landscape studies, any discipline and layer of CL could be a topic of the diversity of research dissertations. However, in this thesis, I tried to pull together a diversity of disciplines under one umbrella. The integrated approach was the central concept from the first step that I attempted to preserve this holistic, interconnected approach in the theme and paradigm of this research structure up to the end.

Finding the proper scale and framework in this extensive multidisciplinary ground was the most critical decision process in this research. I applied a multi-scale methodology for moving between lines of the local case study to ongoing world experiences. Explicating the macro-scale trends in local decision-making phases and finding the appropriate methodological framework for the study was an elaborate part of this research. Alongside this multi-criterion peripheral discourses, remaining on the research subject laneway was one of the toughest complexities of this research. Despite examining different criteria that are effective in shaping the theoretical foundations of this thesis, not being captive within each criterion is the fundamental concept of the research methodology

Additionally, the noteworthy issue that should be enlightened about the limitations is the ecological studies in this research. Exploring the environmental characteristics and natural landscape features of the case study site and providing the scientific, ecological rehabilitation process is out of the domain scope of this inquiry. Notwithstanding the brief description of Bisotun environmental structure as a context for the creation of historical and cultural vestige has been leveled out in this

research. Still, the profound studying in ecological structures and environmental threats to the Bisotun region requires different research contexts.

1.8 Research Expected Results

1.8.1 Internationality Research Results

Cultural landscape valorization causes to convert threats to opportunities and vibrant the site with a brighter future. This research will have significant impacts on the sectors below:

- Integrated approach in surveying and critical decision making in neglected NCLs in locally and globally multiscale.
- Deriving subcategories in the cultural landscape spectrum by extracting the literature genres from NCL contents and filling in the literature gap in NCL typology.

1.8.2 Locally Research Results

The Bisotun natural beauty attracted several Persian Empire kings and numerous artists, architects, and poets during the history. Today research outcomes indicate that, during the last fifty years, the natural-historical sequence of the site has lost its cohesion and connections. A cultural landscape losing its unity and being separated cannot preserve the spirit of the place. Alas, construction of the inner-city freeway through the ancient site, disposing of the sewage of factories on the river banks, and abandoned lands were examples of disregarding the language of the landscape in the area. Entire the unilateral decisions, damage the glory and dignity of this landscape. An in-depth reading of the site to determine the threats it faces and defining the specific steps in recovery plans are the local results of this inquiry—the recommended action steps gathered under the umbrella of the BAMFAR project platform.

1.8.3 BAMFAR Bisotun Project Objectives

By synthesizing the theoretical and strategical discussions, the practical recommendations asserted in the BAMFAR Bisotun project.

(BAMFAR Bisotun in the Persian language: بامفر بیستون – is the abbreviation of باززنده سازی منظر فرهنگی

Which means Cultural landscape revitalization).

Following principles opened and explained in action plans directions in this project:

Immediate Preservation:

- Prioritize conservation activities in all rock relief components on the Bisotun mountain cliff.
- Concrete preventive measures in preserving the present architectural structures spread out on Bisotun NCL face to severe deterioration.

Architectural Reconstruction:

- Khosrow bridge and the historic hydro structures around this bridge, according to architectural traces, documents, and restoration hypotheses, should be reconstructed. This action should carry out respecting the architecture authenticity method and original material.

Architectural Semi Reconstruction:

- Designing the *protective structure* of Khosrow palace ruined architectural remains and applying the ruined palace after enforcement as Bisotun virtual archeological Musume.
- Reconstructing the ancient route trail passing through the bridge toward the Bisotun core zone.

Regeneration residential zone in rural communities:

- Refurbishing the vernacular architecture of two rural structures near the site due to creating new capacity for recreational and service facilities like restaurants, café, and hotels in a rural region as a non-destructive structure responding to the various socio-cultural impacts on reviving the local economy.

Designing the narrative paths:

- According to hidden epic – romantic contents in Bisotun NCL, two virtual separated narrative paths planned for these two genres.
- The visitors, by applying the AR/VR devices, both wearable and in the IoT environment, can involve two various literature scenario cinematographic paths. The narrative content has tangible sensor points spread on the site.

1.9 Applied Methodology and Approach

The descriptive-analytic method has applied to present and codify the CL revitalization principles. Quantitative research methods supported the data collection and knowledge creation, and scrupulous literature review followed up. Qualitative methods occurred in detecting field surveys and detailed descriptions of fieldwork, including the content of opportunities and threats applied in the site. I took up to in-depth investigations into the case study site via field observations, interviews, and filling the questionnaires by involving local communities in the decision-making process of this research. The survey of the site has carried out in three zones (natural, historical, and narrative). This research applied mixed research methodologies as considering the interdisciplinary content of the studies related to the topic. The case study method and correlation method for interpreting the results were two main research strategies. Simultaneously, the inductive reasoning method has a key role in concluding surveys and achievements of investigation in the case studies site.

The critical point of this research, that the role of the landscape architect as a researcher in this thesis is undeniable and from the surveying process to results analyzing, comes from the landscape architect's perspective to cultural landscapes. "Landscape architects should develop the methodology and technology, for not only ecologically sound and production environments, but also for the spiritual environment for quality of life.³⁰" This is of crucial importance that defining the research position in the cultural landscape field, according to diverse research scales, is the primary concern in the methodology of this thesis.

The developing process of this research started during ecological and historical investigations in Bisotun C.H. as the main case study. This process continued more flourishing after studies about the intangible values of Bisotun C.H. as an irreplaceable cultural Atlas in Persian civilization.

A sophisticated literature review carried out to incorporate the theoretical and practical outcomes and robust dissertation by scrutinizing the research questions.

Extracting the “DNA of cultural heritage” that resulted in representing the authentic narrative “landscape language” of Bisotun CL formed the final scale of this research. Reading the case study landscape language (Bistoun heritage site) occurred in the interaction of global contexts and cutting-edge international approaches and conventions about CL. This scale represented during the intangible value studies and pushed the borders of this research beyond the geographical and historical boundaries. Explicating the macro-scale trends in local decision-making phases and finding the appropriate methodological framework for the study was an essential part of the effort in this research (diagram 1)

1.9.1 Case study Analyzing Methodology

For data gathering the quantitative research method applied in the following cases:

- Survey the information from statements or questions in a questionnaire or an interview.
- Library studies: research in databases as archival sources, photographs, aerial photographs, reports, and maps
- Interviews with experts in the Bisotun research center and people living as local communities.

By Qualitative method detecting challenges and opportunities of cultural landscape achieved: Field survey: a detailed description of observation, including the content of opportunities and threats in the site applied

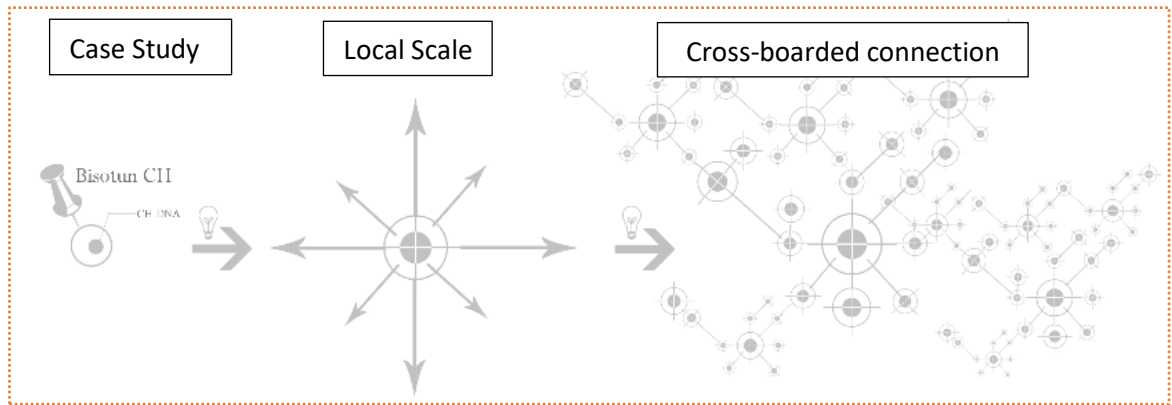


Diagram 1: The macro-scale trends in local decision-making phases. Source: author, 2020

1.10 The multi-scale framework and Study Zones

The survey of the site carried out in the following three phases:

➤ **Zone 1: Natural environment and ecological features:**

Bisotun protected area includes 40,000 acres of the region, embracing parts of Bisotun meadow and the Gamasiab river, which are located around the Bisotun historical core-site.

➤ **Zone 2: Historical landscape (national and world defined buffer zones):**

The historical landscape study includes national, and the world defined limits of Bisotun historical site and the ancient route that contains 3700 acres of the natural landscape.

➤ **Zone 3: Bisotun narrative layers studies:**

Epic and Romantic story/history is in the collective memories of people are in the Bisotun cross-border intangible zone.

Synthesizing these multi-scalar studies, and the theoretical backbone of research about future narrative, cultural landscapes result in policies and actions for the future landscape, conceptual model. Finally, an innovative design, modeling suggested in the specific project: BAMFAR Bisotun project. The research phases and sectors and the interrelationships between the components of the strategic plan illustrated in diagram no 3.

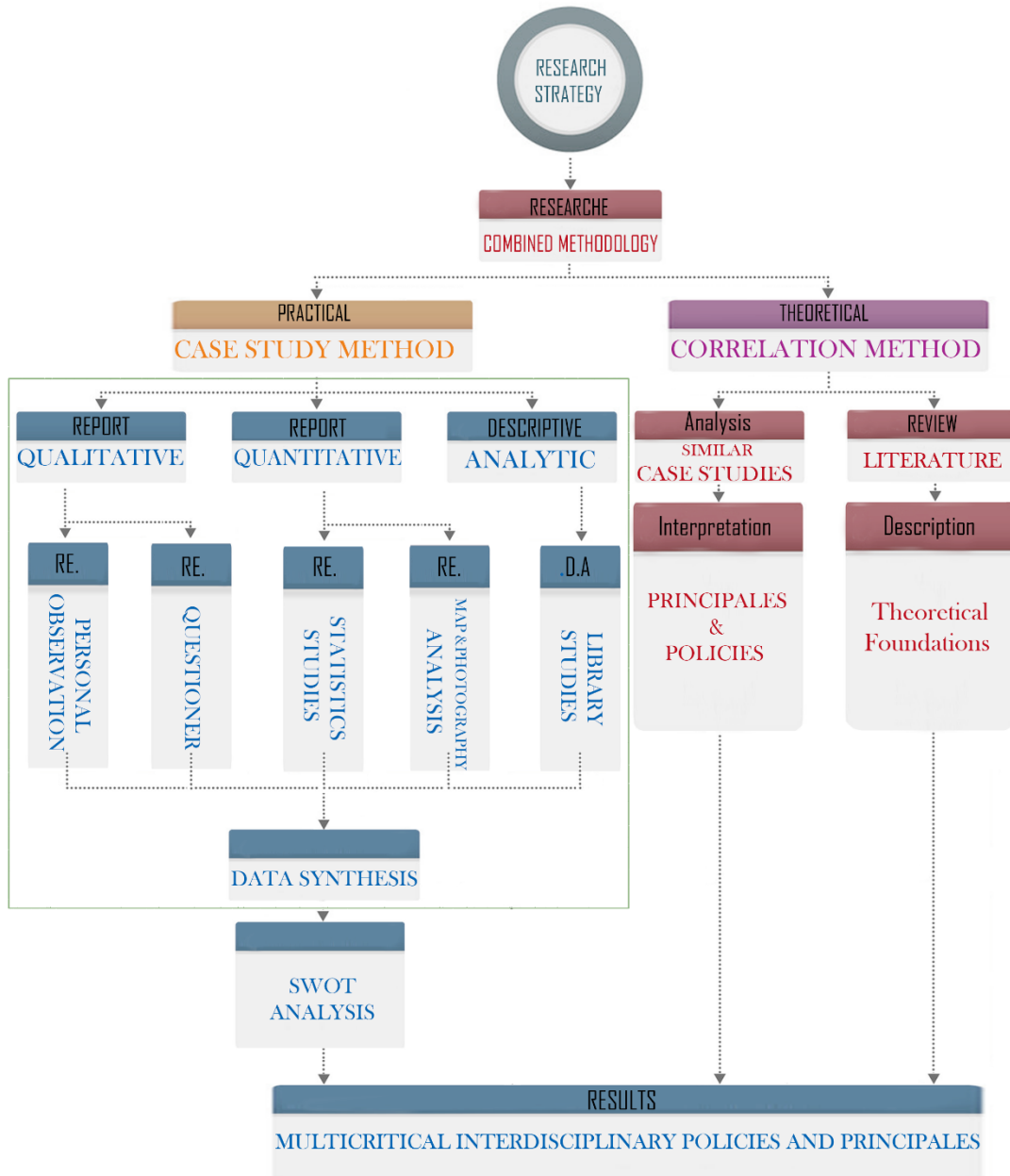


Diagram 2: Research progress process. Source: author, 2020

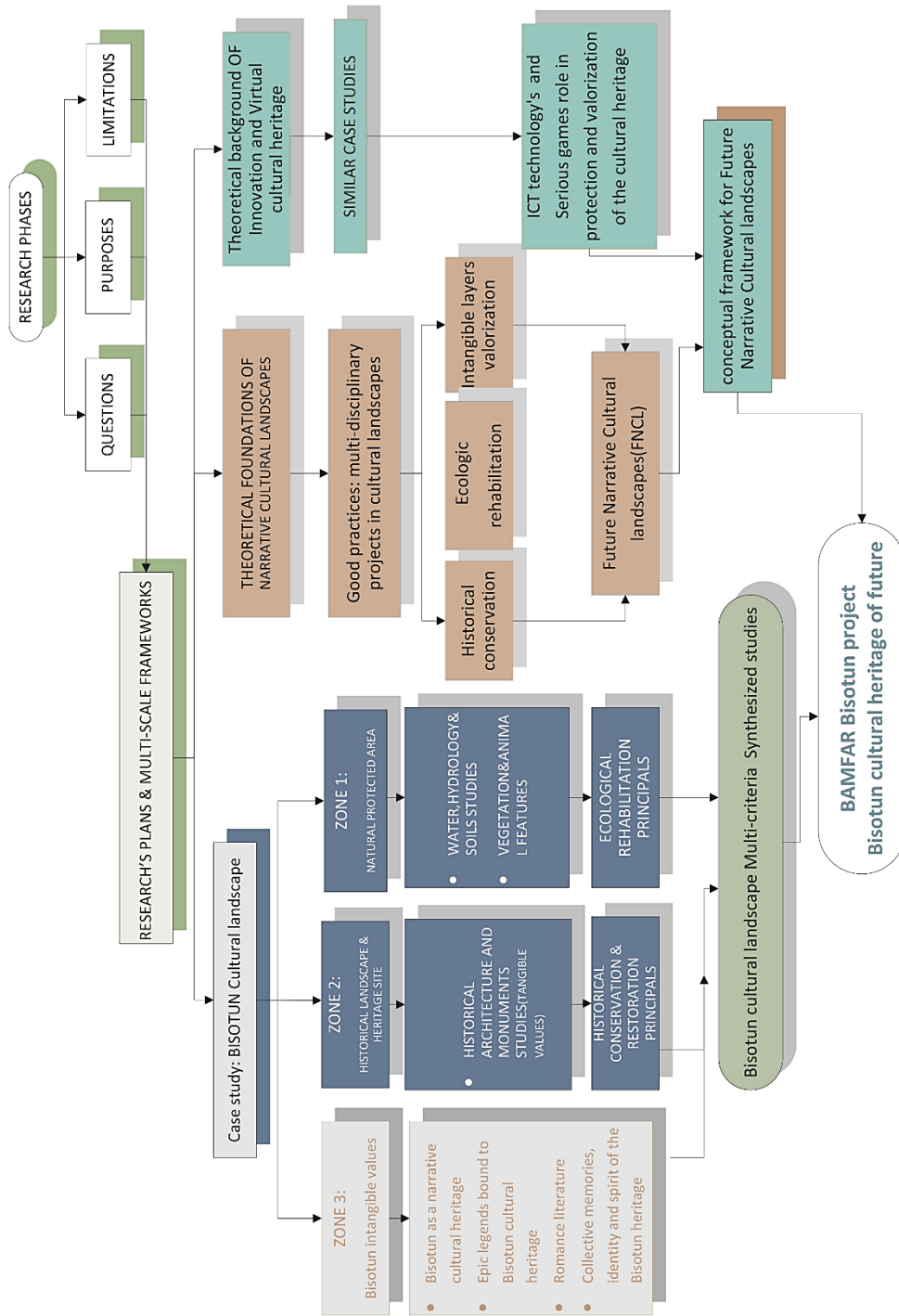


Diagram 3: The research phases and sectors, Source: author, 2020

1.11 Why the Bisotun Heritage Site Chosen as The Case Study?

The following ideas evoked the inspiration in centralizing Bisotun CL as the case study in this dissertation.



*Figure 1 :Bisotun heritage site, historical inscriptions and bas-reliefs, ruined palace and FarhadTarash terrace.
Source: Author,2020*

1.11.1 The global and national position of Bisotun WH

In the early days of 2020, world cultural heritage members, cultural preservationists, and activists in this field heard the alarm about the Iranian antiquities' cultural heritages. Although targeting Iranian cultural sites by threatening³¹ in a possible war had a shocking impact, pushing aside the concept of belonging, cultural heritage of all humanity as the underpins foundation of world heritage convention ratified by the Hague Convention³² in 1954 and the WHC convention in 1972³³, could not be tolerable. Identifying the Iranian heritage sites can encourage the rise of awareness and

increase the shared discernment to aide warning against destroying these human cultural belongings and attempts to the rational protection of them.

Obviously, any attack on these testimonies of human civilization has an immeasurable impact on sustaining peace, holding back the global development goals. There can be no sustainable development without peace³⁴, as manifested in the 2030 Agenda. Regarding Francesco Bandarin's declaration on 6th January 2020³⁵, several monuments of the cultural heritage of the great Persian empire could become the target of attacks, such as the site of the inscription of Darius I the Great at Bisutun of 521 BC.

This research will discourse this inscription and bas-relief as one of the outstanding universal value of Iranian civilization, which is coined as the longest multifaceted, ancient text written in Iranian literature. Its simultaneous translation into the three major languages (Old Persian, Elamite, and Babylonian) is reminiscent of the global audiences of this proclamation and, since nowadays, leaves a visitor in awe. This inscription as the heart of this heritage site that after Cyrus Cylinder is the most well-known written evidence about the Persian civilization, can answer to this interrogative sentence: How are Iranian can be imagined by reading the Bisotun inscription?

Through comparative fieldwork and diachronic integrated approach, the tangible and intangible values of this monument, and its impact on Iranian collective memory, have been envisaged. Taking an in-depth look into its current threats and the comprehensive conservation strategies occurred in the framework of chapter 4, zone 2 studies.

“The overarching benefit of ratifying the World Heritage Convention is that of belonging to an international community of appreciation and concern for universally significant properties that embody a world of outstanding examples of cultural diversity and natural wealth.”³⁶ According to the World Heritage List, the number of cultural properties inscribed on the WHC in Iran is “twenty-three Sites and fifty-five are in the tentative list waiting for the documentation process³⁷.” These low quantities of recognized cultural landscapes in Iran cannot reflect the real capacity of 6000 years of historical heritages in this land. From this point of view, the quantity of registered sites on the World Heritage list is extremely less than global and national expectations. The focused case study

in this research, "Bisotun,³⁸" is one of the nominated properties in WHC. This multidisciplinary exploration of this CL can be a turning point in similar studies in Iran or collaboration of the international research on this groundwork.

Furthermore, there is "no property representing the heritage of the Kurdish people has yet been nominated in Iran, Iraq, or Turkey,"³⁹ and the only WHC nominated cultural heritage that is the Kurdish ethnicity territory is Bisotun CL. However, the position and pivot role of this heritage is the cross border and above from any red herring ideological or ethical critiques in the political outlook of this region.

1.11.2 Lack of sustainable planning in Bisotun region

Although the limited core zone of this vast CL acknowledged by WHC as a world heritage site, there are several historical traces around the boundaries of the worldwide zone.

Regarding the values of this heritage site, it was expected to decision-making and development activities in the region aligned this central point and without any damage to natural, historical properties. Contradictory, actions that curb the credibility and sustainability in the Bisotun landscape are predominant.

It has been deduced from the surveys that since 1950 the natural landscape of Bisotun site has undergone an unbalanced change⁴⁰, generally by the progressive press and industrialized activities. Regrettably, despite the harmony of the cultural and natural landforms, the today looks out of Bisotun natural landscape is full of incompatible functions, dull and uninterested view of industrial constructions, abounded buildings, farming land without any exceptional features, and military camps.

In other words, "Heritage was long absent from the mainstream sustainable development debate, despite its crucial importance to societies and the wide acknowledgment of its great potential to contribute to social, economic and environmental goals."⁴¹

Unsound knowledge about this site, unobtrusive exploitation, and disregard the landscape language has led to a degraded view and spoil the aesthetic and narrative characteristics. "The

natural platform is always the foundation of the civic centers of high cultural values. Undoubtedly, any demolition in this natural context has a serious impact on cultural symptoms that are induced on it. More broadly, in the result of disruption of linkage between the natural and cultural landscape, the values along both sides are at stake.⁴² A diversity of criteria about opportunities in one hand and threats, on the other hand, is on the ultimate level in the Bisotun site. Challenges and constraints that Bisotun CL is dealing with are commonplace, and similar to the other cultural landscape in the region, but the impact of unsustainable decisions was severe in Bisotun CL., that cause to push its position on danger. This research objective is submitted due to the curb, the multilateral damages, and revitalize its coherency.

1.11.3 Bisotun complex hybrid landscape language

“The qualities of coherence, complexity, and mysteries are to be found in certain recurrent features in any landscape⁴³.” Choosing this place as the case study was not only based on personal interest, but also because of the multi critical interrelated aspects of Bisotun CL-that create a complicated landscape language. I decided to study on this site to increase my knowledge and skill in profoundly reading the hybrid characteristic in Bisotun CL. The motivations that underlined its complexity involve: more than 140 historical remains, the combination of a variety of cultural narrations, the focal point of natural unique landforms and patterns, and simultaneous harmony in natural features and narrative yield layers. Bisotun selected as a perfect exemplified fieldwork for theoretical studies in this research. Coming up with the linkage between nature and history and complete this circle by narrative perceptions, “*Genius loci*, or the spirit of the place,”⁴⁴ was the key idea.

Mutual Interpretation of nature in cultural things and the recovery of the epic legends and romantic stories that make up the complexity of this landscape was the inspiration to pursue this research. As I born in the locality of this heritage site, during my lifetime, I have visited and pondered about its intellectual labyrinth aspects, hidden stories, and potential threats; all these reasons result in focusing on Bisotun CL as the main case study in this dissertation.

CHAPTER 2: CONCEPTS & THEORIES

Introduction

What is considered as Cultural Landscape in this research is a perpetuate intertwined collection of Natural landscape, Tangible continuous historical remains, and Literary grand narratives interlocked with the context. In this study, interpretation of Natural landscape, as the basic principle for the conception of historical and cultural manifestations, is not confined to analyzing the ecological features. Reading nature through convoluted historical milestones is the considered approach to the natural layer in CL. Investigating and understanding the literary narratives on the one hand cause to explore the clues in recovery the tangible layers of CL that are nowadays hidden and confused, and on the other hand, in this changing world, the literature layer bound to the landscape should keep alive and valorized. The mentioned ideas about CL have been assumed in this research, and all theoretical studies and background reviews centered around the concept expressed above.

To CL comprehensive revitalization, where it has become a disrupted system, and its elements are left as unfinished puzzle pieces in a natural context, applying the Innovative Technologies in the creative recovery of the CL layers can offer new hypotheses.

Collectively , there is a mutual relationship between the theory and the practical examination of the case study site in this research. During Bisotun site studies, the framework for theoretical background studies has been determined with the major paradigm shift from other researches around Bistun CL.

Within interdisciplinary studies in the Bisotun site, a novel sub-category in CL introduced and spanned the literature gaps in this field, which is explained meticulously in this chapter.

This chapter, after outlines identifications of CL in some of the extensive literature overview, explores to provide the explicit definition of CL that aligns with the research perspective. The definition meets the description of Cultural Landscape as a living and growing dynamic being with recognizable and detectable past layers. Thus, the CL definition supports the operational basis of CL revitalization strategies: preserving and valorizing measures to recover the continuity between

the tangible and intangible associated features. In other words, the revitalization process is a creative imagination that tries to depict a “cohesive picture in a broken mirror⁴⁵.” This process looks at the recovery of the Eco-Cultural Systems cohesiveness by imagining the lost mosaics of the landscape. In this way, innovative technologies employed to read the erased lines and echo the lost voice of the past.

The core research questions which this sector will answer are:

Theoretical Questions

- What is the meaning of culture as a core concept of Cultural Landscapes?
- Regarding the different doctrines about the meaning of culture in the Persian language, is it possible to extract the concept of culture from this spectrum to define the novel interpretation of the cultural landscape term? (Deriving the general features of Farhang (Culture) from the Persian translation meaning of this term)

In this chapter, the primarily concerned is profoundly reviewing and analyzing the theoretical background in these highlighted topics:

Definitions: Meanings, origin, and novel approaches in CI, CH, and NL, Variety of operational legislative contexts in World Heritage Convention, ICOMOS; ICCROM, and IUCN are reviewed in this section.

Furthermore, the concept of “Far hang” (culture in the Persian language) securitized to employed in the new definition of the cultural landscape.

Cultural landscape and literature: Narrative Cultural landscape and Taxonomy of NCL in Epic and Romance genres.

2.1 CULTURAL LANDSCAPE DEFINITIONS

2.1.1 Cultural heritage, Cultural landscape or Heritage site

Despite the extensive studies and research sources in the field of cultural landscape its concept is frequently misunderstood, and its intellectual and practical parameters integration remains relatively neglected. Nonetheless, in the unidimensional definition, its meaning and domain limited and the holistic perception of CL marginalized. “Some argue that in practice they tend to be reduced to merely “physical entities—comparable to historic districts, for instance—instead of also being seen as a method of considering, analyzing, and evaluating places” (Longstreth 2008, Chalana,⁴⁶ M. 2010), CL concept is “misconstrued as being synonymous with the designed landscape—a garden, park, campus, boulevard system, and the like—or with landscaping—the act of manipulating topography, ground surfaces, and plant material.”⁴⁷“which bear the mark of systems of agriculture or husbandry.”⁴⁸”

The primary step in achieving the goals of this research is proposing an accurate and appropriate definition of the term Cultural Landscape that covers its various dimensions. In this sub-chapter, the perspective of the diversity of scholars and scientific foundations of the world in the CL field will be argued. Subsequently, the considered definition of CL term disclosed and its components and criteria discussed at the end of this writing.

“The concept of cultural landscape has evolved over several generations⁴⁹” and human and nature interaction has emerged in several traces of ancient civilizations around the world. During the 20th century, several scholars defined new definitions for this old concept. “The term “cultural landscape” has been a fundamental concept in geography, and was first defined as “landscape modified by human activity” by the German geographer Friedrich Ratzel in the 1890s ⁵⁰”. The CL term was presented to English-speaking nations in the 1920s by Carl O. Sauer, a geographer who declared this term for the first time as a “fashioned from a natural landscape by a cultural group. Culture is

the agent; the natural is the medium; the cultural landscape is the result⁵¹ .“The Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by the General Conference of UNESCO in 1972, established a unique international instrument recognizing and protecting both cultural and natural heritage of outstanding universal value. However, it was not until 1992 that this Convention became the first international legal instrument to protect ‘cultural landscapes.⁵²”Wagner and Mikesell argued that CL is “a concrete and characteristic product of the interplay between a given human community, embodying certain cultural preferences and potentials, and a particular set of natural circumstances. It is a heritage of many eras of natural evolution and many generations of human effort.⁵³” Generally CL definitions embrace of the four main pillars: **human, ecology, history and culture**, which have been continuously pointed in the description of this term, such as: “exceptional spiritual interaction between humankind and its natural environment⁵⁴, specific techniques of sustainable land-use, considering the characteristics and limits of the natural environment⁵⁵, “a tangible manifestation of human actions and beliefs set against and within the natural landscape⁵⁶.”

The above-mentioned critical concepts repeated and represented in several studies in this field, such as followed explanations about CL. Although the scale and detail of CL in these definitions are different, the core ideas are matching:

- *Cultural landscapes are at the interface between nature and culture. They represent the permanent interaction between humans and their environment, shaping the surface of the earth.⁵⁷*
- *“Cultural landscapes can range from thousands of acres of rural tracts of land to a small homestead with a front yard of less than one acre. They reveal aspects of our country's origins and development through their form, features, and the ways they were used, also reveal much about our evolving relationship with the natural world.⁵⁸”*
- *Cultural landscape perspective explicitly recognizes the history of a place and its cultural traditions in addition to its ecological value and also recognizes the continuity between the past and with*

*people living and working on the land today*⁵⁹

- *Cultural landscapes present a cumulative record of human activity and land use in the landscape, and as such, can offer insights into the values, ideals, and philosophies of the communities forming them and of their relationship to the place.*⁶⁰
- *A cultural landscape can be associated with a person or event. It can be thousands of acres or a tiny homestead. Collectively, cultural landscapes are works of art, narratives of culture, and expressions of regional identity.*⁶¹
- *“Cultural landscapes, however, are undergoing rapid and fundamental transformations across Europe, mainly as a result of an on-going polarisation of land-use, with abandonment and rural exodus on the one hand, and intensification and urbanization or peri-urbanization on the other.”*⁶²

According to the Council of Europe Cultural and Natural Heritage Service definition, CL does not only exist in three dimensions but in four - and the fourth dimension is time. Time is precisely what changes a landscape into a cultural landscape under the interacting influences of nature and man, who shape the landscape in his mind.

Referring to a category adopted by the World Heritage Committee in 1992, CL holistic conception “paved the way for new thinking on human beings and their environment, linking culture and nature, with a vision of sustainable development. The awareness raised at the level of government, NGOs, and civil society helped to accept “cultural landscapes” as a category of sites for nomination.”⁶³

The Committee acknowledged that cultural landscapes represent the “combined works of nature and man⁶⁴.” National Park Service of the US in 1998 defined CL as “A geographic area, including both cultural and natural resources and the wildlife and domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.”⁶⁵ Fowler at World Heritage Committee explained CLs as “illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment, and of progressive social, economic and cultural forces, both external and internal.”⁶⁶

According to the wide-range research context, several definitions addressed in separate disciplines. Undeniably, the viewpoint of the landscape architects, archaeologists, ecology preservationists, historic preservationists, geographers, or even politicians is different from each other around the meaning and value of Cultural Landscape. In evidence, "That concept is still relatively new to the field of historic preservation, and while it has made a substantial contribution, it remains misunderstood or marginalized in many quarters. Indeed, the number of preservationists who have not heard of the term or have only a vague notion of what it represents is substantial"⁶⁷. "When preservationists think of cultural landscapes, they usually regard them as something resulting from the impact of human activity on a natural environment. For the politician, CL studies "has political nature is a political practice, and the purpose of representing it as an activity that recovers the truth about the past is a political purpose. "⁶⁸"The geographer Arnold Alanen and landscape architect Robert Melnick emphasize that these places may be found "virtually everywhere that human activities have affected the land." Such definitions treat CL as a material thing. Rodney Harrison discussed that ignoring the multifaceted and the holistic meaning of CL and "Separating the cultural and natural landscape"⁶⁹ made sophisticated challenges in the management of these sites that is the disadvantage of separation and division in definitions of CL. He suggests "unifying feature of diverse philosophical approaches to landscape and space lies in their interpretive scope to examine the geographical, social and historical spaces – the spaces of everyday life and experience – as well as those intangible and unknown spaces on the margins."⁷⁰ "Cultural and natural heritage should no longer be considered separately for purposes of site planning, management, and conservation. A common philosophy promoted, which would merge the human dimension of the heritage with the environmental aspect."⁷¹

"A new approach to integrating cultural and natural heritage was taken by the Amsterdam Global Strategy meeting in 1998, proposing to link natural and cultural heritage criteria in order to overcome the divide between nature and culture in the application of the Convention."⁷²

IUCN((the International Union for Conservation of Nature)) category V in 2003 highlighted the people's traditions in a natural landscape context. "Where the interaction of people and nature over

time has produced an area of distinct character with significant aesthetic, cultural, and/or ecological value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area.⁷³

In 2013 the Connecting Practice Project initiated the comprehensive activities in joining ICOMOS, and IUCN aims in common projects. Nevertheless, “a divide between the two fields is still often observed. The World Heritage Convention is the leading international instrument for conservation that brings together nature and culture. The project is a joint initiative between IUCN and, working with a range of partners, providing the opportunity for influencing a shift in conceptual and practical to arrangements for the consideration of culture and nature within the implementation of the World Heritage Convention.⁷⁴”

Nagy, in his paper about *Sustainable futures for Europe's heritage in cultural landscapes*, demonstrates that: “Studying (cultural) landscape and its history is not about getting nostalgic about the good old times. It requires having a clear notion of what a (cultural) landscape is: Is it what we see on topographical maps and aerial photographs? Alternatively, do we have to be ground-based, to see the landscape and understand how local people and tourists construct a landscape for themselves?”⁷⁵

It is well-established fact that a prerequisite for effective strategies in any CL studies, is determining the definition of a Cultural Landscape as a broad term with the multidisciplinary domain. The explicit definition of Cultural landscape figures the framework, philosophy, approach, and method in any project. For example, in the HERCULES project, which as a transdisciplinary research project, centered on “Sustainable Futures for Europe's Heritage in Cultural Landscapes,” the definition of CL term is set outside local and regional boundaries and is determined by its transboundary definition. All strategies and theoretical account of action adopt with this approach. “In HERCULES, we know that no cultural landscape on this continent can and should be preserved or developed only locally. Rather, look at how local- and regional-level integrated landscape initiatives across Europe have inspired and cross-fertilized each other.⁷⁶” Finding the proper strategy in this project arises after defining the CL term in step with the project objectives. Nagy believed that “when the

idea for the HERCULES project came up in 2012, there was much ambiguity about what cultural landscapes are. Despite the fact that this concept was mainly linked to heritage, society, and environment, the HERCULES team had a slightly different understanding of the concept. They wished to link cultural landscapes with an evolving and changing perception of space and its management."⁷⁷

"In recent years, as a result of major phenomena such as globalization, demographic growth, and development pressure, the cultural heritage sector has started to reflect on the relationship between conservation and sustainable development. ⁷⁸"

Socio-Cultural values as shared keywords in (Cultural Landscape/Heritage) studies

There are theoretical similarities among these terms: Cultural landscape, cultural heritage, heritage site, and heritage landscape. According to various mental constructs, the different meanings of these terms evoked, which are "differently construed by different cultures, through time and around the world."⁷⁹ Their common scope is historical and cultural trends, but the ecological attributes are not the focused point in some heritage studies. On the other hand, all the heritage sites ought not to consider as CL because of the differences in culture term and heritage word meaning and conception. According to the Cambridge dictionary, Heritage means: "Features belonging to the culture of a particular society, such as traditions, languages, or buildings, that were created in the past and still have historical importance."

The **socio-cultural values** are the pivot point of similarities among the terms mentioned above that described as:

- 1) Intangible value
- 2) Communal value
- 3) Heritage value

- **Intangible value:** It may at first seem difficult to bring together the tangibility of landscape – earth and rock and water – with the intangibility of an abstract idea⁸⁰Intangible factors of CL encompass: socio-economic structures, the rituals, narratives, skills and livelihood activities of resident populations, and inhabitants' relationships with history and the past, This includes language and oral traditions, performing arts, social practices, and traditional craftsmanship ⁸¹” and also the spirit of place, “thinkers, talkers, writers and poets, and exploration ⁸²,” continuity of past, intellectually exist in these intangible potentials. On the other hand, tangible values evolve buildings, landmarks, monuments, artifacts, artwork, and historical remains. According to ICOMOS guidelines: “Cultural Heritage Site refers to a place, locality, natural landscape, settlement area, architectural complex, archaeological site, or standing structure that is recognized and often legally protected as a place of historical and cultural significance”⁸³. UNESCO manifested that “ Intangible elements of a site’s heritage such as cultural and spiritual traditions, stories, music, dance, theater, literature, visual arts, local customs, and culinary heritage should be considered in its interpretation⁸⁴ The value of intangible layers is not subordinate to tangible traces, but also in the CL site that tangible remains are obliterated during the times, intangible layers can narrate the unobserved -able qualities of the site. “Although the physical form may change, the spirit and purpose of the original is not only preserved as a continuity but can be enhanced through the contributions of succeeding generations ⁸⁵.” In other words, people's memories remained and transmitted via tangible landforms or landmarks. They “used the land and left their imprint on it in roads and pathways, in fields and fences, in various structures and myriad place names.⁸⁶”
- **Communal value:** manifested in Burra Charter (ICOMOS Australia 1979, subsequently revised in 1981, 1988, and 1999) in heritage sites. The document identifies ‘communal value’ (involving *symbolic, social, and spiritual*) as one of the key types of value, making

up significance and provides a beneficial discussion of what this encompasses. Mostly “Many recognize this document as a key document in bringing about this shift (Emerick 2014⁸⁷) emphasizes that the sustainable management of heritage places should start with an understanding of significance⁸⁸” and had a crucial impact on immaterial values protection in CL/CH.

- **Heritage value** “Heritage value,” defined by Geser⁸⁹, Sable⁹⁰, Throsby⁹¹, and et.I, is mentioned in some CH definitions as its indispensable part. “The heritage value lies in its cultural significance, which is a combination of historical, symbolic, spiritual, aesthetic, and social values. Because of these values’ heritage sites, buildings, and objects can enhance the cultural and social capital and community welfare in several ways.” European Commission in CH research (2018) emphasized on cherishing CHs for discovering our diversity and start an inter-cultural conversation about what we have in common. So what better way to enrich our lives than by interacting with something so central to who we are? “Shared histories” and “Shared Heritage” that presented by Rodney Harrison⁹², can be considered as an important factor in creating collective memories in cultural heritages, on the other word: Heritage is our legacy from the past, what we live with today, and what we pass on to future generations.⁹³

Regarding the ICOMOS **Charter point of view**, three significant entities of heritage site include: “material culture (cultural properties) and the geographic and human environments. To insist above all on the great importance of landscapes and natural sites, which have a unique esthetic and/or panoramic value. Finally, that the people in their environment, who have their customs and traditions, whose memory is furnished with particular folklore, and whose way of living is adapted to this specific setting, are a human and social treasure that also requires protection.⁹⁴” In broad-spectrum, “these landscapes may vary considerably in scale, drawing significance from multiple attributes, and require⁹⁵.” However, in the core, the concept has the same root. According to The Intangible Dimension of Monuments and Sites document, “over the past thirty years, the concept of cultural heritage has been continually broadened. (defining) the Commemorative sites, which

are marked by a dramatic moment in human history, attempted to cover the shortages in Cultural landscape definition.⁹⁶

To sum up and synthesized the concepts mentioned above, in other words, the following results step up:

The CL multi-criteria component analysis, initiate from two cells, Nature and Human, as the first seeds. Time, as the indispensable element in creating the CL concept affect the first cell. Natural landscape transformed by human interventions and the four categories of cultural landscape emerged in Garden, Park, Agricultural land, and Hydro infrastructures.

On the other hand, Cultural properties are the result of human life during ages—these properties classified into two major groups: Tangible Values and Intangible Potentials.

Tangible Values can be recognized in four subcategories: Archeological sites, Historical remains, Buildings, and Settlements.

Subsequently, the Intangible Potentials revolve around Heritage and Narrative Values.

Heritage Values divided into Communal Values (Spiritual, Social, Symbolic), Aesthetic, and Historical. The Narrative Values arise in the literature (Myth, Dramatic, Folklore), Tradition, and Customs (Dance, Music, Visual Art, Theater).

Diagram 3, and 4, illustrate the CL components analyzing, which will promote and enrich the comprehensive interpretation of this term in this research framework.

At the end of this sector, it is noteworthy to assert the following vision about Cultural Landscape categories, which clear the way for proceeding to the next sector:

Although the recent potential interest adopted in nominating the world heritage sites in themes such as: “Industrial landscape, Military landscape, Landscapes of nuclear power’ and landscapes of the war dead⁹⁷” as Cultural Landscapes, in this thesis the CL defined approach is not along with this line of thought. Actually, from this research perspective, these types of heritage sites should not be nominated as a cultural landscape. This point of view strands from the meaning and origin of the term “Culture.” which will be discussed in the next sub-chapter constructively.

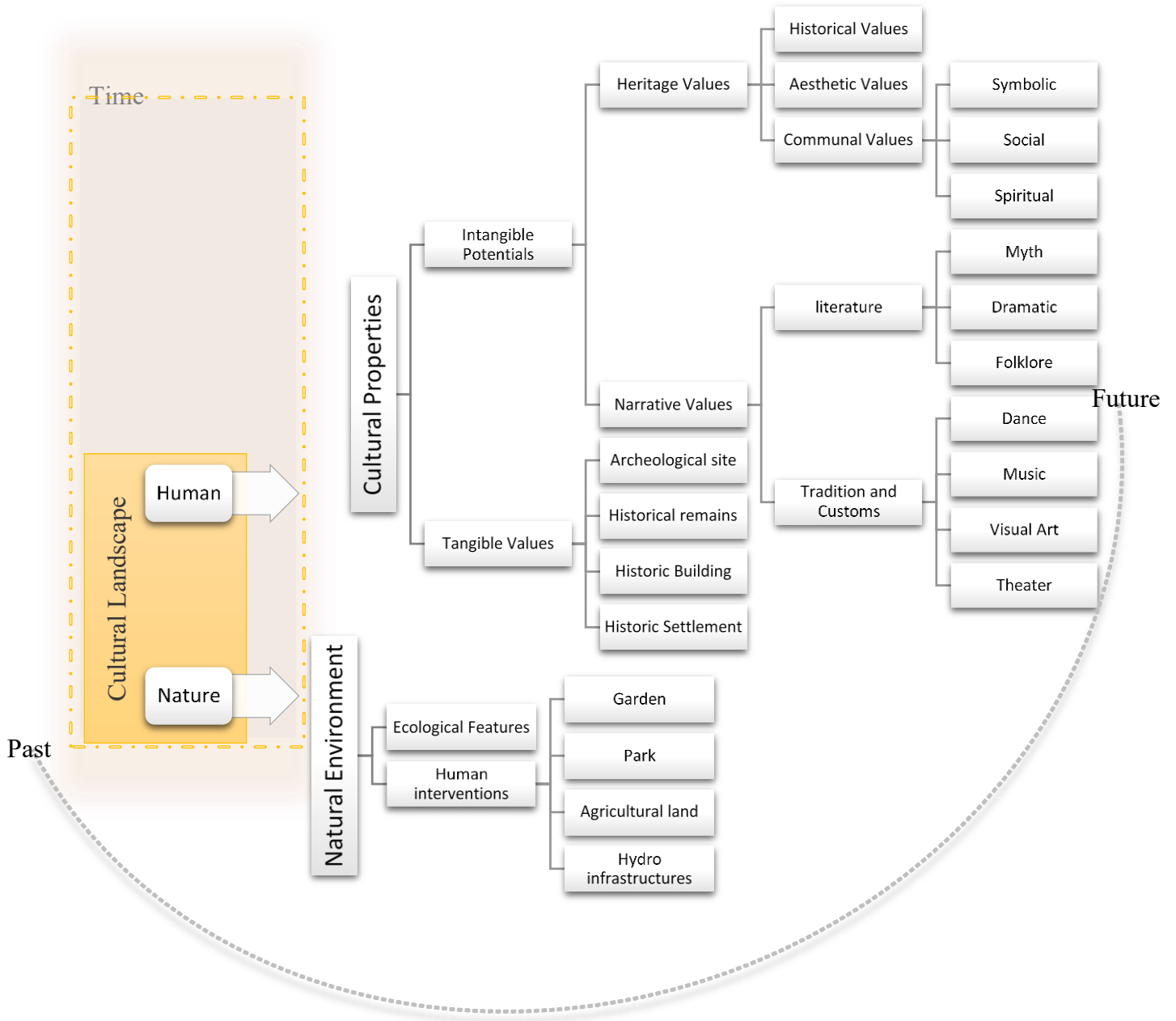


Diagram 4: Components Analyzing of CL Definition. Source: Author, 2019

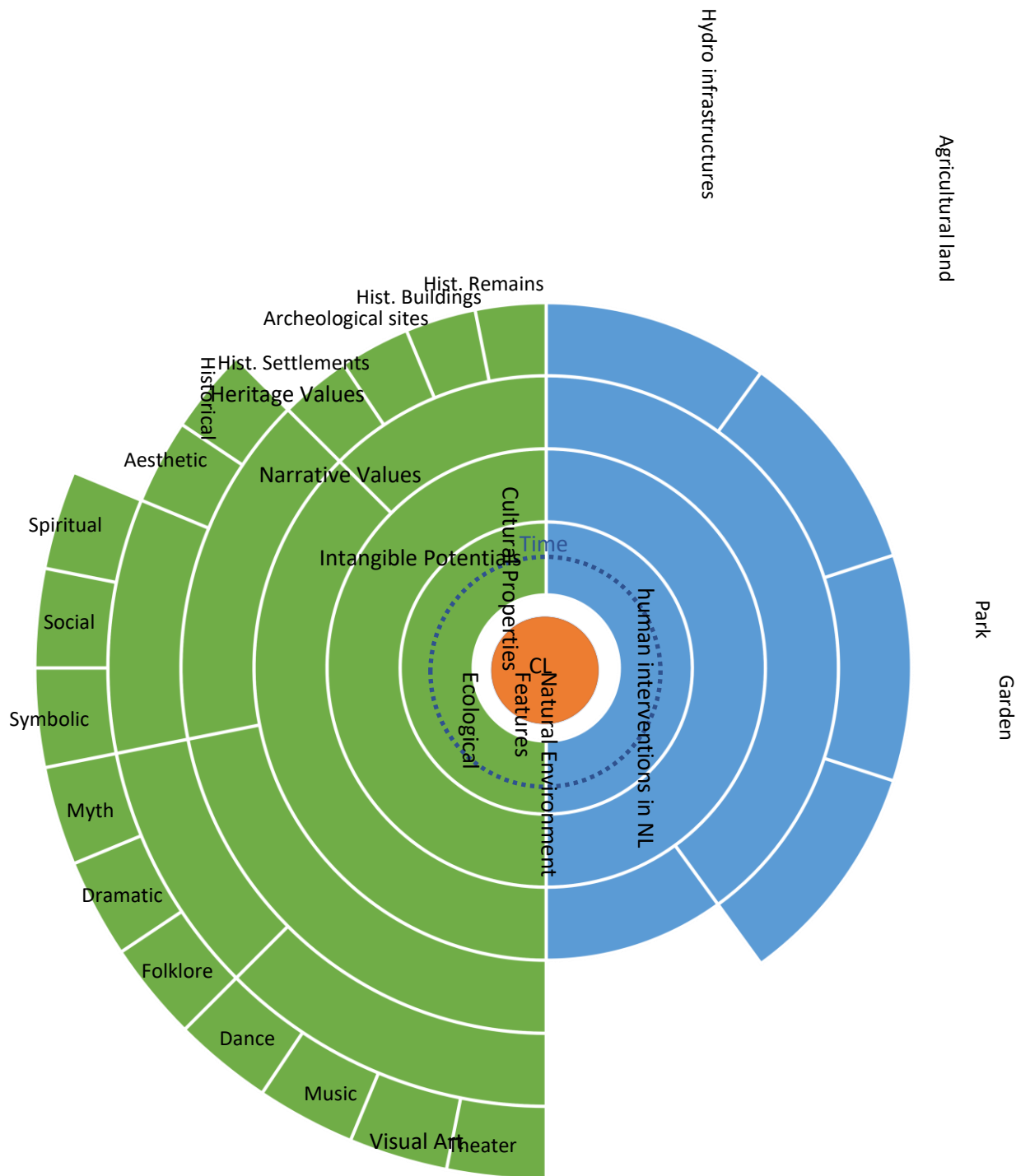


Diagram 5: Multi- Criteria Components Analyzing of CL Source: Author,2019

2.1.2 Meanings, origin and novel approaches of cultural landscapes

This point is touched upon from the resultant of the viewpoints presented in the previous section, that the CL diagnosis as a natural landscape in which the role of human interactions in it can lead to distinctive, identifiable cultural traits. By critical review, the ambiguity point in these generalized definitions is the *interpretation and configuration of Culture*, which is a fundamental base in this trend and should be defined more meticulously.

In other words, do the intention and purpose of human intervention in nature determined in CL definitions? Is merely the existence of these two main factors in creating the CL (nature and human interactions) is sufficient to introduce a region as a cultural landscape? If the answer is positive then, why an industrial factory along the river, or a huge dam or a stone mine workshop in the depths of the mountains or a military land mine with explosive remnants of war under the ground, cannot be nominated as a cultural landscape?

Although all these samples formed in a natural landscape context and rendering a type of human impact in nature and have created a culture that is the consuming and destruction culture. Alternatively, yet if we extend further, entirely of the terrestrial globe which humans, the tangible or intangible influence remains, is a cultural landscape because any interaction in nature represents a form of acculturation.

Phillips in 1998 claimed that "Since there are cultural aspects of practically every landscape on earth, it follows that practically all landscapes are cultural landscapes.⁹⁸" How the frontiers in CL definition can be determined and prevent to misusing and vagueness in applying the CL term? It seems that the two axes are necessary for defining the CL, but they are not sufficient, and what seems to be the purpose of the majority of researchers in this field is beyond that definition. The interrelationship between humans and nature and the type of intervention and modification in natural context have not seized upon the CL definitions precisely.

According to several scholars' standpoint, the human interaction with the natural environment might be mentally, and by woven the intangible values to the natural context, a distinct CL created. "However, the degree of human modification or "fashioning" beyond which a natural landscape regarded as a cultural landscape is subjective and has been a point of debate and a source of confusion.⁹⁹" "Moreover, all definitions are constructed from the point of view, which is all too often left unstated.¹⁰⁰" "Culture affects behavior and interpretations of behavior¹⁰¹." From such an argument, it concluded that the CL definition acquires more explanation in precisely determining the behavior of humans in nature. Without specifying the core meaning of culture, the CL definition cannot be comprehensive and useful in today's and future actions in this subject area.

To develop the argument gradually, it is imperative to delve into the terminology and investigating the original meaning of the term Culture, which can lighten the analytical indices in defining the CL. Meanwhile, diverse ways of looking at the 'culture' term proffered, this variation in meaning provides a scope of the definitions for culture-relevant terms, which is the less substantive case for the word CL. From the author's perspective, without specifying a basic definition of *culture*, the concept of CL cannot be picked out logically.

Apte in 1994 implies that 'Despite a century of efforts to define culture adequately, there was in the early 1990s no agreement among anthropologists regarding its nature¹⁰²'. Culture term is one of the most complicated multi-sided words that its reviewing all its definition is out of the aim of this research, and merely some significant relevant definitions have been hashed out.

Culture meaning in western dialectics

"The most generic sense of the word "Culture"- (in Latin and in all the languages which have borrowed the Latin root)- retains the primary notion of cultivation or becoming cultured, which was also the older meaning of civilization.¹⁰³" "It shares its etymology with several other words related to actively fostering growth.^{104 105}" Edward Tylor stated one of the primary descriptions of culture in 1870. He denotes culture as the "complex whole, which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society¹⁰⁶."

Referring to his approach, “a quality possessed by all people in all social groups, who nevertheless could be arrayed on a development (evolutionary) continuum from “savagery” through “barbarism” to “civilization.”¹⁰⁷” Franz Boas reacted against Tylor and other social evolutionists and mentioned, “one should never differentiate high from low culture, and one ought not differentially to valorize cultures as savage or civilized.¹⁰⁸”

“Many researchers associate culture with some form of knowledge; other scholars stress the importance of the environment inhabited by the knowledge carriers, while archaeologists learn about cultures through the objects produced in the environment as a result of utilizing this knowledge¹⁰⁹.” The following extract from Collins dictionary provides a general definition for this term: “Culture consists of activities such as the arts and philosophy, which are considered to be important for the development of civilization and people’s minds. A culture is a particular society or civilization, especially considered to its beliefs, way of life, or art.¹¹⁰”

In 1952, Kroeber and Kluckhohn the American anthropologists, in their credential book: *Culture; A Critical Review of Concepts and Definitions*, compiled almost all definitions of culture in the western world. By collecting three definitions: “Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievements of human groups, including their embodiment in artifacts. The essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values. Culture systems may, on the one hand, be considered as products of action, on the other, as conditional elements of future action.¹¹¹”

Cultural traits have often been attributed to heredity because philosophers and other scholars in the past did not know how to explain otherwise the remarkable stability of differences in cultural patterns among human groups.¹¹²” But nowadays it is a well-established fact that people learn the cultural patterns and culture does not transfer by genetics and people can select and learn it, and it needs education, valorizing and advertising to be seen and grasped by others. “Culture is a fuzzy set of basic assumptions and values, orientations to life, beliefs, policies, procedures and

behavioral conventions that are shared by a group of people, and that influence (but do not determine) each member's behavior and his/her interpretations of the 'meaning' of other people's behavior¹¹³.”

On the other hand, Hofstede in answering the question, how much culture and identity have similarity meaning, affirms the “culture is not the same as *identity*. Identities consist of people's answers to the question: Where do I belong? They are based on mutual images and stereotypes and emotions linked to the outer layers of the onion, but not to values. Populations that fight each other based on their different “felt” identities may very well share the same values.¹¹⁴” Spencer believes that cultures are coherent and logical systems, and “the various parts of a culture are all, to some degree, interrelated. Cultures should be thought of as integrated wholes.¹¹⁵”

All the discussions mentioned above evolving the meaning of Culture are derived from western dialectics, and after translating culture to the other languages without similar Latin roots, the meaning of this term is, to some extent, will be altered. Since the case study of this inquiry is the Bisotun CL in the cultural area of the ancient Iranian civilization, I have explored the culture term from the overture of this civilization because it incorporates the keywords for defining the CL, which derive from its setting.

Farhang: Culture meaning in Persian civilization

The “Farhang” term derived from the customary translation of culture in the Iranian language, and nowadays, all Persian-speakers apply this term. “Farhang” has emerged consistently in Middle Persian(Pahlavi, Parsig) from 300 B.C to 800 AD. This ancient Iranian language widespread and also formal language in the Sasanian empire the last kingdom of the Persian Empire (224 to 651 AD) inscriptions and Zorastorian books before the Arab invasion in Iran, and it is the mother of all Iranian languages.

In etymological discipline, Farhang term is made up of two components:

“Far” (Farr (ah), Xwarrah in old Persian): which is one of the most significant and applicable words in Persian glosses and Persian civilization before Islam, has been practiced as the prefix in several words. It means “glory” according to the most likely etymology and the semantic function reconstructed from its occurrence in various contexts and phases of the Iranian languages.¹¹⁶ ”

Bailey in 1943 indicated Far “ is possible to recognize the basic thought of good things and fortune, whether it appears as a hypostasis in the invisible world (intangible values) or is concerned with man's life on earth (tangible values).....It was, therefore, a concrete expression concerned with this earthly world.¹¹⁷”Dekhoda¹¹⁸, the author of the most extensive Persian language lexicon interprets its meaning as stately power and dignity. The following words are the most credential meanings for this term: peace, happiness, abundance, fortune, elegance, prosperity and welfare, luminosity, and high position. Wolff Fritz, as the linguist and Iranologist in 1934, inscribed this lexical equivalent for this term: Brilliance and powerful translucent glory. Farr means ““heaven-sent glory¹¹⁹” and honorable meta gift, which is widely used in Shahnameh,” “Farr appearance is like a firelight.¹²⁰”.

This word implies as a prefix in several words like "Farzand" means glorification of life, which is equal to the daughter and son in English. Or the word "Farshe¹²¹" which means fresh.

“Hang”:(Thang) This word has its roots in old Persian: The primary meaning of Hang is the act of pushing forward in an abstract sense, propulsion. Hang has the same meaning as Ahang; means intending to move forward.

Dekhoda interprets Farhang term it in these traits: consciousness, education, and training, it can be inferred as knowledge and wisdom in behavior. “Ferdowsi” in the most valuable book in Persian literature, Shahname¹²², (the book of kings, 977 to 1010 AD) considers Farhang as a form of individual moral superiority and communal society value, “He does not speak of good or bad culture. In his view, Farhang has always been pleasant and amiable.¹²³” Fritz , who published his unique book: “Glossar zu Firdosis Schahname” in Ferdowsi millenary celebration, addressed 90 versus of Shahname which the term Farhang is used. From his point of view, the conception of

Farhang in Shahname can be recognized in “learning and educating knowledge, and wise behavior¹²⁴. Farhang has an interrelation conception with the meaning of education. The term does not merely refer to scientific education and also includes learning art, ethics, and in other expressions, widespread civility and training in comprehensive knowledge. Hence, to this day, a person who is ethical and progresses in science is called “Farhangi.” Alternatively, the community of teachers called “Farhangian.” Farhang chiefly conveys through direct and indirect education to individuals, which repeatedly emphasized in Iranian literary works and oral narrative heritage.

Configuration of Farhang (Culture) attribute

Considering the arguments mentioned above, “Farsi speakers look on culture as the fundamental concept of comprehensive development in society. “The concept of “ Farhang,” as the widely used word in Persian literature, has a more multifaceted semantic meaning than the word culture and comprising a variety of communal values in Persian civilization. Takmil Homayoun revealed that “I have studied this word in European languages and even in Sanskrit and Latin and have found that the meaning of the word Farhang in Persian is much wider than its synonyms in other languages.¹²⁵”

Concluding, the beliefs and values that create the principle of the “Far” hypostasis include glory, dignity, and peace. Subsequently, the noble attributes of Farhang, which interlocked with mentioned values, can emerge in the following traits: Peaceful overall progress, utilizing wise knowledge and conveying it through education. Throughout ancient history, Iranian civilization has been reconfigured over and over again through culture (Farhang) tendency principles.

Arberry in 1953 about the Farhang attributes in Iranian civilization in the preface of the book written by thirteen Iranologist scholars, demonstrated that: “What is it that gives form and flavor to a great culture? A long and prized tradition, poise and assurance, satisfaction with work well done-these are some of the evident but super- facial symptoms. Beneath the surface, other currents flow: poise is itself the delicate balance of forces striving in contrary directions, satisfaction a hardly-won relief

from deep-set discontent. It has been often remarked that the Persian¹²⁶ character is full of inconsistencies; the observation is true, but the phenomenon is a necessary condition of the perennial consistency of Persian civilization. Conflict within the Persian soul has saved the Persian mind from ever becoming sterile¹²⁷.”

Consequently, to gather up the results of this brief study around the Farhang (culture) term from the middle Persian language origins and cultural area, the following diagram provided. The Theoretical formulation of this concept configured in this diagram. Finally, the comprehensive definition and general features of Farhang(Culture) from the perspective of this thesis discourses in the next frame. The extended theory of Farhang employed in the next step in defining the cultural landscape.

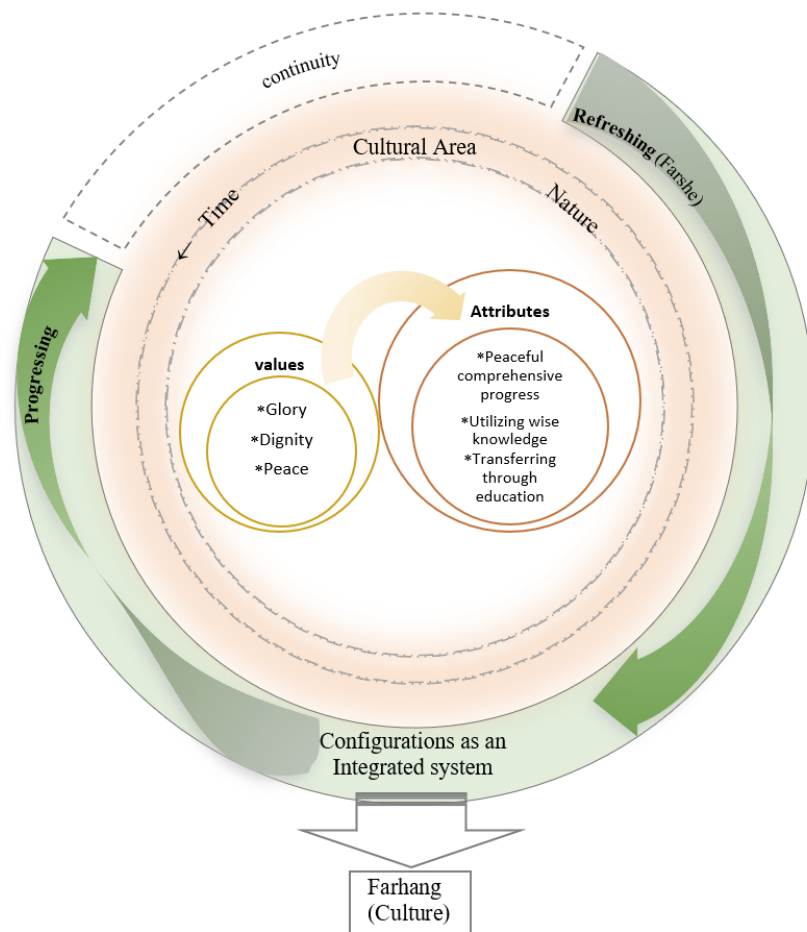


Diagram 6 : Configuration of Farhang (Culture) attributes, Source: Author,2019

Farhang (Culture) is the collection of underpinned and contributable values, transmitted by education which is the dignified essence of human beings and the expression of happiness and inner peace, its scenes, startling images of the nation's wisest knowledge, which are not only drained in the intangible values but also have traceable influence in the material values. Farhang (culture) is the multi-criteria integrated system in which damage in whatever sector will contagion to the other parts and, in equal measure, progress and development in each attribute will strengthen and nurture others. Any activities carried out within the framework of Farhang (culture), ought not to confront the natural environment values or underestimate the critical status of ecological features in creating the cultural contexts, they should consider the collective interests and respect the global peace because these are the underlying principles of Farhang. Farhang is a progressive, constructive and continuous phenomenon, however, the pace of this progress is not constant and various hinder or accelerator intervening the speed of advancement. The domain of culture is changing over time and its fundamental values are the face of invasion and challenged by other cultures, these tensions and interactions cause to transform the attributes and domain of cultures. Some cultures are more enduring and lasting with extensive domain and long history that have been favored and refereed by societies because their values are more adaptable and aligned with the high communal values of humanity. These alive cultures repeatedly at different era have been sprung and sprouted from vast and deep roots. Culture is constantly evolving and ongoing despite its cascading life cycle, can recover its defected parts by refreshing (Farshe) and reconfiguring the system regarding the past patterns and knowledge and forging new shapes in its cultural area. The more cultural values are elaborated and sophisticated in its natural and historical context, the more complexity and enrichment in its attributes are quantifiable. Culture sparks illuminate all details of human life manifestation, from everyday life choices such as the type of food and clothing ,to the individual manner, social mores, celebration, mourning, game, art, literature, architecture, and landscape architecture to the image of a nation in the global arena, all are impressed by the culture.

2.1.3 The concept of “Farhang” in the novel definition of the cultural landscape

Every cultural system is born and grows in its natural context. Straightforwardly, since this research is about the legacy of Iranian civilization, it engaged to determine the frontiers of the CL definition in line with the cultural values of this realm and consequently provide a global definition with the essence of this civilization.

Considering the citing examples and glimpse review of the interpretation and origin of Farhang, further intersubjective research required in this field.

The research approach and methodology in excerpting the innovative interpretation of Farhang(culture) to provide a new and multi-faceted definition of CL term argued in this section. The critical review and the conceptual analysis in linguistic details of the word Farhang (culture) in this section adopted the dissertation's purpose in achieving the precise and comprehensive definition of the cultural landscape. It can be considered “ a new reading as an Iranian reading ¹²⁸” to the interpretation of cultural landscapes. To put all pieces together, the following definition of the cultural landscape offered to provide a dependable basis for extending the process of this inquiry.

The cultural landscape is a type of the natural landscape, which the continuous human interactions during history, create obvious cultural indications interlinked with its context, that can be examined tangibly and intangibly. These cultural traces arise in the framework of cultural values and attributes of each cultural area, and in societies where these profound values are progressive and refreshable, they are transformed over time and can be reconfigured in their

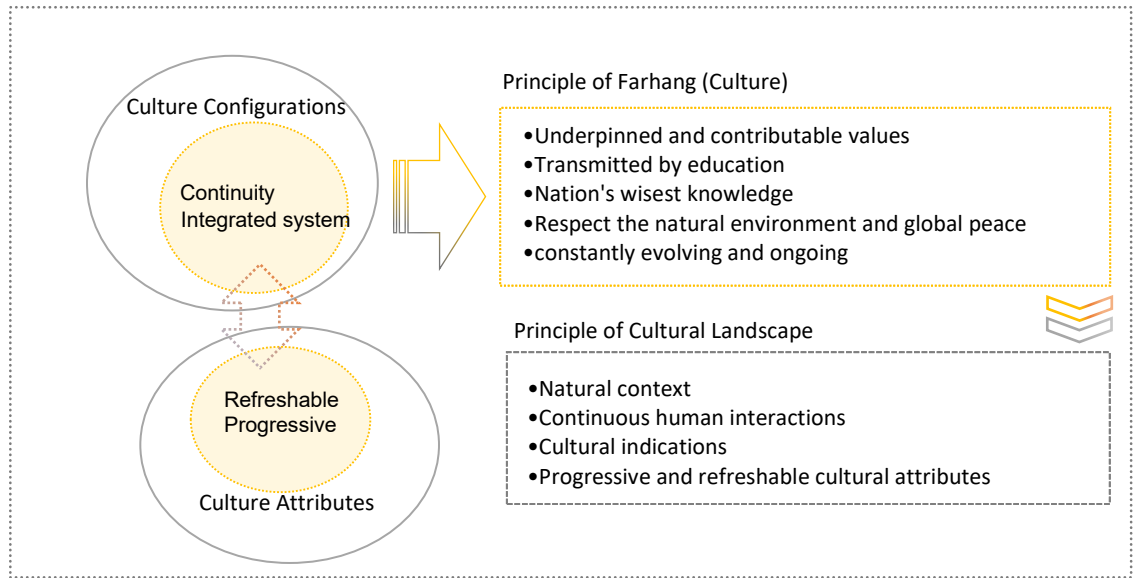


Diagram 7: Schematic summary of the conceptual framework for defining Cultural Landscape. Source: Author, 2020

Results and Discussions

- Whereas the mutual interaction of humans and nature, conceptualized in defining as the constructive and refreshable synergistic relation, therefore, the heritage sites which are the trace of threatening human life or natural resources cannot be categorized as a cultural landscape. Furthermore, the landscapes which consist of memories about human imperil actions in the natural landscape, that threaten the sustainability interests of human societies, seeking ideological conflicts and damage the global peace cannot be nominated as a cultural landscape.
- The fact that should be born in mind is that the interaction between humans and nature is required principle in identifying a landscape as a CL, but it is not adequate. For more explanation about this theoretical point of view, the war landscapes analyzed as a shred of evidence.
- The human interaction with the natural environment in several battlefield landscapes can be read clearly, but the intangible values in these kinds of interactions are not constructive,

peaceful, and refreshable and opposite of Farhang values. Although this theory has no conflict with preserving and presenting such CLs as World Heritage, and they are genuinely the World Heritage of humanity in the contemporary ages, but their exposure under the umbrella of CL term is hesitating. Whereas the World Heritage Organization is searching out to nominate new branches and aspects of the CL, under the overarching definition (considers military and war heritage as subsets of the cultural landscape), the importance of this topic is more lightened. In the ICOMOS 2003 session, it was an assumption that “the military theme could also be expanded intellectually and spatially.... what can we already identify as significant in landscape terms from the twentieth century? ‘Landscapes of nuclear power,’ ‘landscapes of the war and dead’¹²⁹.” From this all-embracing viewpoint, “The Scars of World War I¹³⁰” on several battlefields across Europe can be considered as a cultural landscape. Although such mentioned sites should be identified as the heritage site and ensured their protection and restoration, they cannot be introduced as an expression of human Farhang(culture) because they do not validate the fundamental values of culture constructively.

- The CL studies and the possibility of rebirth and revitalization of its values can no longer be separate fields of study. Filling the gap between these two principles is the turning point of this research. How to recognize cultural values over time and how to refreshing and progressing them and reconfiguring CL attributes is the cornerstone question in CL revitalization projects. Furthermore, “The role of time in landscape evolution and thus in the development of landscape palimpsests¹³¹” should be spotlighted as a fundamental base in this discourse.
- Two main factors that should be considered recognition in nowadays cultural landscapes global discourses are perceiving cultural landscapes as an (I) Integrated system, and (II) ongoing live phenomenon.

- Cultural landscape derivative from a culture domain that is a continuously integrated system. CL “with a multiplicity of driving forces, processes, actors, and outcomes;¹³²” illustrates a smart homogeneous system.
- Since intangible values are laced with natural features, the CL can ponder as a living phenomenon that takes the appropriate setting for its survival and growth.
- “Culture is integrated and its components are more than a random assortment of customs. It is, rather, an organized system in which particular components may be related to other components. If we can view cultures as integrated systems, we can begin to see how particular culture traits fit into the integrated whole, and consequently, how they tend to make sense within that context¹³³.” Recovery of the cultural landscape systems as a living phenomenon with continuous spirit, tangible remnants, and recorded memory, is the most recent and relevant approach to this research.
- This research will take up the hypothesis mentioned above and examine it in the Bisotun site as the case study and propose the practical guidelines derived from the characteristics of this approach to cultural landscape meaning.

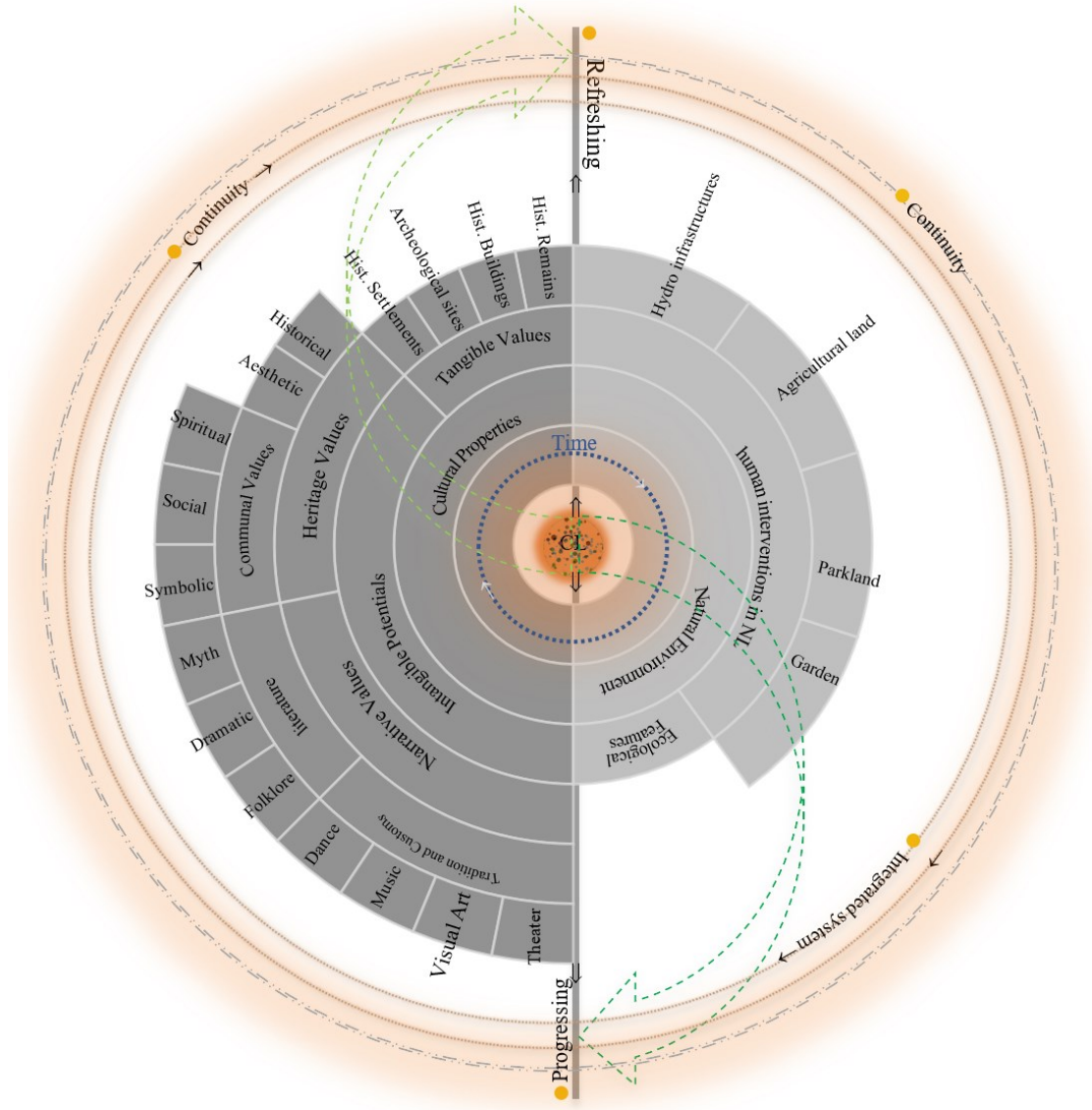


Diagram 8: Comprehensive Multi-Criteria Components Analyzing of Cultural Landscape as the Integrated, Refreshable, Progressive system, Source: Author, 2020.

2.2 Cultural landscape and literature

To proposal and add new subcategories, it is required to go over the more commonplace CL classification. The following explanation about the Subcategories' of cultural landscapes clarifies the position of narrative CL in the associative group. The characteristics and values and the method of recognizing the narrative CL will be exposed in this chapter.

The core research question which this sector will answer is:

Theoretical Questions

- How reading the narrative layers lied in the cultural landscape can define the principles of the narrative, cultural landscape as a particular subcategory?

“ICOMOS notes some new challenges and trends emerging in some recent nominations. One example is what is called an ‘evolving landscape’ where the idea of an organically ‘evolved landscape’ has been merged with that of a ‘continuing landscape.’¹³⁴” “Agreeing to the UNESCO’s WHC declaration about CL in 2003 “discussions about whether they are agricultural, industrial, or urban are therefore dealing with second-order issues. For all or none such describable can fit in one or more of ‘**designed**,’ ‘**organically evolved**’ or ‘**associative**’ models:

Designed: The most easily identifiable is the **clearly defined landscape** designed and created intentionally by man.

Organically evolved: This (CL type)results from an initial social, economic, administrative, and/or religious imperative and has developed its present form by association with and in response to its natural environment. Such landscapes reflect that process of evolution in their form and component features. That includes the relict (or fossil) landscape and continuing landscape.

Associative cultural landscape: The inclusion of such landscapes on the World Heritage List is justifiable by virtue of the dominant religious, artistic, or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent.¹³⁵”

According to this classification, the narrative cultural landscape stands in Associative CL subcategories. It means the focusing type of this research on romantic and epic CL upraises from the associative CL, and the proposed sort of epic-romance class by this research will be a new branch of this subcategory.

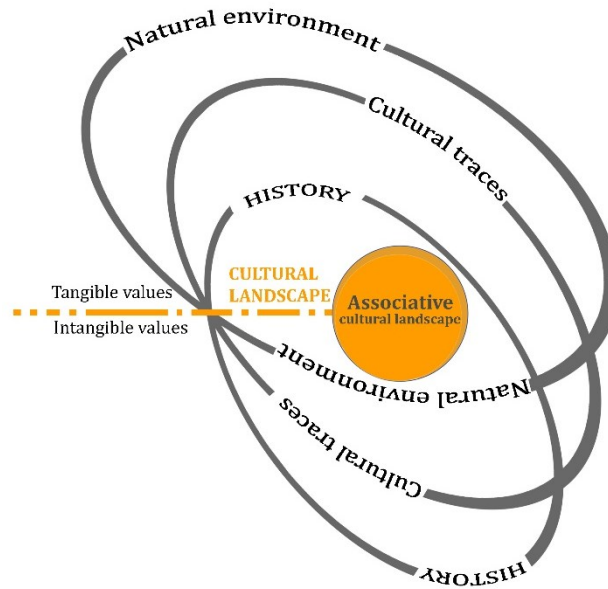


Diagram 9: Associative cultural landscape position and values, Source: Author,2020.

The following diagram presents all types of CL, which discussed in this chapter.

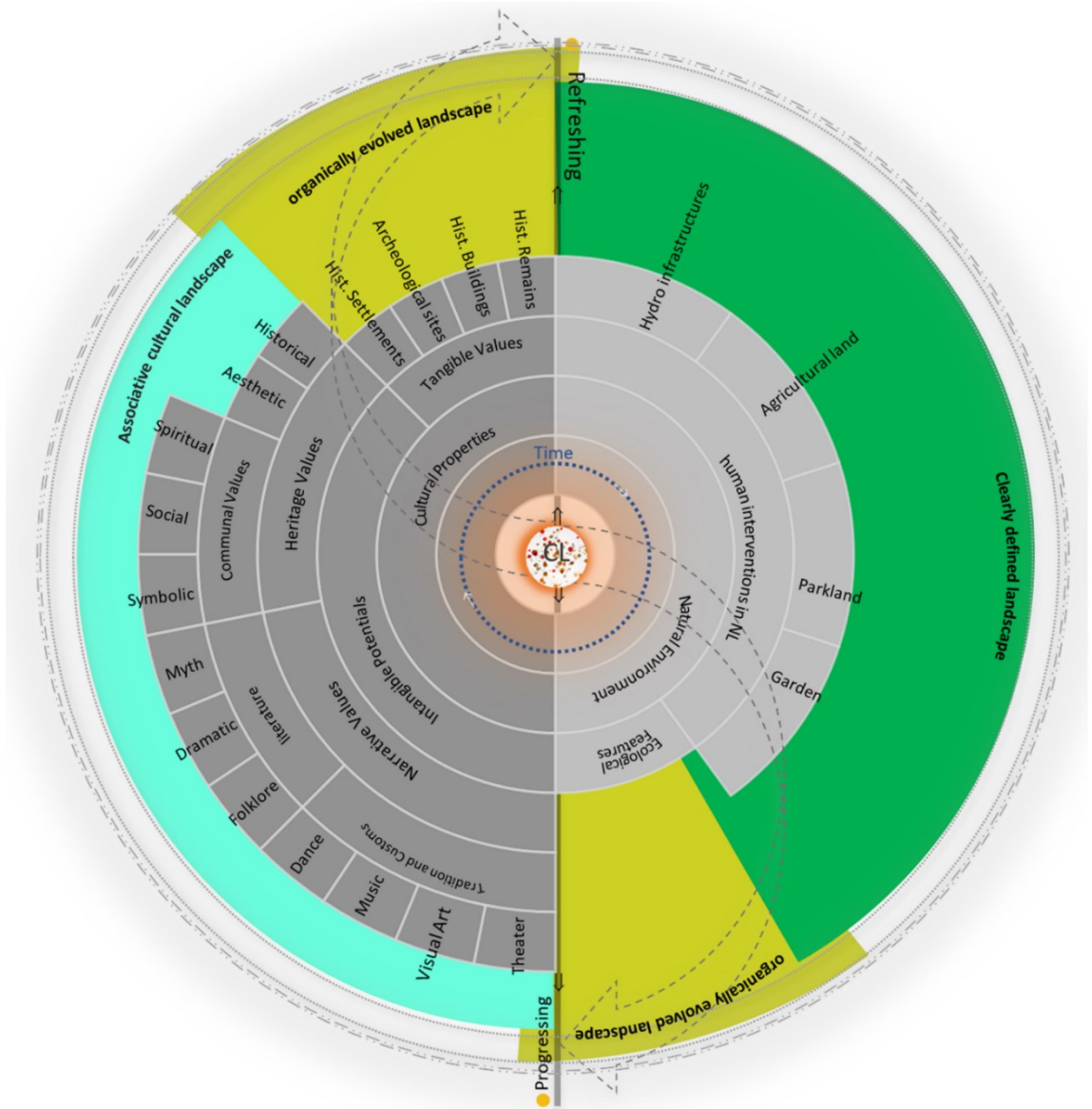


Diagram 10: Comprehensive Multi-Criteria Components Analyzing of CL as the Integrated, Refreshable, Progressive system. Source: Author, 2020.

2.2.1 Cultural landscape and literature, the interconnection between content and context

“To reveal and sustain the great diversity of the interactions between humans and their environment, to protect traditional living cultures and preserve the traces of those which have disappeared,¹³⁶” the concept of CL has gone forth. Whereas CL can be recognizable in intangible potentials, narrative values, literature, and traditions, and customs, the variety of categories and subcategories can be defined in the Cultural Landscape classification.

Rereading narrative layers of CL on the one hand greatly support to find clues in revitalizing the tangible traces of the landscape that are nowadays broken up, and to imagine the whole picture of CL, and on the other hand, landscape-bound literature as an indispensable intangible layer of CL ought to be, revived, and valorized due to continuing CL authenticity and meaning.

The unification of the landscape and literature creates the narrative CL and respecting the type of literature the subcategories of CL can be determined. If we face the physical-historical traces interconnected with written works, the most remarkable and phenomenal type of narrative CL can be evoked. Obviously, in this circumstance, the elements of landscape have been explained in literature work and can be visible in CL. This integration among (i) natural landscape forms, (ii) historical shapes, and (iii) legible literature narration, figure the conceptual framework of *Narrative Cultural Landscape* (NCL). The role of literature in conjure up the human creative imagination, desire, and beliefs about the natural landscape are visible in NCLs.

“The world as it exists beyond the pale of human sensibility is formless and inchoate, comprised of matter in the raw” the literature that narrates the natural features of the landscape as the raw material can transform the landscape into the cultural landscape, in other words, “converts this raw material into the kind of vista that we recognize as a landscape¹³⁷.”

Some of the characteristics of the landscape may be exaggerated in the novelist's and the poet's works, and the tangible elements of the landscape serve to carry the tale and the sentiment the writer intends to narrate the story, however reading the literature hidden in CL, more deeply can promote the *imagination* in creating an innovative plan in the cultural landscape site. “Thus, the

archaeologist or environmental historian might imagine how a landscape could have looked in the past, and a landscape architect or designer might imagine how it could look in the future. The novelist might imagine a landscape that could conceivably have existed but which is nevertheless of his own invention; The most we can do is to regard perception as a kind of guesswork ¹³⁸.

Scrutinize the “Storytelling and narrative analysis as key methods to investigate the various meanings and intimate relationships attached to the cultural landscape ” can be brought up in these practical results: literary tourism, theme park designing, and “Cultural Route” planning. “The Cultural Route recognizes and emphasizes the value of all of its elements as substantive parts of a whole. It also helps to illustrate the contemporary social conception of cultural heritage values as a resource for sustainable social and economic development. ¹³⁹”

Doherty in 2016 in his paper titled: Is landscape literature? stated that, “the writer and landscape architect use similar tools of allegory as well as satire, and metaphor, the design of the landscape is inherently tied up with the design of literature, and vice versa. landscape is of course not literature but landscape and literature are intertwined in ways that become very hard to separate. ¹⁴⁰”

Spirn pushes this theory more forward and states that “landscapes are literature in the broadest sense, texts that can be read on many levels. ¹⁴¹”

Furthermore, Cameron in 2012 claims that ‘stories’ are increasingly seen as ‘a powerful method and a useful tool, designed both to demonstrate affective and emergent geographies and to move audiences toward new realms of thought and practice. ¹⁴²”

Cultural landscapes “testify to the creative genius, social development, and the imaginative and spiritual vitality of humanity. They are part of our collective identity. ¹⁴³” Understanding the cultural landscape is like literature comprehension that due to incurring a sense of the overall meaning and profound reading process, the *content and context* interconnection will be disclosed. When a piece of the text changed or removed, the reader(landscape architect) should adjust the ambiguous or broken lines and imagining a sense-making interrelation between the context and content.

Regarding the enduring narrations interlocked with the landscape can provide valuable information about the context and fill the gaps in interpretation and transmitting past knowledge.

Reading “To design wisely is to read ongoing dialogues in a place, to distinguish enduring stories from ephemeral ones, and to imagine how to join the conversation.¹⁴⁴” Due to cross-fertilization of the context’s features “and emphasizes the value of all elements in the cultural landscape as substantive parts of a whole¹⁴⁵,” this section illustrates the thematic structure of literature position in cultural landscapes. The principles of CLs which fall into the narrative CL category and epic-romance subcategory will be discussed in the conclusion of this section.

The question of how the cultural landscape can continuously evolve in the future? can be answered by the discovery of its narrative layers. “There does need to be a clear understanding of which parts of the (CL) evolutionary process may evolve, and how, and what aspects should be maintained as a ‘golden thread’ linking what is there now to the way the landscape has evolved over time.¹⁴⁶”

The question is, practically, how can literature be the golden thread in the tangible and intangible values connection? One of the best examples of creating a connection between tangible objects and intangible literature narration, illustrated in the museum of Innocence in Istanbul, Turkey. The Museum of Innocence¹⁴⁷ is both a novel by Orhan Pamuk and a museum he has set up. From the very beginnings of the project, since the 1990s, Pamuk has conceived of novels and museums together. The story describes life in Istanbul between 1950 and 2000 through memories and flashbacks centered around two families – one wealthy, the other lower middle class. The museum presents what the novel’s characters used, wore, heard, saw, collected, and dreamed of, all meticulously arranged in boxes and display cabinets. The novel was published in 2008; the museum opened in Spring 2012.

The museum links, photos, and brief explanations depicted on **GP-1**.

As respects, the typical intangible features of Bisotun CL, “gold thread,” is hidden narrative literature. By creative reading, the interlined and overwritten of this site, the novel sub-category as Epic-Romance narrative CL derived. Notwithstanding, the theory of Epic-Romance narrative CL brought up, after interdisciplinary exploring on the Bisotun site, the analysis of this aspect will be divulged in the next chapters (chapter 4, zone 3.) for keeping the thesis coherency.

2.2.2 Taxonomy of Narrative Cultural landscape: Epic and Romantic

“Revivalist tendencies often emerge in relation to sophisticated discourses of authenticity, cultural or countercultural memory, and the reshaping of the self in relation to a known or an unknown other.¹⁴⁸” Reviving the relevance between historical figures, and legible literature narration of NCL impresses the process and results of the cohesive revitalization plan. As Hyden¹⁴⁹ in 1997 stated the story narration is “one of the ways in which we create and give meaning to our social reality.’ Stories provide individuals with a powerful tool to make sense of their worlds and realities, and its different meanings can improve planning practices, particularly in the framing of different planning alternatives (Bury 2001; Cronon 1992, Bulkens, M. (n.d.). 2014).¹⁵⁰

For the last decades, ' literary studies have been intensely inquiring into the way space is represented within diverse contexts of literary narration.¹⁵¹”

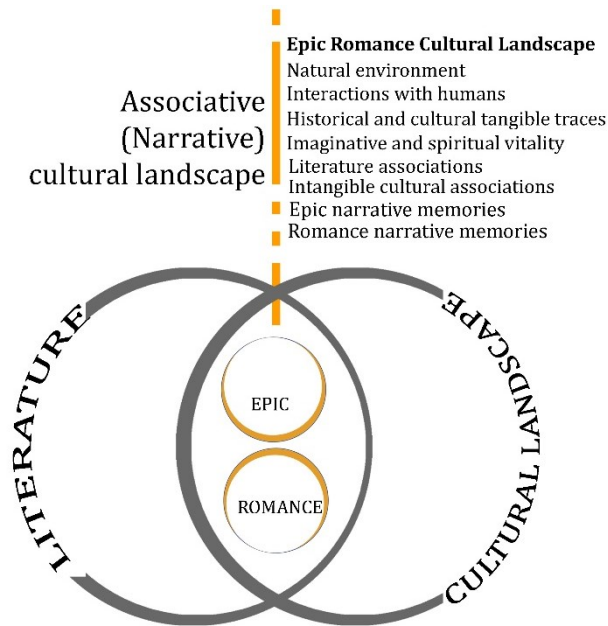


Diagram 11: Epic Romance cultural landscape characteristics, Source: Author, 2019

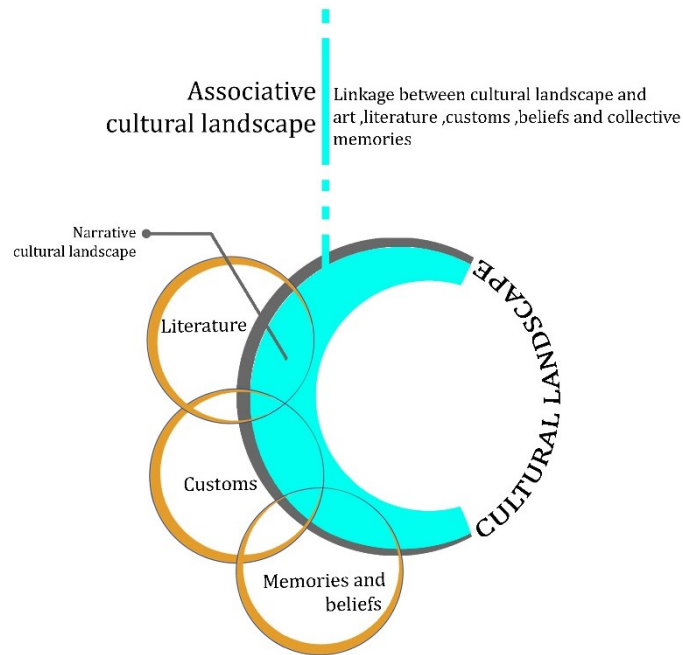


Diagram 12: Linkage between cultural landscape and art, literature, customs, beliefs and collective memories

Romance genre: literary form, emerged in France in the mid-12th century in aristocratic court contexts which highlighted chivalry attitudes as a moral code of conduct. The story narrated around the chivalry relations with women of majesty whom they obeyed.

“In modern French, a *roman* is just a novel, whatever its content and structure; while in modern English the word “romance” (derived from Old French *romanz*) can mean either a medieval narrative composition or a love affair, generally one of a rather idyllic or idealized type, sometimes marked by strange or unexpected incidents and developments; and “to romance” has come to mean “to make up a story that has no connection with reality.”¹⁵² “There were rules which governed courtly love but sometimes the parties, who started their relationship with such elements of courtly love, would become deeply involved. A famous example of a relationship that was stirred by romantic courtly love and romance is described in the Legend of King Arthur, where his Queen, Guinevere, fell in love with Sir Lancelot. Many illicit court romances were fuelled by the practice and art of courtly love.”¹⁵³

Epic genre: The “**epic poem, epic, epos, or epopee** is a lengthy narrative poem, ordinarily involving a time beyond living memory in which occurred the extraordinary doings of the extraordinary men and women who, in dealings with the gods or other superhuman forces, gave shape to the moral universe for their descendants, the poet, and his audience, to understand themselves as a people or nation.¹⁵⁴” From the etymological discipline epic “from Greek epikos, from epos “a word; a tale, story; promise, prophecy, proverb; poetry in heroic verse, (can be interpreted in) pertaining to or constituting a lengthy heroic poem¹⁵⁵.”

In Oxford dictionary, the following explanation provided for the epic term: “A poem, typically derived from ancient oral tradition, which celebrates in the form of a continuous narrative the achievements of one or more heroic characters of history or legend.¹⁵⁶” Yoshida, the Japanese researcher in this field, stated that “Epic poetry has been and continues to be used by peoples all over the world to transmit their traditions from one generation to another, without the aid of writing. These traditions frequently consist of legendary narratives about the glorious deeds of their national heroes. Thus, scholars have often identified “epic” with a certain kind of heroic oral poetry, which comes into existence in so-called heroic ages¹⁵⁷.”

“Epic and romance are distinct literary genres that poets combine in some of the most effective narrative poems of the early modern period; Critics refer to these sorts of poems variously as “romance” or “romantic epics” or “epic romances” or “chivalric epics” or “heroic poems,” each designation emphasizing a slightly different part of, or way of looking at, the hybrid literary form. To simplify greatly, one might say that the focus of epic is war, whereas that of romance is love. ”

De Jong in 2012 in his *Studies in Ancient Greek Narrative*, emphasized on the geographical basis in epic genre creation and argued that: “Epic narrative memorializes places and encodes their dynamic profile utilizing embedded descriptions and dispersed toponyms laden with signification. Toponymic exemplifying genealogy, an expressive means that allows the past to project itself into the present, is explicitly set on a geographical basis and, in these terms, lay the geo-historical foundations of epic. Thus, next to various forms of representing space within the narrative, epic is also keen to establish the extratextual space created between the mythical and historical world.¹⁵⁸”

In line with this viewpoint about the connection of literature genres with geo-historical heritage sites, the concept of epic and romantic genres in this research will result in triggering the correlation between two realms; Landscape as the first skin and literature as the unseen able second skin of NCL.

Bunschoten and his colleagues in 2001 in the impressive book aptly named “Urban Flotsam: Stirring the City,” surveying several examples to didactic the relation between content and context of landscapes. It contains a variety of manifesto in the poetic setting of theme about the two skins of landscape (geography), the first skin as ground and the second skin in love, epic, life, collective dreams, desires, and expectations, which in some ways mimics the first skin. They provided different examples to show that we “scratch, mark or otherwise articulate the surface of the ground to place and orient ourselves,” which appear on the second surface. In 45th manifesto, it has been mentioned that: “An epic (landscape) geography is a metaspace embedded in the second skin of the earth – a virtual mantle forming a narrative unfolding that simulates the skin. Motion through the texture of the mantle unfolds the narrative. When a scenario is formed within the second skin using its resources, epic geography is formed.”¹⁵⁹

The Anne Spirn writings are the high influenced works in the field of reading landscape narrations. She believes that epic landscapes are designed to convey martial stories about very important historical and cultural events.¹⁶⁰

All of the above-mentioned reviewed sources have contributed to this research to open the argument about the Romance and Epic genres in western literature and then illustrate the relation of narrative layers with its context. These background reviews pave the way for the first Theoretical Goals of Case study:

- ❖ *Delving deep in the Iranian literature genres in Bisotun to categorize this site as a remarkable hybrid NCL to produce a new subcategory. Creatively reading the Bisotun landscape narrations, to diagnosing the hybrid dialectics in the case study.*

The following diagram synthesized the theoretical studies in this chapter and provided the principles of the narrative cultural landscape.

Defining the epic and romance sense aligns with this research objective depends on the meaning of these terms in the Bisotun landscape language. Via translating these words in the case study context, this research can develop the proper scenario for implementing recovery of the narrative layers in Bisotun's future planning. Whereas knowing the characteristics of Bisotun Narrative layers needs the prerequisite knowledge about natural and historical landscape, this section will discourse in chapter 4, Zone 3. After natural and historical analyzes, the following diagram will be completed in chapter4, diagram 19.

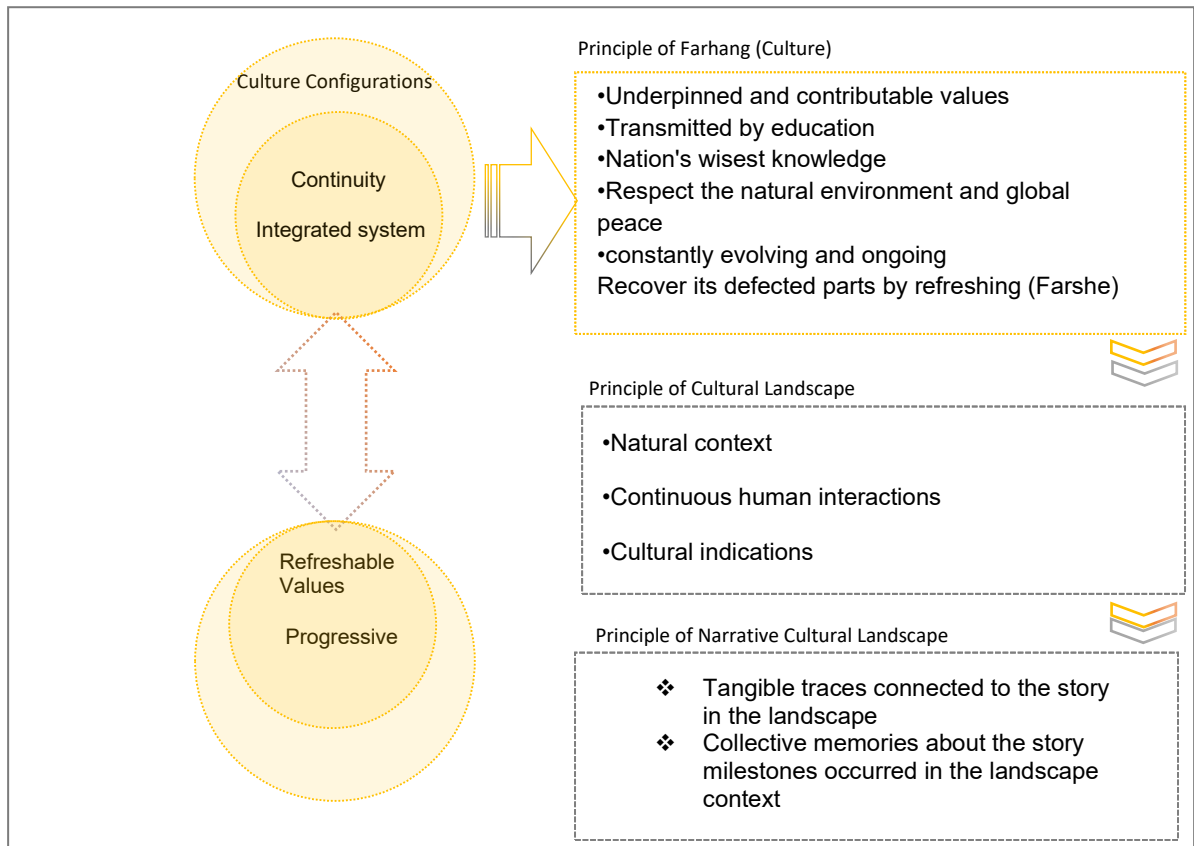


Diagram 13: Schematic summary of the conceptual framework for defining Farhang(Culture), Cultural Landscape, Narrative Cultural Landscape. Source: Author, 2020

Concluding Remarks

The structure of this chapter was based on two discourses: One, multidisciplinary studies define Cultural Landscape, due to using this definition and approach in research case study interpretation. The second was the position of literature in forming the collective memories of CL. In this chapter, the wide-ranging library studies carried out in different scopes related to these two discourses and embraced the summary of the research history as well. The completed part of this chapter imprints in chapter 4 zone 3 (Zone 3: Narrative layers in Bisotun Cultural Landscape).

CHAPTER 3: STRATEGIES AND TOOLS

3.1 Acupunctural Strategies in Cultural Landscape Revitalization

Introduction

The prospective potential of CL “as a positive and cohesive resource for the future¹⁶¹,” led to issue several declarations, guidelines, and statements to address Cultural Landscape (CL) valorization and revitalization actions. “Concerning cultural heritage, integrating the care, protection, interpretation, and proper use of heritage in all policies, programs, and actions, and in so doing, bringing benefits across the four areas of sustainable development: economy, culture, society, and the environment.¹⁶²” The increasing attention to CL revitalization align to the prospective “Sustainable Development Goals” resulted in numerous of intellectual concepts on this trend such as: Respecting and reinforcing cultural values and the social-environmental context, treating all groups with dignity and respect, making the necessary adjustments to address the cultural possibilities of a pluralist society, and finally “community-driven” strategies (¹⁶³, ¹⁶⁴, ¹⁶⁵).

The revitalization design projects as developing consensus, are intelligent interventions due to preserving the valuable, tangible assets of CL without damaging the authenticity and underlying intangible values integrity. “The intervention on environments, products, and services with the aim that everyone, including future generations, regardless of age, gender, capabilities, or cultural background, can enjoy, while also being able to access, use, and understand whatever part of the environment with as much independence as possible.¹⁶⁶” These kinds of sustainable intervention policies are boosting the socio-economic situation in CL.

This interaction is the result of the recovery of the people's influential flow in CL without any visible and nonvisible obstacles. Furthermore, CL revitalization can enhance synergy and distribute cooperation between economic and cultural context. Choosing the effective intervention which one is not offensive and false and damage the CLs structures or spirit of the place, desires investigation in system analyzing.

This section emphasizes the theory of sustainable interventions in the cohesive CL revitalization plan to converge protection and valorizing concepts. In this way, cybernetic system theory extended

its knowledge base in cultural landscape system analysis, and acupuncture strategy sized up to make principles of CL revitalization. The core research question which this sector will answer is:

Methodological and Strategic Questions

- How can acupuncture strategies imply in revitalizing the cultural landscape structures?

Based on the theoretical achievements of this section, the primary strategy in revitalizing the Bisotun CL as an integrated cybernetic system discussed in the proposed model in chapter 5.

3.1.2 Cultural Landscape Integrated System as a Cybernetic System

Cybernetic theory applied to multi-dimensional systems when the system is more complicated than the sum of its elements¹⁶⁷. "In the early 21st century, the wide use of the prefix *cyber* has become the marker of the penetration of computer and information science, broadly conceived, into myriad facets of our lives. This use of the term can be traced back to a single book, Norbert Wiener's *Cybernetics*.¹⁶⁸ He defined this concept in 1948 as "the scientific study of control and communication in the animal and the machine."¹⁶⁹ " Nowadays, the term is often used loosely to imply the "control of any system using technology."¹⁷⁰

The cybernetic term can extend its intellectual domain to any multidisciplinary systems to create a new ground such as cultural landscape cybernetic systems. The description and brief analysis of the cybernetic word in this subsection denoted to illuminate this theory in the relevance to the acupuncture approach to CL revitalization. Considering the context of acupuncture concept pillars in a cybernetic system, I endeavor to unfold the transition of term meaning in this field.

Set aside the several paradoxical interpretations of this term the remarkable definitions are: "The art of steersmanship: deals with all forms of behavior in so far as they are regular; offers a method for the scientific treatment of the system in which complexity is outstanding and too important to be ignored,¹⁷¹." The cybernetic term derived from the Greek word "kybernetes" that means steersman, pilot, helmsman, who is in authority for steering. Hence refers to the idea of wise governing, navigating in a self-adjusting system.

Bachman noted that cybernetic thinking is rooted in the holistic approach to the understanding of dynamic, complex problems¹⁷², while two years later, in 2014, Galloway claims that: "Cybernetics is defined thus in terms of a broad set of assumptions and techniques influencing society and culture at large. ¹⁷³"

"Cybernetics is associated with models in which a monitor, compares what is happening to a system at various sampling times with some standard of what should be happening, and a controller adjusts the system's behavior accordingly.¹⁷⁴" Studies in cybernetics provide a means for examining the design and function of any system, including to make them more efficient and effective.¹⁷⁵

The two essential pillars of this theory refer to the ability of the system in reading the past routes (feedback) and foreseeing the future ones (feedforward), aptly translated in the duty of a pilot in navigation. "Both *steering and control*, also called *feedback and feedforward*, are based on circular causality at a level which includes information processing. They are the same process, but feedback reacts to an event that already happened. It is an attempt to change its consequences. Feedforward 'reacts' to an event that is only anticipated.¹⁷⁶ "The discipline of cybernetics, of which Gordon Pask was a leading figure in the advancement of this intellectual domain, states, in principle, that systems are based on regulation, control, adjustment and purpose, filtered through means of feedback¹⁷⁷."

In architecture, Christopher Alexander ¹⁷⁸and Bruce Archer, Boyd Davis¹⁷⁹ , and Tange Kenzo and Isozaki Arata ¹⁸⁰applied the cybernetic theory system in their works, both theoretical and designed works.

"Cybernetics models are usually distinguished by being hierarchical, adaptive, and making permanent use of feedback loops. A cyborg can be defined as the human being who is technologically complemented by external or internal devices that compliment or regulate various human body functions.¹⁸¹" The concept of the cyborg ("cybernetic organism") based on the science fiction settings refers to a human-robot system that can control all living organisms inside its system to heal after damage and rehabilitate automatically (**Self-recovery**) after harm¹⁸².

In other words, the cybernetic system theory focuses on controlling the complex system by adequately responding to feedback as the *communication loops* among *critical points* of the problem. These target points can be sticking out in multi-diverse scientific areas and host of different disciplines, in the organic living phenomena or the humanities or the architectural design, the critical fundamental points can be found. Effective governing, automatic monitoring and integrated controlling the dynamic interactions among the **critical points** are the purposes of cybernetic systems.

Granting to the reading and the context of this research, a cybernetic system in cultural landscape studies involves two primary elements:

- 1) Cultural traces (material or immaterial) as **critical points**,
- 2) **Communication lines** (visible or invisible) as feedback/forward channels.

These two elements in the cybernetic **self-recovering** system should evolve into a protected coexistence life. The ongoing communication between the critical points of CL will be monitored and kept on in the future. By employing the cybernetic theory in the acupuncture approach in rehabilitating the CL elements, new ground will be created in this research, that by implicating this scenario in Bisotun CL fieldwork, the practical recovery strategies can emerge finally.

3.1.3 Acupuncture Strategy Meaning and Aim

“Acupuncture is a complex intervention that has its roots in China a little over 2000 years ago. In part, it has been an oral tradition, and in part text-based, which has led to a proliferation of styles and schools of practice.¹⁸³” This approach is built on “Asian historical, cultural processes and their primary philosophical and cultural contexts that were based on a very different world view than that which predominates today in Western scientific thinking. The trend of seeing the body, mind, emotions as one, rather than distinct,¹⁸⁴” refers to interpretation about harmony between human, tangible and intangible parts and surrounded environment. The core concept of many Eastern philosophies is founded on protecting the harmony between the human body and the environment.

“The traditional literature on acupuncture is full of contradictory ideas, even within the same texts. In the either-or assumptive model, one cannot accept the validity of competing ideas; if one idea is right, a contradictory one must be wrong¹⁸⁵, but in acupuncture philosophy variety of contradictory solutions considered.

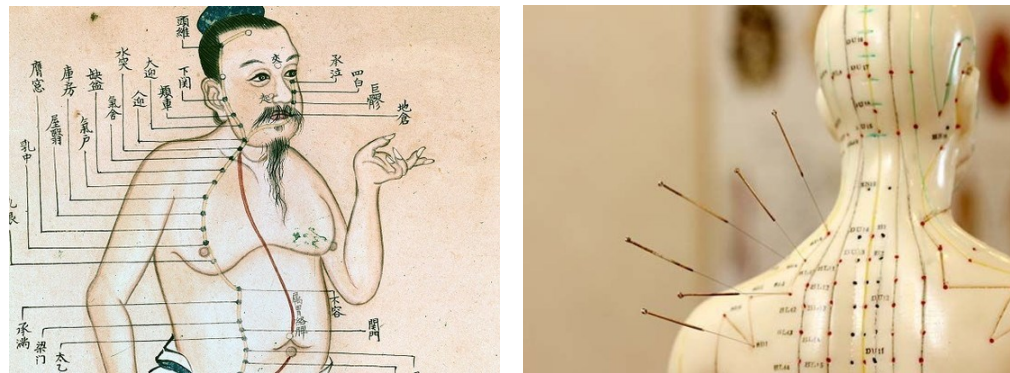


Figure 2: Acupuncture chart with a series of points indicated on. Source: Welcome Collection. Attribution 4.0 International (CC BY 4.0), 2020

Figure 3: Acupuncture Points, Source: <https://www.woninstitute.edu/acupuncture-points/,2020>

Interpreting the Cultural Landscape as a living system that is alive and needs pathological studies to diagnose disorders and recommending the proper healing therapy is the base concept in acupuncture strategies in CL. The concept of landscape as a living phenomenon discussed extensively by Ingegnoli in 2015. She depicted in her book: Landscape Bionomics and the Theory of Living Systems¹⁸⁶ that: being the landscape a biological level, it is the physiology–ecology/pathology ratio that permits a clinical diagnosis of the health state of a landscape, after functional analysis and anamnesis. No doubt that landscape bionomics has its predictive theory; nevertheless, it is necessary to develop this discipline.

Considering the CL as a living, ongoing complex entity talked about in several scholars' works.¹⁸⁷ In malice of this concept as a key essence presents in whole sections of this research, but profound discussion about this idea is out of this research scope. The intention is to point out this concept (CL is a living phenomenon) as the stepping stone in acupunctural strategies.

The similarity between the human body and CL that is faced with the surviving challenge can be explained in this vision. "As we can see, the human nervous system is composed of two parts, one being the central nervous system, and the other peripheral nervous system. However, only when acupuncture is applied to some specific parts of the human body, can high-level reaction occur. These parts are called **acupuncture points**, which act as sensors in cybernetics.¹⁸⁸"

The connection among acupunctural points creates by meridian lines and collateral¹⁸⁹ channels.

"Acupuncture points" can also be seen in any focused urban, rural, or cultural landscapes. This integrative strategy as "people's healthcare-seeking behavior" (Johnson, G.,2009) has been transmitted to urban studies and can be a useful strategy in the revitalization and wisely intervention in CL as well. The aims and definitions of the acupunctural strategy include broad domain with backgrounds from a range of disciplines: Target therapy, integrative thinking, low-cost strategy, small interventions with a large-scale benefit, top-down strategy, fragmentation and interrelation, upgrading public space and reinforcing social cohesion, "in-between strategies," aims to rejuvenate a neglected space, multi-focal development(Johnson, G. 2009, Casanova,¹⁹⁰ H., Bijloke,¹⁹¹ D. 2000)

"The theory of urban acupuncture is not totally new. It has been first introduced around the 1960s, after which it has been applied in South America and South Europe (Barcelona)¹⁹²". Two well-known examples of applying acupunctural strategy refer to Ghent city in Belgium and Barcelona in Spain. If the smooth transmitting the blood in the body (Qi¹⁹³) convinced as people flow in the city in Barcelona: "the Qi of blood run smoothly in the city, that is, to provide the citizens with a comfortable and happy life; thus the city's "container" and "energy" can be balanced between Yin and Yang.¹⁹⁴" The city of Ghent is implementing an "acupuncture strategy as well. This means diffusing culture and creativity throughout the city by spreading it across neighborhoods. Tangible projects focusing on urban regeneration are launched in every part of the city, creating a global landscape of innovation and participating in the development of a creative network throughout the city." (Bijloke, D. 2000). In Acupuncture vision, we do "the smallest effort in the critical point to get the maximum result just like the ancient Chinese "acupuncture" therapy ¹⁹⁵. "In the Barcelona Model, acupuncture

points play roles as urban public green space, public buildings, and courtyards, while people are the blood of the city. This strategy was to first deal with small and medium-sized public spaces and gradually transformed Barcelona into a living-friendly city.” (Minhao, Z., et.al)

During the recent years in China “Architectural acupuncture started from Pingtian and Hengkeng mountain villages near the heart of Songyang in 2015 and spread to the country’s boundary in the north and south in 2017. One year later, small groups of villages were formed to have an agglomeration effect.¹⁹⁶” “In 2014, Xu Tiantian, founder of Beijing-based studio Design and Architecture (DnA) began to work in Songyang County, in China’s Zhejiang Province. Her exemplary holistic planning concept of Architectural Acupuncture, which has gained the support of local administrative and political leadership, aims at revitalizing rural areas and comprises the renovation of production plants and of tourist and technical infrastructure as well as the creation of venues for culture and education and of social housing. Each of Xu’s small-scale interventions at the local level is unique, only the small budget is common to all of them.¹⁹⁷”

Xu Tiantian applied the acupunctural strategies in revitalizing the cultural landscape of the villages in Songyang. By surveying the getting lost technologies of the past achieved a future design strategy which she calls “architectural acupuncture”, which prefers smaller interventions to extensive redevelopments as catalysts for more sustainable processes. Today this sustainable original design strategy in this region attracts enormous interested visitors and known as the model example of cultural landscape revitalization projects.

Her projects in this region involve a variety of functions like the museum, bridge, cultural center, and pavilion. Take the bridge over the Songyin River in Shicang village for example: “The bridge links the two villages of Shimen and Shimenyu. The existing stone masonry bridge with its characteristic arches comes from the 1950s and is today closed to vehicles. With the renovation and upgrading of the bridge, Xu Tiantian designed a social location that unites the two previously connected villages from a cultural perspective. The architect-designed a simple wooden structural element, which defines the new space with its additive sequence. In the middle, a square planted

with trees invites spending time. The visual connection to the river, but, even more, the cultural elevation of the bridge, assists the two neighboring villages in defining a shared cultural space that makes it possible to experience their historical link in a new way. Not only did she provide a link between two communities, but the wooden bridge also features a square in the middle that is planted with trees to encourage the pedestrians to linger and share a cultural space together.¹⁹⁸ The brief description and project photos are accessible in the Good Practices section (GP-21).

In South America “authors such as the urbanist, Manuel de Sola-Morales, and the Brazilian mayor Jaime Lerner have used the acupuncture term to describe a strategy based on small urban interventions.” (Casanova, H, 2014) which signifies the minor intervention on specific points.

Jaime Lerner states that he applied urban acupuncture with some focal ideas to help the normal process of planning, the structure of living and working together, and multi-use spaces during day and night (Lerner, J.,2007¹⁹⁹). He could plan and design more sustainable public places. He indicates “that I have always nurtured the dream and the hope that with the prick of a needle, diseases may be cured. The notion of restoring the vital signs of an ailing spot with a simple healing touch has everything to do with revitalizing not only that specific place but also the entire area that surrounds it.²⁰⁰”

Via undertaking this strategy “that will allow flexible and innovative space management and would require a process of identification, innovative urban tools, revised legal mechanisms as well private and public actor’s involvement” ²⁰¹ will emerge. Finnish architect Marco Casagrande²⁰² believes that in acupunctural strategy, “these interventions are driven by small scale businesses and alternative economies benefiting from the fertile land.”

In the following conceptual figure, the two elements of the cybernetic system rendered in the context of the acupuncture approach to this theory of system.

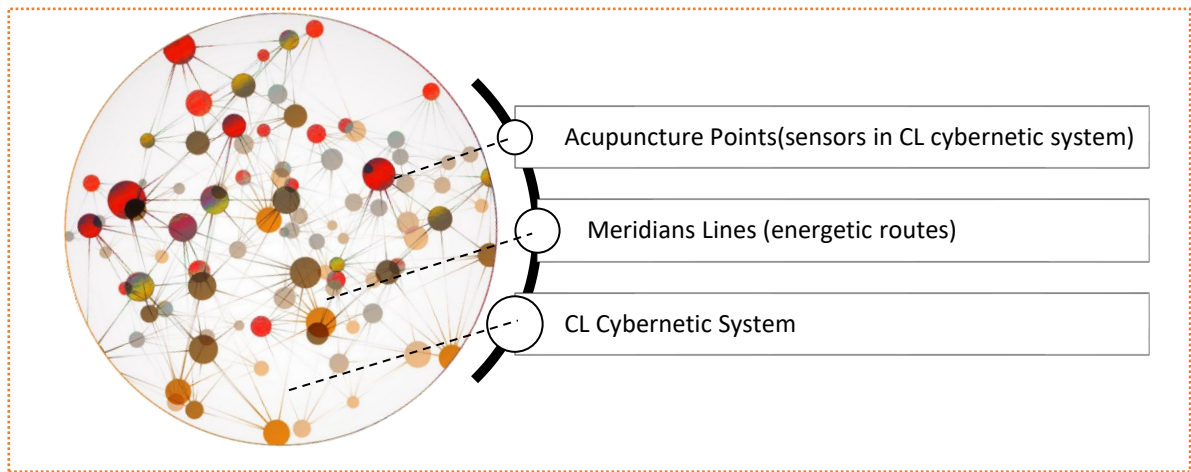


Diagram 14: Acupunctural elements in the cybernetic system Source: Author, 2020.

3.1.4 Acupunctural Revitalization Principles in Cultural Landscape Cybernetic System

The relation between acupuncture points and restoration process is mentioned clearly by Minhao, Z. et al.: “Once the human acupuncture point is damaged, partially or completely loses its functions and fails to act as a sensor, the human body will be unable to function properly. To cure this condition, the acupuncture points should be activated and restored to its normal functions, then various organizations of the body can start working again.” If we suppose ruined architectural monuments in CL as damaged acupunctural points in the CL cybernetic network, we can apply the **reconstruction strategy** for reviving the regular **flow** in CL.

On the other hand, the important note about the Acupunctural strategy is avoiding from idealistic changes in policies in CL revitalization projects. The viewpoint of Oriol Bohigas, former director of Barcelona Urban Planning Bureau, about this city, which applied this strategy for regeneration, is remarkable. He said: “We were doing some specific planning which could be partially implemented at that moment. This also means resolving the imperative, which ensures citizens getting a better living environment *without too much idealism.*”

“Establishing acupuncture’s effectiveness, and therefore ‘proving’ whether it works or not, for specific conditions and in defined contexts is no small challenge.”(Johnson, G. 2009) The most transparent explanations of how acupunctural design approach can be employed as a prolific,

integrative strategy, provide a connection with the past, and preserve the sense of continuity explained in practical examples of this section.

The fundamental principles of three main acupunctural strategies that have been studied in these best practices are:

- 1) Preservation and protection
- 2) Reconstruction and semi-reconstruction
- 3) Virtual reconstruction

Following the brief explanation of these strategies, the proposed definition of the acupunctural approach that is confounding of all these stages will be discussed. The acupuncture points can be sorted into two **Tangible and Intangible points** which in the NCL cybernetic system these are the critical pivot points. Straightforwardly tangible acupuncture points included: historical architectural elements and archaeological remnants, and The immaterial values, narrative layers, and underlined collective memories could be categorized as intangible acupunctural points in CL.

3.1.5 Preservation and Protection

According to The Venice Charter²⁰³ for the Conservation and Restoration of Monuments and Sites that is a set of guidelines, drawn up in 1964 “The principles guiding the preservation and restoration of ancient buildings must be agreed and laid down on an international basis, with each country being responsible for applying the plan within the framework of its own culture and traditions.”It means that finding the acupuncture points as resources and obstacles on their flow should be done according to the local Pathology of CL.

One of the well-known acupunctural preservation projects in China accomplished by Kovac’s team in the Cultural heritage of “The army of terracotta soldiers uncovered at Xi’an, China, in EURO CARE ARCH IN-SITU project. Aimed at developing techniques to assess the needs of different sites and find customized solutions to individual problems. In this project, he has re-designed the original plans for the building so that construction has continued on the upper floors,

leaving the ground floor and basement as a museum. The excavated flooring has been preserved by a glazed and sealed floor, and the basement walls are also protected by extensive glazing. Artifacts found on the site are displayed where they were found during the archaeological excavation.²⁰⁴As a result of the progress achieved in this EUREKA project, authorities will be able to promote tourism while ensuring the preservation of the tourist attraction itself. The potential economic benefits are enormous. By keeping the environmental conditions (careful ventilation and light filtering) constant and by simulating the original conditions of conservation, further deterioration is stopped. With the combination of a thorough heritage presentation program, visitors are exposed to archaeology in a very direct and unique way.²⁰⁵ Designing the creative protection shields with multilayer glass was the most critical decision in the acupuncture design approach in this project. In this project, the ancient artifacts as focal points, the tourist flow could be circulated without any damage to tangible remains by and creating visual access to this heritage. In the corresponding recovery, the flow in meridians between focal points. This intelligent intervention by applying new technologies can be categorized as an acupuncture approach.

EUROCARE ARCH IN-SITU project brief description and photos depicted in GP-2.

3.1.6 Reconstruction and Semi Reconstruction Strategy

Reconstruction as a self-recovery strategy in the Cultural Landscape cybernetic system has magnificent outreach advantages. Reconstruction strategy is “based upon a detailed and systematic analysis of environmental, archaeological, architectural, and historical data, including analysis of written, oral and iconographic sources, and photography.” (Ratified, P 2008) The significant note is that the reconstruction strategy should be done respecting Nara Document (1994) in authenticity and spirit protection. Reconstruction strategy that aligned with international conventions can result in multilateral sustainable advantages. For instance, in the “Roman City in Carnuntum Park” valorization project, the acupuncture approaches applied in socio-economic and cultural aspects of this CL. Considering this practical experience “in the reconstructed and semi-

reconstructed Roman City authentically echoes Roman life and city architecture in the 4th century A.D. Building work was able to be carried out partly with original Roman stonework and with reconstructed Roman tools using ancient building technology and craft skills. Places are fully equipped, and every single room is furnished. This project has been reconstructed based on written and illustrated sources as well as preserved originals from other museums. Four buildings have been re-erected in their original locations.²⁰⁶”

In this project, the acupunctural approach can be recognized in removing the physical and immaterial obstacles on **people flow** for visiting this CL. Recovery the past knowledge in reconstructing the historical ruined buildings, by detailed reconstruction strategy resulted in the visual and spiritual connection with the past layers. This reconnection enhanced synergy between acupuncture points. Brief project description and highlighted points depicted in GP-4.

3.1.7 Virtual Reconstruction

Acupuncture (strategy) trying to recuperate our collective loss of memory and identity.” (Lerner, J. 2014) The immaterial values, narrative layers, and underlined collective memories categorized as intangible acupunctural points in CL. In recalling the collective memories and narrating histories by employing Virtual reality technology with smart devices, the world of materials is not only a world we can think about but one that we can think with it. ^{207, 208}

Eliminating intangible barriers in recalling collective memories and narrative stories cause to recreating the people flow, virtually or in reality, in CL sites. Hence, we can realize this scheme as an acupunctural strategy with valuable social and cross economic impacts.

The theoretical background and variety of good practices in this field, discussed in the following sector of this chapter.

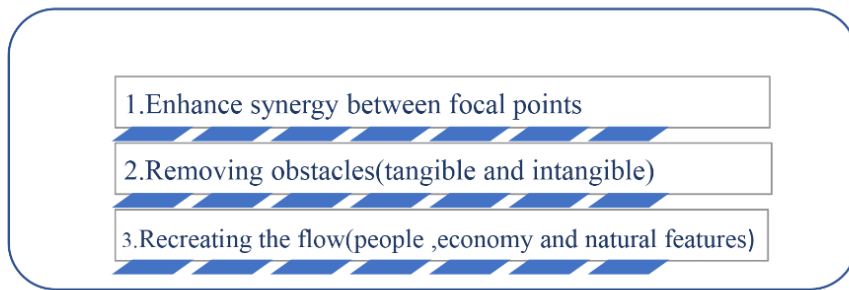
Concluding Remarks

“Nevertheless, the acupuncture points occur in special places of the body called meridian lines. These lines are located all through the body, and there happen to be hundreds of acupuncture points. Meridians are the energetic routes that are vital for life and health, and energy has to flow unimpeded. The activity of the acupuncture needles is to clean the obstacle to energy flow and regain good health²⁰⁹.” A similar approach can cause to revitalize and rehabilitated the CLs. In Cultural landscapes sites as “multi-dimensional sensitive energy organism, and a living environment” (Hoogduyn, R.2014.)

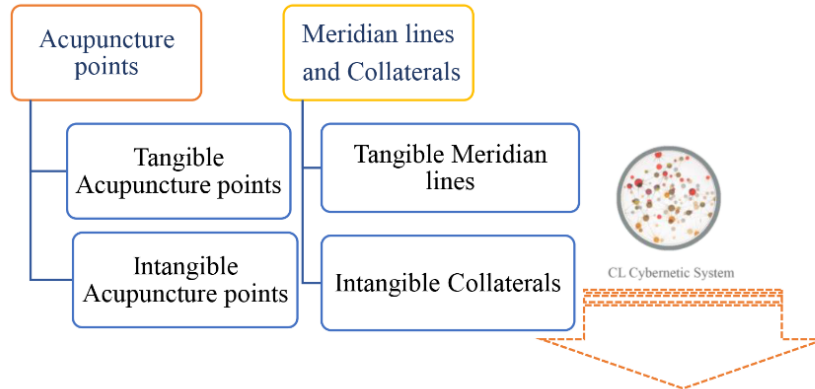
The acupunctural revitalization process includes three phases:

- 1) Defining the acupunctural points and Meridians,**
- 2) Investigating the obstacles and barriers in interconnections and socio-economic flowing**
- 3) Planning the small interventions as *therapy* techniques to enhance synergy between focal points.**

By taking a descriptive-analytic approach to the pioneer's viewpoint, and studied examples an interpretation according to the literature review and theoretical background relevant research in this section, the conceptual framework for acupunctural revitalization strategy and“ the diagnosis of what to preserve, how to preserve it, and how to be presented to the public,(Ratified, P, et.al.2008)” is indicated in following diagram 15.



Cybernetic CL system elements in Acupunctural approach



Practical Strategies in revitalizing CL in Acupunctural

Meridian lines Damage level

- low damage level , Acceptable line flow
- Midium damage level, line flow lower than expectation
- High damage level ,Intersected and intrupted line flow

Acupuncture Therapy

Minor intervention Strategy

- Protective strategy
- semi-reconstruction strategy
- Reconstruction strategy

} System
} Recovery



Diagram 15: Conceptual and practical framework of acupunctural approach in cybernetic CL systems. Source: Author, 2020

3.2 Innovative Technology as a Tool in Revitalization the CL Intangible Layers

Introduction

Innovative technologies run a new paradigm in cultural/heritage landscape and have reshaped our perception of the intangible values and integrated planning in these sites. In this subchapter, the role of advanced tech in revitalizing the intangible values of the narrative, cultural landscape is brought up. Scrutinizing in the latest topics in the literature review and analyzing best practices in this field, the principle of applying new techs in CL sites described. The characteristics of the narrative cultural landscape have been discussed in the previous chapter. Applying the innovative technologies in up-scaling the reconnoiter process and illuminating the practical techniques in cherishing and reviving the NCL is the result of this section. The considered good practices have effective achievement in merging of two phenomena, the first as a symbol of past and locked in history, -heritage/cultural landscape- and the second as a symbol of the future, evolving in variable speed, - innovative tech-.

Prudently Revitalization of intangible layers of cultural heritage requires investigation in theoretical disciplines and also innovative technologies.

Cultural Heritage (CH)/Cultural Landscape tourism represents the fundamental socio-economic impressions in sustainable development worldwide. The 3D visualizing projects as the introduction to 3D heritage studies have been followed in several CH/CL sites around the world.

The unique value of CL refers to a combination of nature, tangible historical remnants, and intangible authentic layers in particular areas. Immaterial value as the core of cultural diversity can be highlighted in a smart tourism plan in CLs.

Recovery of the intangible layers of CL requires investigation in narrative layers and also choosing the proper innovative technologies. The smart revitalization approach should provide productive interaction between CL and visitor. Flexibility in design and democracy in planning to allow visitors to create a personal experience in CLs are achievable by smart technologies.

Immersive technologies such as virtual reality (VR) and augmented reality (AR) have enabled tourism managers to enhance tourists' satisfaction by providing them with memorable experiences. Such immersive virtual environments based on new and upcoming technologies are changing the way tourism operators stimulate their customers before, during, and after their experience²¹⁰. The future concern is illustrating the intangible heritage narrations and preserving the shared cross-border databases about Cultural Landscape multi-criteria characteristics. The core research question which this sector will answer is:

Methodological and Strategic Questions

- How innovative technology adopted to revive the CL narrative values in similar practices?

The objectives of this subchapter are first, (I) exploring and presenting good international practices in cooperation between these two phenomena (II) analyzing a variety of innovative technologies in actualizing intangible potentials of CH/CL by pushing the memories over the edge of reality.

In the various case studies that have been studied in this field, the influential role of critical cultural points in the context of the cybernetic CL system has been conceivable. Utilizing advanced tech in the field of revitalizing CL is in line with acupuncture strategies - the least intervention and the most effective strategy – that has discussed in chapter 3-1. In this chapter, innovative techs as a practical **tool** in acupuncture revitalizing the intangible values of CL discoursed.

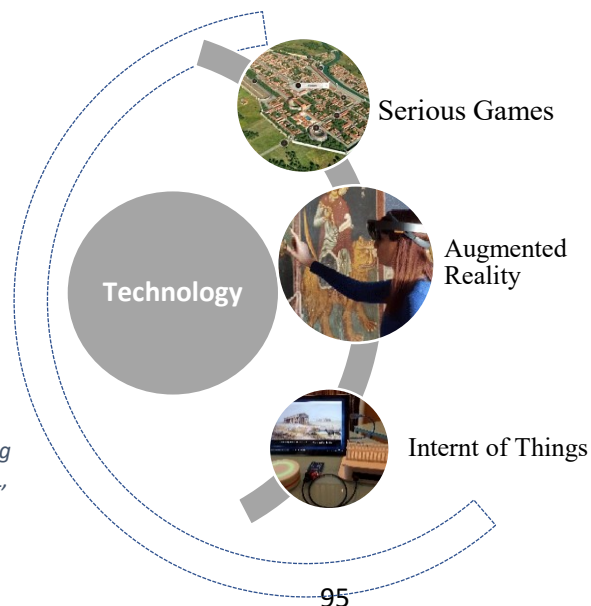


Diagram 16: Innovative Technologies in Revitalizing the Intangible Values of CL, Source: Author,2020

3D Photogrammetry models for visualizing CL

Piccialli ²¹¹ highlights the role of digitalization in protecting the intellectual authenticity of heritages. He declares, whereas the cultural heritage is a crucial economic source that is a viable national advantage, in the framework of intellectual property preservation, it can be digitalized. Its economic potential requires the development of sui generis rights for intellectual belongings protection. For socio-economic and cultural drives, the cultural heritage should be protected nationally and internationally valorized and promoted by its digitization.

Good Practice: MIT Design Heritage research group:

For example, MIT Design Heritage research group has remarkable experiences in 3D visualizing projects in several CI sites with profound respect for the authenticity of the case study. The noticeable approach in their designed platform is its collaborative structure for collecting data and sharing the 3D products in an online database. This strategy provides a multifaceted utilize of visual content in a variety of subjects: education, restoration, and community development.

“The goals of the MIT Design Heritage tool is to allow users to upload, share collaboratively, and "patch" 3D Photogrammetry models for digital preservation of architectural sites. Digital Collections each digital heritage building contains a gallery of individually uploaded 3D photogrammetric models and a collaborative patchwork area.²¹²”

MIT Design Heritage in the shared platform of individually collected 3D captures has presented the future concept of the globally accessible database of the variety of research outcomes and products which “collaboratively compiled narratives about heritage places and their spatial designs.”

The photos and information links about the MIT Design Heritage project is available in the **GP-3**.

ArkaHeritage co. (Iran Digital Heritage Center):

ArkaHeritage co. (Iran Digital Heritage Center) was established in 2015 to document, simulate, archive, introduce and disseminate Iran's cultural and natural heritage. In Mirasarka webpage is

expressed that: The human legacy is highly unstable and vulnerable to natural disasters and human error; hence, the Arka legacy is based on new technologies such as photogrammetry, photogrammetric drones, laser scanning, gigapixel photography, virtual reality, augmented reality, and 3D printing.

Ubiquitous effective actions in 3D visualizing and documentation of highly diverse CH/CL in Iran require substantive and fundamental steps from MCTH (Ministry of Cultural Heritage, Tourism and Handicraft) in Iran, which is the crucial priority that has not been considered yet. The formation of small research groups like Mirasarka Group despite limited scope and results can be a sign of recent shifting approaches to CL innovative techs in Iran. This Group has so far only had sporadic projects in the field of 3D visualizing and documentation, all commissioned by the State Heritage Organization and not available to the public and independent researchers through online infrastructure. A portion of the group's activities and portfolio is accessible in their website link: <https://mirasearka.com/>

2.1.1 Virtual Reality in Cultural Landscape

The hidden story in the Narrative Cultural landscape transmitted by smart storytelling and virtual imagining technologies. This upgrading technology employs intelligent sensor applications in NCL sites and strongly related to pervasive and ubiquitous VR devices.

Virtual cultural/ heritage landscape is the body of works dealing with information and communication technologies (ICT) and their application,²¹³ which woven with the real landscape context. VR tech can constitute a powerful tool to enhance people's fruition and enjoyment of such spaces; thanks to ICT technologies, a cultural object can be effectively "dressed" of its context and juxtaposed into it. (Piccialli, 2016)".

"AR and VR are promising technologies that may have particular impacts on multiple sectors. The predicted market size for 2020 is set for 143.3 billion dollars.²¹⁴"

Virtual Reality environments that endeavor to recovery and reinterpret the CL for audiences composed of three main components:

- 1) Content: Intangible narrative content that lied in legends or historical documents
- 2) Transmitting device: An electronic device like a cell phone and VR screens
- 3) VR technological structure in computer visualization.

Utilizing the electronic media to reconnect today to past memories, knowledge, story/history of a cultural/ heritage landscape can be figured out the virtual CL outlines. Recalling the collective memories and narrating histories by employing this technology with smart devices is achievable (Liu, J. 2018). The multifaceted benefits of using VR technologies in this domain are not only close to attracting tourists but as well as deepening public awareness in protecting cultural heritage. From Ioannidi's point of view, "That applications do not only provide information, but they can also stretch and extend the visitors' sense of involvement and give them the opportunity to learn while having an entertaining experience." (Ioannidis, et al. 2014). The virtual heritage can provide a platform for multi-criteria knowledge and pedagogic goals as well. For instance, in the "Rome Reborn" VR project, is one of the most significant virtual heritage projects in development since 1997. This project "Consists of a digital reconstruction of the ancient city of Rome, within the Aurelian walls, as it appeared in 320 AD. The current version of the model is 3.0, optimized for use in real-time through augmented virtual reality" The demonstration, which was offered during the day, allowed a visit to the Roman forum with many possibilities of choice and in-depth analysis through specific viewers to experiment directly with virtual reality.²¹⁵ " A series of products for personal computers and VR headsets that make it possible to visit the now-vanished ancient city²¹⁶." Bernard Frischer, director of 3D Modeling, stated that about the ultimate purpose of this notable project, "We want to democratize knowledge."²¹⁷

Although VR techs do not require the tangible context and the product can be used and visualized the site in any place, in the majority of VR Techs examples, employed in CL sites and visitors can evolve in VR experience in site and "digital contents are juxtaposed to real collections²¹⁸."

Nonetheless, the essence and structure of this technology do not depend on the real situation. The use of the VR environment in attracting tourists before leaving to visit the CH/CL destination, in reality, is one of the applications of this tech. The advantages and disadvantages of applying VR in similar instances will be argued in the final section of this chapter.

Eva Pietroni, who is a scholar in digital CH storytelling, and engaged in several projects²¹⁹ in this field ²²⁰in 2019 in her paper about virtual experience design in museums, surveyed 11 examples and evaluating the user experience inside museums with a different type of virtual techs. She argues that via “a general direction” in the content and form of virtual experience the visitors' feeling of confidence and trust will be aroused. They will engage actively by “expectation and discovery that makes him/her feel at the center of an emotional and creative experience of a progressive appropriation of meaning. “She denoted that in comparison with traditional visits among collections organized according to a taxonomic approach, visitors prefer the hybrid of narration, interaction, and circulation of social-cultural patterns. The role of interactive experiences where the user is guided within a story is more motivating for publicity and more prolonged, which has been proofed in different visitor studies (like Hassenzahl, et al. in 2011)²²¹.

Good Practice: Virtual Museum of the Tiber Valley (GP-4)

“The aim of the Virtual Museum of the Tiber Valley project is the creation of an integrated digital system for the knowledge, valorization and communication of the cultural landscape, archaeological and naturalistic sites along the Tiber Valley, in the Sabina area between Monte Soratte and the ancient city of Lucus Feroniae (Capena).²²²”The wide ranges converge of scientific, artistic, and historical digital content in the form of media, such as videos, audios, images, and 3D simulations provided in Tiber Valley in gesture-based interaction VR project. The VR application has been introduced at Villa Celimontana in Rome on the occasion of the Travel Literature Festival²²³ in 2014. In the downloadable promotional brochure from the official site of this project stated that: “The Tiber emerges from various points of view: the Geo-morphological environment, the ecosystem, the settlement and human activities, the mythology linked to the river, the rituals

and iconography, the literary, natural and archaeological landscape. Storytelling, evocation, and interaction modes involve the visitor in an emotional and multi-sensorial experience, through a language that combines science, technology, and art. Various multimedia applications have been developed and put permanently in museums, both of the city of Rome and the peripheral territory.²²⁴

The virtual reality project on this narrative, cultural landscape launched in 2014. Multicultural research in a variety of tangible and intangible values of this NCL applied as the content of virtual tech. The natural landscape features, archeological, historical traces, and literature mixed within the valley of the Tiber NCL context have been explored and visualized originally in this project.

“This installation consists of four scenarios and it aims to create a new evocative and narrative access to the territory of the middle valley of the Tiber. It allows the visitor to see the Tiber through the eyes of a fish that swims in the river, a bird that flies over the landscape, the ancient characters living in the Roman city of Lucus Feroniae, and a freed slave that lives his own dramatic experience inside a famous roman villa, Villa dei Volusii.²²⁵”

The historical ruined buildings have been reconstructed virtually, and people who lived in this site rebirth again and started to narrate the hidden stories of the site and transmit their customs, beliefs, and culture to future generations via the hybrid multimedia environment of virtual reality.

The brief outlook on this project and its photos illustrated on GP-4.

Good Practice: Virtual Museum of Cappadocia (GP-5)

Historical -natural site of **Cappadocia** located in a semi-arid region in central Anatolia in Turkey. Composed of cone-shaped geographical features that during the Bronze Age homes carved into valley walls and in early Christians used by refugees. Cappadocia is a spectacular cultural landscape, which is a testimony of human nature interconnection.

“In 2014, the mission was repeated together with the directors and video operators who filmed and then merged into the videos available in the *online* virtual museum. To these videos, in terms of

content, the same researchers active in Cappadocia contributed to the relief, restoration, and historical-artistic study.²²⁶

In the Virtual Museum of Cappadocia project²²⁷ that developed between 2013 up to 2015, the natural landscape and rock heritage of Cappadocia has been valorized innovatively.

Creating the narrating paths in a cinematographic way is the core concept of this project. These narrative paths are divided into a variety of sectors:

- 1) introducing the geographical site
- 2) Open Air Museum,
- 3) The rock habitat,
- 4) historical and ideological context paintings

Besides the virtual Museum, the database for the general public utilizing has been outlined. "The Scientific Investigation Database" has been associated with the historical, artistic, and topographical database, in which the results of the surveys relating to sampling and the analysis of pigments, executive materials, painting techniques, and micro-investigations are published and made available. chemical or stratigraphic, mostly conducted under a microscope.²²⁸ *This project displayed in 2016 in the Travel Literature Festival in Rome.* The more detailed data, photos, and links about this good practice can be accessed in GP-5

3.2.2 Virtual/Augmented Reality Reconstruction:

It is noteworthy that the integrated reconstruction of the historical traces/archeological remnants should be proposed in any CL revitalization project. Implementing a virtual reconstruction environment should be a truthful and credible device to express the authenticity and integrity of the place. According to WHC operational guidelines: "authenticity in terms of the material evidence refers to the originality of the extant historic fabric as a carrier of values. Integrity refers to the amount of extant authentic historic fabric and its ability to convey the full significance of the

place.²²⁹ Preserving authenticity should be enforced in the virtual reconstruction as well because the border of reality is touched open to this virtual world.

As the starting point, exploring the accurate method, material, form, and details should convey via virtual reconstruction experiences in CL.

Respecting to WHC and ICOMOS guidelines²³⁰ (the Nara Document on Authenticity of 1994 and the Declaration of San Antonio of 1996) about protecting the authenticity and originality of historical-cultural monuments, should be applied meticulously in scientific virtual reconstruction projects as requisite bases. For instance, according to the 2019 edition of Operational Guidelines for the Implementation of the World Heritage Convention²³¹ the variety of attributes that should be recognized to meet the conditions of authenticity, including: "form and design; materials and substance; use and function; traditions, techniques and management systems; location and setting; language, and other forms of intangible heritage; spirit and feeling; and other internal and external factors." These attributes depend on the characteristic of the cultural/historical heritage should be measured in the Virtual/ Augmented reality reconstruction projects.

"It might be possible to refine archaeological recording to a level of precision with which very accurate 3D rematerializations become possible. In this scenario, excavation becomes a *repeatable* experiment with many possible narratives²³².

Even creating virtual people respect originality in their customs and dialectics can cause them to recover the spirit of place. Applying Computer-generated imagery (CGI)²³³ application in this process have significant results in visualizing the real characters. "Creating virtual crowds in the context of simulated cultural heritage cause to revitalizing the spirit of place and, more specifically, can present the customs and characteristic more attractive and understandable for tourists." Such crowds normally consist of a large number of avatars²³⁴ dressed as local citizens of the reconstructed site.²³⁵

"Augmented reality (AR) is being developed as a part of smart tourism to provide information about destinations and attractions. visual appeal and facilitating conditions affected perceived ease of use.

Perceived ease of use affected perceived usefulness. Finally, perceived usefulness and ease of use affected intention to use AR and to visit a destination via AR attitude.²³⁶ "

In AR, while observing the world, visitors also observe virtual objects overlaid on the real world usually by interacting with their smartphones or digital cameras. Via using see-through displays or more recent techniques such as Spatial Augmented Reality (SAR), that can be used on large surfaces as spatial-aligned wall projections (also commonly named 3D video mapping).

"Seven dimensions that should be incorporated into AR acceptance research, including information quality, system quality, costs of use, recommendations, personal innovativeness, and risk as well as facilitating conditions ²³⁷"

There are several projects in CL sites that employ Virtual/Augmented reality (V/A reality) reconstruction as the destination of choice for revitalization and valorization of historical remains. Although this virtual environment can be used for reconstruction in the real world, in most of the projects, this tech applied to revival the past ruins on today's visitor imagination.

Good practice: Virtual / Augmented reality reconstruction in Carnuntum Park (GP-6)

In "Roman City in Carnuntum Park" CL revitalization project, the integrated combination of actual and virtual reconstruction is conceivable. "Uniquely throughout the world, a whole city quarter has been reconstructed on the original site. Just as if time had stopped 1700 years ago when Carnuntum was the scene of an event that was to have a lasting effect on the world²³⁸." This Roman military encampment was founded in 50 CE. In this project by providing V/A reality reconstruction, the intangible layers of Roman civilization have been reborn, and concurrently the ruined tangible monuments reconstructed virtually. The Archaeological Park Carnuntum provides visitors with a mobile application that allows for an on-site, augmented reality experience of a Roman gladiator school and its vicinities. "Novel subsurface radar and scanning techniques used in this project. The school was an important facility for the amphitheater of Carnuntum, a Roman military garrison, and town situated along the Danube Limes. With a combination of 3D and mobile technologies, the

augmented reality app brings the gladiator school back to life without having had to excavate it. The park offers the app as part of their guided tours.²³⁹

This project introduced a good practice in Reconstruction and Semi Reconstruction Acupunctural Strategy as well in the previous sector, the more detailed explanation about the Roman City of Carnuntum Park project is available in GP-6.

Good Practice: Capitale Cultura Group, ArtGlass (GP-7)

The fantastic results of applying AR tech in revitalizing CL/CH sites can be assumed in the projects of the **ArtGlass group**²⁴⁰. The mission of the Art Glass leading firm is creating a new dimension of cultural individual user experience, "leveraging on the potential of Augmented Reality and wearable technologies. We believe in a new paradigm able to connect our vast cultural heritage and the audience, in real-time storytelling around art, with a strong economic, communication, and promotional impact.²⁴¹" This group from 2013 present involved in AR solutions and multimedia glasses, followed the fusion of creativity and innovative technology in their product, due to visualizing and simulating the hidden intangible layers of cultural heritage.

The concept of AR represented wearing the AR devices (glasses, gloves) and walking through the site and see the overlap edge of reality and virtually simultaneously. AR is at the forefront of the Art Glass group project in CL/CH sites to enhance their user experience. They applied to augment reality techs in ruin reconstruction, interior restoration, building overlays, art analysis, character interpretation, and landscape reconstruction. Their revitalization projects implemented AR experience in Italy, Swiss, and US museums. In the building overlay project, the hidden structures of architecture are visible. In renovating the interior design, the user See-through all decorative details, furniture added with exciting ideas. For instance, the antique fireplace turned onto the scene in an AR immersive environment. In landscape reconstruction, the archeological vestiges of ancient wall revitalized virtually. The video of and final results in AR reconstruction and restoration projects and the useful links, photos, and brief explanation about this group gathered in GP-7.

Three-dimensionality multimedia installation projects

The 3D representation of the content of stories mixed to architectural monuments has been experienced in several live performing projects. The architectural masses, including the walls and floor, are utilized in an open space to display buried narrative contents in the physical objects. This method can create the possibility of reading literature through architecture in an immersive experience for the audiences. The positive points of these types of projects are the collective involvement of the population, which is in contrast to individual use of VR/AR devices. The following project is a studied example of this multimedia installation project.

Good Practice: Invisible Cities (GP-8)

Director Pino DI Buduo, since 1991 considering the novel "Invisible Cities²⁴²," written by Italo Calvino, implemented hybrid multimedia techs to narrate the dramatic reading based on this novel concept. "Its main goal is the rediscovery of the historical and cultural identity of the places: cities, districts or regions of any part of the world. To light and to give it back to its population as something they never saw before, though still alive in its artistic monuments, in the memories and the items of its inhabitants, something capable of reawakening a strong sense of belonging inside of them."²⁴³

The 3d multimedia content via video-projection tools, blend with live actors performances, displays in open public spaces where people can engage in this combination of installation art, meanwhile walking through the urban scenes.

In the latest performance of this group in summer 2019 in the "Live Art" project, a media hybridization regarding the Raffaello Sanzio's School of Athens, projected inside a palace by applying walls and floors as performance screen. The outstanding artistic painting on the Apostolic palace walls by Raffaello in the 16th century was the core-focused cultural object. "Live performers directly entered inside the details of the painting, becoming part of it and at the same time elements that broke the logic, and gave three-dimensionality. They told texts based on the theories of the same philosophers depicted, presented simply and metaphorically."²⁴⁴

The audience could be the witness of an innovative narration by connecting to alive components of this art painting in the form of live performers and 3d multimedia content.

The video links, photos, and brief explanation about "Invisible Cities" performance and "Live Art" has been shown in GP-8.

3.2.3 Gamification Innovations in Cultural/Heritage Landscape

The digital heritage games evoke the user's imagination about NCL and disseminating story content, which can engage users more active and enhance NCL visitors. It is categorized in Serious Games (SGs) and Entertainment Games(EGs) that can be used in the domain of NCL to valorize the site, train the applicant or make an inspiration to visit in reality.

SGs: "Applying games and simulations technology to non-entertainment domains results in serious games.²⁴⁵"

Serious games emerge in mobile apps, online web-based games, and home games.

The primary purpose of SG is engaging the user to interact "with an electronic system designed to combine teaching, training, practice, communication, and information with entertaining or play-based methods derived from video games.²⁴⁶" The mixture of game playing and serious content is the essence of this tech. "The three main principles underpin the serious content are: deliver a message, provide training and enable the exchange of information between the players of the game or between the distributor of the game and its players.²⁴⁷" "Serious games have been proven to be a source of enjoyment and, if well-made, are a powerful tool to help museums/CH/CL entertain and enlarge cultural offers to visitors. Playing games is an easy and excellent way to spend unhurried, enjoyable training time.^{248, 249}"

In this research, the purpose of applying games in NCL is to provide a platform for visitors to investigate the hidden narrative laneways in NCL and by this dynamic interactivity plunge on the

spirit of place and recall memories buried on site. It means that the onsite type of heritage SGs is highlighted and applied ultimately.

The three main types of heritage games are so-called:

- (i) **Offsite games that initiate and finish offsite.** By providing the simulated virtual environment about the cultural heritage site in the distance, strives to introduce the site to the audience and provoke eagerness to visit the site; in reality, these games launch and finish out of the real site, an ideal medium for pedagogical purposes.
- (ii) **Offsite games that will not wrap up offsite.** It means that without visiting the CH/CL site, in reality, the user cannot reach the final stage of the game.
- (iii) **Onsite games.** Initiating and terminating onsite. In a mixed AR environment with real open space where the actual story happened on the heritage site. Three following examples are good practices in this field that respectively show the three different sorts of gamification in narrating story/history:

For example, **Minoans** is the title of a serious game that is designed based on archeological databases about Aegean cultural heritage. The “mission is to get cultural institutions aware of the potential of the use of digital resources to play games: therefore, Minoans could be an exportable prototype to investigate the usage of serious games for cultural issues.” (Barandoni, 2017)

By providing offline and online environments for this game, the knowledge about Aegean civilization and interacting with their heritage is more pleasant for the players. By 2D side-scrolling narrative structure, Minoans can be played globally. Designing such an attractive platform for public use, immerse players will decide to visit this archeological site in reality. “It is a lively approach not only increases motivation to acquire competencies about Aegean archaeology but also raises interest in art history and cultural heritage in general.”(Barandoni, 2017) Project photos illustrate in GP-9.

Good Practice: Father and Son (GP-10)

Father and Son²⁵⁰ game designed around the timeless investigative journey idea, updated in January 2018. The game goal is evolving the applicant with historical treasures of Napoli and the most magnificent artifacts about Egyptian civilization along with the National Archaeological Museum in Naples. The publisher of this innovative cultural product, National Archaeological Museum in Naples, claims that it is the first game put away by an archeological museum. On the Google play website, we can read this description about the game: "What begins as the story of a son who never knew his father becomes a universal and ageless tale, with the present and the past making up the setting for Michael's travels. Seek for yourself the beauties of Naples, experience the last hours of life in Pompeii before Mount Vesuvius erupted in 79 AD, and explore the ordinary day-to-day life in Ancient Egypt. The past is what makes our present real."²⁵¹

The adventure begins from the National Archaeological Museum in Naples. After passing the different phases on Napoli, Pompei, and ancient Egypt for unlocking some stages applicant should present on the museum in reality. This game delivers a particular astonishing graphic design and sound that draws the user to download it and learn indirectly from the mentioned historical heritages and desire to close the game in reality in the Archaeological Museum in Naples.

The more detailed description, photos, and video links about this good practice can be accessed from GP-10.

Good Practice: True Crime Mysteries: Misadventure in Little Lon (GP-11)

True Crime Mysteries game encounters users in the open immersive environment of augmented reality on Melbourne streets where the actual crime lied, being sent to the mobile game market in October 2019. The content of the story/ history is based on Melbourne's well-known district and criminal happenings in 1910. User evolves to a historical crime mystery, "propelled on an exhilarating adventure through the streets of Melbourne past, exploring heritage sites where spine-tingling events went down"²⁵². Applicant tries to gather clues, and by speaking with augments 'real-life' characters that will be presented in a variety of hotspots of historical site

detects to investigate the truth on a twisted tale of trails. Players can gain valid information by archeological dig hidden through the game. "Misadventure In Little Lon offers insights into the complex class, gender, and power structures that shaped people's lives and formed the bones of Melbourne's society today."²⁵³ Although this game can be worked anywhere in the world but has interconnections with narrative layers of the Melbourne heritage site, and the platform for on-site playing is more interesting because of tangible targets and real surrounding mixed to AR environment. Additionally, this game is more convenient because it is available via cellphones, and providing glasses or other AR tools is not essential. The more detailed data, photos, and links about this good practice in games innovation can be accessed in GP-11

3.2.4 IoT Technology Role in the Protection and Valorization of Cultural Landscape

The readiness and aptitude of IoT as an innovative technology to generate connectivity of the physical-cultural object with the information technologies is noteworthy. Recovery the selective memories and history narrations via smart devices, result in innovative interpretation and connection with hidden values in CL.

On the other hand, IoT ideas can be carried out in CL/CH sites to proposed the practical recommendations in three main categories: (1) sharing knowledge (2) Efficiency and flexibility in design (3) protection checks and safeguard monitoring.

Accordingly, IoT technology can be utilized in all research processes, information gathering, documenting, authentic protection, restoration, innovative tourism guiding, smart monitoring, and safeguarding the cultural heritage properties even in distant regions.

Digital technologies afford vast opportunities for refining public access facilities to several forms of cultural properties and their reuse. IoT technologies can encourage the advancement of creative, innovative studies besides educational devices as well as documentaries, data analyzing, tourism applications, and hence along.

3.2.5 IoT Data cycle, Sharing and Analyzing in CH/CLs

“The data formats let user agents and cloud services act intelligently, parsing data for events, organizations, people, places, products, reviews, and so on and acting on them either interactively or proactively.²⁵⁴ “Merging the virtual Web with the IoT will enable really smart devices, providing smarter automation and services. Associating a Web URI with every person, place, or thing forms the basic mechanism for bridging these two technologies²⁵⁵.”

Furthermore, selecting the “mature technology” is a significant element in this trend. “Heritage institutions need tech solutions that are cost-effective, sustainable, and capable of addressing different needs of users.” (Geser et al.,2014).

Two main approaches carried out to propose the practical recommendations in applying IoT technology in CL scope include:

- (1) Accessibility: guiding and highlighting the access routes to the variety of themes in CH/CL visiting
- (2) Creative narrative, cultural digitalization: raise awareness, disseminating the importance and creative connection with immaterial values in CL.

How IoT could be applied to these concepts is the keynote of the following examples.

❖ ACCESSIBILITY

Data collection is the primitive phase of defining the accessibility routes and profound knowledge about the different layers in CH. A virtual smart online library about any cultural heritage can provide information gathering to diagnosis the multi-discipline studies, in a worldwide database. This designed application causes more global linking from different countries to intervene at updating analyses about the specific CH/CL. Furthermore, this virtual library could apply for education and decision making in administrative and strategic planning.

Application of smart technologies and sensors in heritage sites is an innovative utilize of computing applied and the Internet of Things (IoT) in the Cultural Heritage field.; It is extremely related to the

system's progress of capability in pervasive and ubiquitous with the ultimate goal of reconsidering such places. IoT paradigm will create a potent creature to increase people's realization and joy of such cultural places; regarding ICT technologies, a cultural thing should be perfectly “dressed” of its background and juxtaposed into the setting²⁵⁶.”

By applying IoT technology to protect the tangible and revitalize the immaterial aspects of CH, the key characteristics of cultural heritage will connect with the effective integration of devices, information management tools, and sensors. Regarding best practices in “Learning from the past, designing our future²⁵⁷.”

Three different example studies evaluated to draw practical strategies in this approach.

Good Practice: Europeana project (GP-12)

Europeans, besides the Europeana Foundation, are the essential part of the EU commission, which is dedicated to enhancing a digitized platform of any cultural heritage in Europe with cultural materials that are digitized, including a digital library, museum, and archive. Europeana now has prepared access to about 30 million items in which these cultural items are from more than 2500 subdivided groups and organizations. Most of the resources of the institutions in Europe related to the cultural field are internet-based and generally reusable. Under the services which connect Europe, the EU has funded Europeana as a digital service arrangement that gives access to culture data, tools, technology, and services to cultural heritage and creative entrepreneurs. According to Borissova²⁵⁸ studies in 2018, the importance of Europeana acknowledged from a digital innovation viewpoint, recognize experiments to be addressed, and deliver suggestions to the member countries and states, the commission, and Europeana. Transforming the whole world with culture is the most significant mission of this foundation and makes European heritage reachable and even use it for just people's enjoyment.

The more detailed data, photos, and links about this good practice in games are depicted in GP-12.

Good Practice: VAST project (GP-13)

Valorization of narrative history and heritage landscape for highlighting the reminiscence of WWI Military constructions and artifacts surveyed and displayed in 3D to produce new circulation and communication materials. 3D digital models, WebGIS platforms, conferences, communicative and scientific articles, virtual tours, forming the content of this Now utilized both in museums and along with the main ways across the focused area. Typical informative resources mostly included adult audience, virtual and interactive restoration of war buildings, landscape, and things. Innovative ICT technologies would have resulted in the valorization and protection of destroyed or considered as "in danger" WWI heritage sites. Subsequently, the essential purpose of the VAST project is to turn on the light on the consequences of war for the local community, especially for today's younger generations that have not any direct experience and memory about the war²⁵⁹.

The more detailed data, photos, and links about this good practice are available GP-13.

Good Practice: MNEMOSYNE -The See_for_me project (GP-14)

This project is a mobile computer system for the intelligent audio guide, which is a vision based to afford introduction and data around the observed objects inside and outside the museum. In the MNEMOSYNE project, the smart system presented personalized, comprehensive information regarded to the visitor's preferences. This innovative project installed at the Florence, Bargello Museum. The linkage between mobile video cameras and an artificial vision software to perceive the visitors' trails in museum salons, by following the interesting artworks for a visitor, it will define the individual profile that supports the data about the artwork.

At the interactive table next to the exit door of the museum room, the visitor has access to more in-depth data about the interesting artworks and explore links to the other analogous artworks in the museum or in during to Florence visiting. As a non-intrusive system, it is completely privacy respectful, and it is not required to carry and hold any personal mobile devices. This project was successful in providing the opportunities for computer vision smart technology in coming after the

applicant's desire and interest and support simultaneously profiling with immediate feedback. The similar technology in computer vision smart capabilities were further applied to the newest generation of mobile audio-guide.²⁶⁰

The more detailed data, photos, and links about this good practice are accessible in GP-14.

❖ CREATIVE NARRATIVE CULTURAL DIGITALIZATION

Via applying the node sensors of IoT spread on the CL site, the end-user plays an active role in choosing the desired data and builds the individual route in visiting the CL. In this scenario, the individual experiences and bounding with historical messages of place will improve. On the other hand, the different attractions of the place could demand a different group of visitors that find the information more enjoyable and useful for themselves. By applying this technology, decision-makers and designer can plan a more flexible space for visitors.

The Internet of Things (IoT), utilizing in the Cultural Heritage field, is an innovative strategic concept attaching intelligent objects, smart sensors, applications, and services within static and physical cultural spaces. The purpose is to convert these places into intelligent Cultural Heritage atmospheres. The Internet of Cultural Things is a developing discipline object to design a novel realization, tutelage, and upgrade models of Cultural Heritage globally.

Referring to Atzori²⁶¹ and Zannella's²⁶² research, IoT implication results in bounding visitor and collective memories buried in CL, and the different values of the site have a different attribute for end-uses. They can have access to part of the information that they are more enthusiastic about, and by applying this technology, we can design a more flexible space for visitors. These solutions meaningfully grow with the ubiquity and dissemination of smart instruments. Considering best practices in raise awareness, disseminating the importance and creative connection with intangible values in CH, three different case studies reviewed to identify practical recommendations in this approach.

Good Practice: HERICOAST project (GP-15)

Coast light - digital dissemination of coastal heritage, is the focal idea of HERICOAST²⁶³ project. The primary purpose of this project is to recall the stories of historical lighthouses, other supports to navigation, and naval history through videos, photos, and written text. The content of stories has an interconnection with geographical characteristics through digital map utilization. The domain of services in the Coastlight.net project is in smartphones, conventional tablets, and personal computers. There are a variety of audiences in this project, from tourists to school students, museums, and the general public attracted by maritime history.²⁶⁴

The more detailed data, photos, and links about this good practice are in GP-15.

Good Practice: THREET project (GP-16)

The ultimate goal of the THREET project is to maximize the eco-tourism potential of cultural heritage sites. Improving the performance of policy tools for protecting and enhancing natural and cultural heritage, THREET pursues and prepares it by organizing thematic paths or enriching existing ones, bringing convenience access to all people by green modes of transport. The primary objective is to achieve the maximum possible level of eco-tourism in heritage sites. For some of the sites which are restricted by the lack of links to materials open to the modes that are sustainable transport and of sufficient information to be sure of their visibility, partners share the sustainable accessibility of challenges. Not being the potential of sustainable development, a context-based revitalization project planned. Relevant experiences of partners analyzed and shared. At least 20 well documented observes will be assigned, personalized to the precise necessities of every partner, and efficiently will serve into the Programme Policy Learning Platform. The result is in drawn of 8 action plans coming finally from experiential learning.

Key actions for the joining regions are 1) Public availability and sustainable improvement forms in natural and cultural heritage. 2) Green mobility new performances and adoption in innovative information. 3) Monitoring the Action Plan by an effective system to evaluate the tangible effect of

its activities on local improvement strategies. 4) Increased capability and skills of each side's staff and primary stakeholders.

The main idea of the project to be initiated in all actions is a bottom-up method for formulating the Action Plan with the main stakeholders. By applying the scheduled actions, their contribution is predicted to perform as a strong multiplier pedal to share the benefit and regional cohesion of local communities. The exciting Stakeholder Groups in the project will establish a permanent environment to be sure of a resilient influence related to the planning problem and resulting activities planned/implemented.²⁶⁵ The more detailed data, photos, and links about this good practice are accessible in GP-16.

Good Practice: NordestIn Project (GP-17)

That is a platform, a movement of innovation and promotion of territorial tourist destiny, that intends to cover all the Northeast of Portugal. It was created a dynamic, interactive, and reactive platform that matches the most exacting and detailed searches of the users. This program is grounded on a complete Tourist, and Business Directory, where identifies all the Points of Interest (POI) of the territories, including natural and cultural spaces, leisure equipment, accommodation, restaurants, handicraft, units of production, and so on.²⁶⁶ The more detailed data, photos, and links about this good practice are accessible in GP-17.

Analyzing the IoT Technology Practices in Cultural Landscape

Nowadays IoT technology is one of the most favorable facilities to provide a convenient way to access cultural landscapes, notwithstanding their remote location or other obstacles to visit. "The application of digital and information technologies to cultural heritage can allow new forms of interactivity between subjects and environments, favor overcoming impediments, redefine the relationship between visitor and work, create social networks of users who share interests and content.²⁶⁷" "Mobile technological devices, conveniently deployed in the cultural environment and

create new opportunities in data collecting and representing data. In this way, the advantages of this knowledge give a reliable rate for decision-makers, visitors, and exposed cultural things.²⁶⁸

This subchapter discussed new approaches in IoT technology, utilizing cultural heritage to show how innovative technologies can provide more awareness and enhances the connection to the historical and intangible cultural values. In this sector, six different creative practices about intelligent IoT system design with focusing on creating unique experience and knowledge in cultural heritage presented meticulously (table 1). The diagram of the Smart Cultural landscape illustrated below as well.

IoT in Cultural Heritage	
ACCESSIBILITY	CREATIVE NARRATIVE CULTURAL DIGITALIZATION
Europeana: Digitalized library, documentation, and museum, access to nearly 30 million cultural items from	HERICOAST: tell the stories of lighthouses, The Coastlight.net facility utilized on smartphones, tablets, and PC/Mac machines.
VAST: 3D digital models, technical and communicative training, virtual reality tours, conferences, WebGIS smart platforms	THREET: green styles of transport and as freely accessible information.
MNEMOSYNE: providing information for the considered objects for both indoor and outdoor	NordestIn: This platform is based on a complete Tourist and Business Directory, where identifies all the Points of Interest (POI) of the territory.

Table 1: IoT in Cultural Heritage. Source: Author.2020

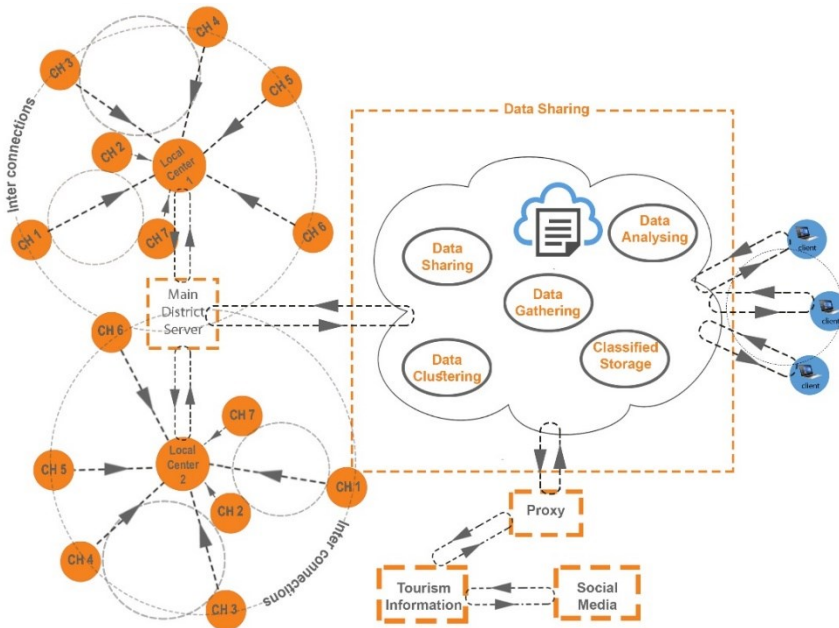


Diagram 17: Smart Cultural landscape Data cycle, sharing and analyzing, Source: Author,2019

2.1.1 The opportunities and challenges in using IoT in CL/CH projects

Fleishman, in an article named: It is 2020. Let's Stop Saying "IoT," in Forbes journal, pointed out that: "The train has left the station, and we are stuck with that odd term, "Internet of Things (IoT)." There is nothing much we can do about it. This relic of a name emerged back in the days when the Internet was *the thing*. It alluded to a world in which digital sensory devices interact with each other in a similar way to which people interact with each other on the web. It has been 21 years since the invention of the term IoT, and we are yet to fulfill this vision. The dry definition of "Sensors and actuators embedded in physical objects that are linked through wired and wireless networks" does not quite capture the potential of IoT.²⁶⁹"

in this sector, the nowadays dreaded position of IoT in a variety of studies illuminated. Maybe it is a right critique about CL/CH sites that did not consider to IoT as a vital tool in breaking the ignorant walls about heritages. Obstacles in the adoption of IT technologies for CH/CL sites as the main impediments in this field abridged on: the lack of budget, time management, maintenance, and legal issues.

Notwithstanding several speeded CL projects in applying IoT, there is a long undiscovered way that remained in this scope. Furthermore, yet there are not any integrated universal projects in bonding CL sites around the world via applying these innovative technologies. According to the Schwartz report, "By the end of this year(2020), Gartner predicts there will be 5.8 billion IoT endpoints. The World Bank reports that 3.489 billion people constitute the global labor force; there will be nearly *two* IoT devices for every global employee.²⁷⁰"

It seems that considering the widespread and public access to IoT technologies, the share of Cultural Heritage sites in employing this tech is partial. "Stakeholders, especially, raised concerns about the fact that the majority of CH organizations do not have an ICT department in-house or technology experts to support the tools after the implementation and during the phases of maintenance and update." How heritage sites and cultural landscape revitalization and valorization projects will attach to this expanding growth should be a critical discussion in any revitalization projects.

Smart Cultural Landscape Visiting Concept and Visitors Interacting:

“Multimedia and virtual reality technologies are increasingly used to communicate archaeological and historic sites for the benefit of the local community, both to strengthen local cultural history and identity as well as promote the sites to tourists.²⁷¹” The Smart cultural landscape techs which create a variety of offsite and onsite experiences for visitors will be highlighted in the following table:

SMART CULTURAL LANDSCAPE PRINCIPLES	Description	Visit phases	Applied Technology
SMART CREATIVE ADVERTISING FOR ATTRACTION	The multimedia and other online content, get inspiration, online magazines, digital exhibitions	Offsite and online	computer visualization of artifacts, social media such as Instagram, Facebook, Twitter, YouTube channels
SMART TRAVEL PLANNING	Time scheduling, accommodation, finding the cultural events dates, booking tickets for festivals and other cultural activities, finding accurate information about the destination	Offsite and online	Websites and mobile applications like “visit a city,” “Trip advisor.”
SMART TRANSPORTATION TO DESTINATION	managing tourist routes, navigation, locations, traffic jams, crowded locations by tourists	offsite	Global Positioning System (GPS), WebGIS, Waze, google map
SMART VISITING TANGIBLE VALUES	collaborative ventures, virtual tour guide, creating a 3D model perceivable, “time travel” experience, exhibitions, online shops, produce 3D digital models of structures and objects	onsite	Mobile app for smartphones, 360° cameras, wired and wireless sensor
SMART CONNECTING WITH INTANGIBLE NARRATIVE LAYERS	“readable and accessible content emotional involvement, multi-sensorial perception, personalized user guides, virtual tour guides	Offsite, onsite and online	Wearable technologies augmented reality, virtual reality, 3D simulation, mobile augmented reality app, cinematic VR experience, smart glasses, Oculus Rift
SMART FEEDBACK AND DATA ANALYZING	Key Performance Indicators for gathering, measuring and analyzing data	Offsite, onsite and online	hotels, tour agencies and transport data collecting / onsite data

Table 2: SMART CULTURAL LANDSCAPE PRINCIPLES concept and visitors interacting, Source: Author, 2019

3.2.6 The critical challenges in implementing ICT technologies in CH/CL sites

“Take cultural heritage out of the museums, put them back into everyday life and investigate how we can use the experiences and achievements of past generations²⁷²”

Although several projects and researches in the scope of innovative techs in revitalizing NCL layers as a powerful tool carried out, these are critical debates around the digitalization of intangible values of cultural landscapes that needs further analyses. The following challenges and questions are noteworthy issues revolve around this topic:

- **Copy-rights issues:** The result of Ioannidis²⁷³ research about the side effects of applying innovative technologies in heritage sites revealed that: legal issues and conflicts related to copy-rights are the most critical obstacles in using ICT technologies in CL sites. When it comes to open-source contents were also presented as major risks on behalf of both stakeholders and providers. Stakeholders argued that making organizations’ digitized content available online will make it vulnerable to third party abuse and commercial exploitation out of their legal framework. While the IoT applications will be varied and challenging to predict, some clear opportunities will arise for ubiquitous information gathering, context sensing, and control. However, some of the real challenges will be in the areas of privacy and security.²⁷⁴The future interlinked documents and applications in cultural heritage require fundamental infrastructures as governmental policies and national legislations. The field of utilizing digitalized data access in CH should be in line with the protection policies of their authentic values as well.

Digitalized human values: How can digitalization convey the human values hidden in intangible layers of cultural landscapes? Carlos Moedas, EU Commissioner for Research, Science and Innovation, at The Innovation and Cultural Heritage conference, in 2018,

uttered about the importance of future innovating for extracting the past knowledge buried in heritages. However, he insisted: 'You cannot digitize experiences. You can digitize the artifacts, the paintings, but you cannot digitize humanity²⁷⁵. Encountering to humanity values bound to intangible layers of CL is not touching the external facade of cultures. How can digitalization transmit humanity values to the future generation? It is a critical question in this scope that needs new research ground to be profoundly discussed.

- **Individual experiences instead of the social connections:** Is 3D augmentation always a perfect tool in revitalizing the intangible narrations? Particularly in the cultural heritage context where authenticity is so important.

The excessive use of individual devices, make unpleasant results like isolating instead of gathering people around CH/CL content. Although the ultimate goal of revitalizing the intangible layers of CL is making a bridge between past and future and recovery of the collective memories, digitalizing and creating the virtual spaces for individual applicants can bring up the contradictory outcomes at the end.

- **Virtual museums curbing the real visitors' attending:** The fourth concern is the side effect of the virtual museum on attracting the tourists in reality. Virtual heritage means people around the world will have access to have visual experience and adequate data about the artifacts or also intangible narrations of the heritage, and maybe it caused to decline of their enthusiasts to visit this heritage / cultural landscape in the real-world. The economy and socio-cultural benefits of their real experience will push aside intensively. Designing serious games or virtual heritages contents regarding this issue should be more creative and multilateral in the future. According to the UNESCO report²⁷⁶ published in 2020 "Virtual/augmented reality should accompany the direct experience whenever possible, and not replace it. Exclusive virtual experience does not allow for effective heritage interpretation, being that the latter is based on human interaction and 2-way communication."

Concluding Remarks

This chapter inchoates with a wide-ranging discussion in the subject background (Innovative Techs as a tool for revitalizing intangible layers of cultural landscapes) and goes forward in introducing four techs: 1) Augmented Reality (AR), 2) Virtual Reality (VR), 3) Internet of Things (IoT) and 4) Serious Games. These four technologies highlighted in this section because of their relevant applicability to the resuscitate of the narrative layers in Bisotun NCL.

In this chapter, I focused on content, technologies idea, and bringing in some holistic recommendations about the required tools, and the structural design of these techs is out of the topic of this inquiry.

The outline of this subchapter is based on the cutting-edge literature review and descriptive-analytic research on inspiring projects. The Good Practices (GP) revolve around the following implied technologies: 3D visualizing -Virtual Reality -Virtual/Augmented Reality Reconstruction-Gamification -Three-dimensionality multimedia installation -IoT (Internet of Things)

Finally, the future challenges in implementing these technologies in the context of cultural heritages discussed and opened several new questions about the pros and cons of the subject for future research.

Good Practices (GP)

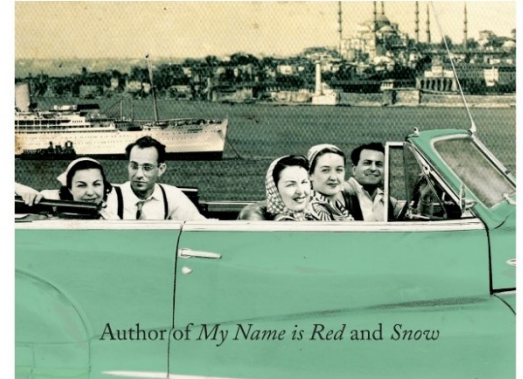
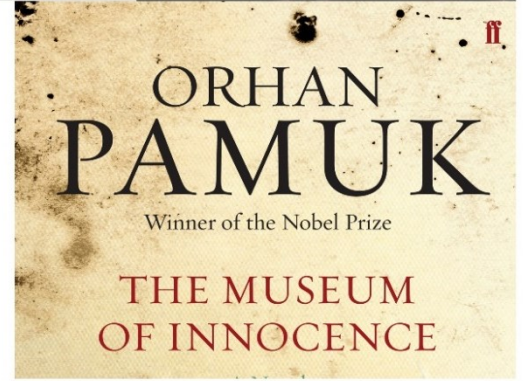
Good practices of multi-disciplinary projects in the cultural landscape revitalization

GP-01

Orhan Pamuk's "The Innocence of Objects"

An Amazing Museum Based on Literature Narrative

Nobel prize winning author Orhan Pamuk's 2009 novel about lost love and the obsessive collecting of objects



The Museum of Innocence, was conceived simultaneously with the idea of creating a bricks-and-mortar museum to house the objects collected while writing and researching the novel. The museum, is housed in a modest 19th century house. The Innocence of Objects beautifully catalogs the museum's collection and in Pamuk's own words, tells the story of how the museum came to be.



Reference and Image Source

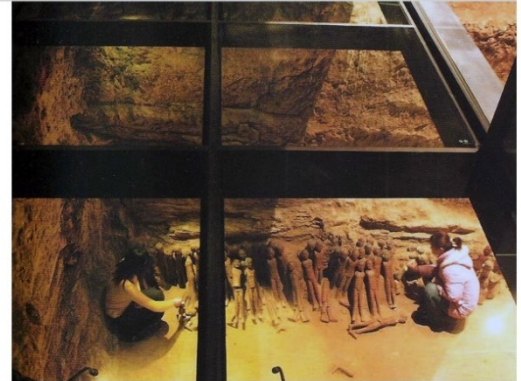
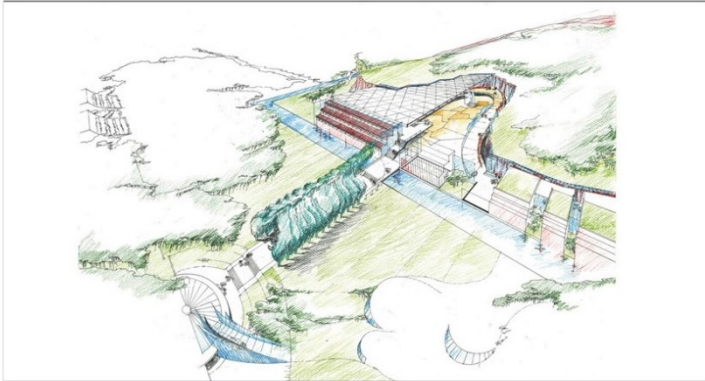
<http://janechafinsofframppgalleriesblog.blogspot.com/2012/10/orhan-pamuks-innocence-of-objects.html>



Acupunctural preservation

EUROCORE ARCH IN-SITU project

E! 1589TEUROCORE ARCH IN-SITU



Although the preservation techniques are specifically designed for each individual site, the overall idea is to keep the artefact in ideal climatic conditions, protecting it from the weather, pollutants such as acid rain and either intentional or unintentional damage by tourists.

The Swedish and Slovenian project partners have an array of expertise and the team members include archaeologists, lighting engineers, materials scientists and microbiologists. Between them, they assess the ideal conditions for each site and then set up the equipment to create them within a sealed protective chamber.

Reference and Image Source

<http://www.enamecenter.org/EEC2013/shadowboxpaginas-NL/xian-E.html>

<https://www.eurekanetwork.org/>

keeping the past in its place – EUREKA, EUREKA PROJECT 1589 ,ARCH IN-SITU

GP 3: MIT Design Heritage project

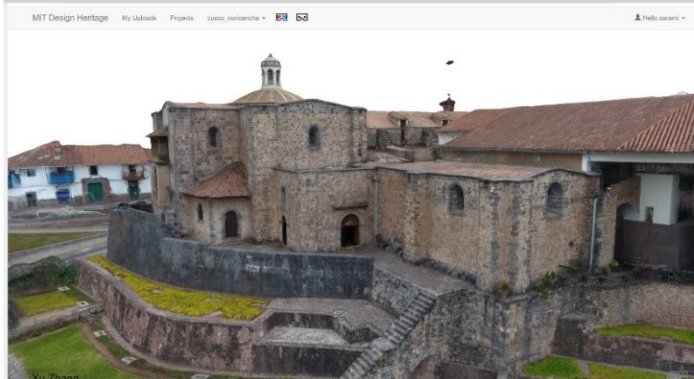
Good practices of multi-disciplinary projects in the cultural landscape revitalization



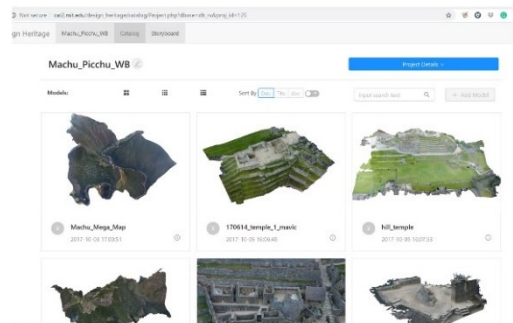
MIT Design Heritage

3D visualizing projects

collaborative structure for collecting data and sharing the 3D products in an online database



This strategy provides a multifaceted utilize of visual content in a variety of subjects: education, restoration and community development. “The goals of the MIT Design Heritage tool is to allow users to collaboratively upload, share, and "patch" 3D Photogrammetry models for digital preservation of architectural sites



Reference and Image Source

http://cat2.mit.edu/design_heritage/catalog/Project.php?dbase=dh_rv&proj_id=125

Good practices of multi-disciplinary projects in the cultural landscape revitalization



Virtual Museum of the Tiber Valley

Creation of an integrated digital system

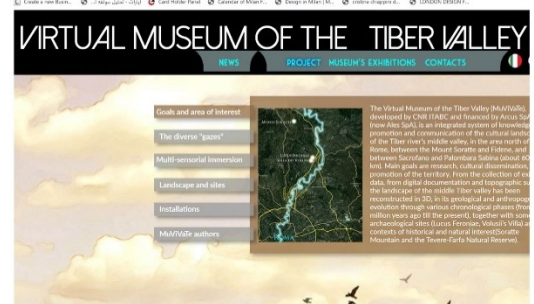
Along the Tiber Valley, in the Sabina area between Monte Soratte and the ancient city of Lucus Feroniae



Not secure | museovirtualevalletevere.it/



secure | museovirtualevalletevere.it/progetto_eng.html



The wide ranges converge of scientific, artistic and historical digital content in a form of media, such as videos, audios, images and 3D simulations have been provided in Tiber Valley in gesture-based interaction VR project. The natural landscape features, archeological, historical traces and literature mixed within the valley of the Tiber NCL context have been explored and visualized originally in this project. It allows the visitor to see the Tiber through the eyes of a fish that swims in the river , a bird that flies over the landscape , the ancient characters living in the roman city of Lucus Feroniae, and a freed slave that lives his own dramatic experience inside a famous roman villa, Villa dei Volusii.”

Reference and Image Source
<http://museovirtualevalletevere.it/>

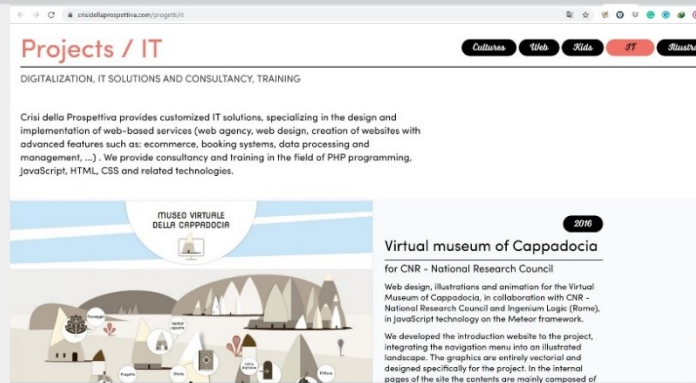
Good practices of multi-disciplinary projects in the cultural landscape revitalization



Virtual Museum of Cappadocia

Historical -natural site of Cappadocia

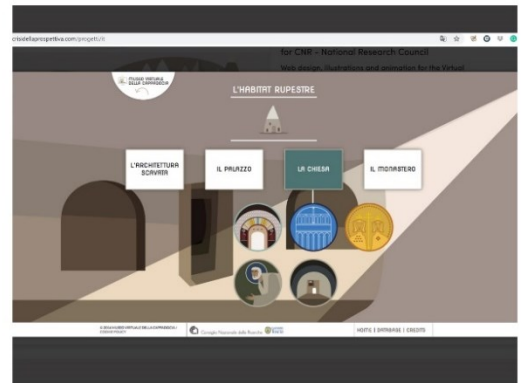
In a semi-arid region in central, composed of cone-shaped geographical features



Cappadocia is a spectacular cultural landscape which is a testimony of human nature interconnection.

In Virtual Museum of Cappadocia project that was developed between 2013 up to 2015 the natural landscape and rock heritage of Cappadocia has been valorized in innovative way.

Creating the narrating paths in a cinematographic way is the core concept of this project. these narrative paths are divided on variety of sectors:



Reference and Image Source

<https://crisidellaprospettiva.com/progetti/it>

<https://crisidellaprospettiva.com/progetti/kids>

Good practices of multi-disciplinary projects in the cultural landscape revitalization



The Roman city Carnuntum Park

Reconstruction strategy in Acupunctural approach
In the Roman city Carnuntum the past becomes tangible.



In the reconstructed and semi-reconstructed Roman City authentically echoes Roman life and city architecture in the 4th century A.D. Building work was able to be carried out partly with original Roman stonework and with reconstructed Roman tools using ancient building technology and craft skills

Reference and Image Source

Source: <https://www.carnuntum.at/de,2019>

Figure 2, Screenshot Carnuntum App / Location Heidentor

Source:7reasons https://www.7reasons.net/pm/?page_id=278

Good practices of multi-disciplinary projects in the cultural landscape revitalization



Capitale Cultura Group
ArtGlass

The good results of applying AR tech in revitalizing CL/CH sites



The mission of the Art Glass leading firm is creating a new dimension of cultural individual user experience, "leveraging on the potential of Augmented Reality and wearable technologies. The concept of AR is represented on wearing the AR devices (glasses, gloves, ...) and walking through the site and see the overlap edge of reality and virtually simultaneously. They applied to augment reality techs in ruin reconstruction, interior restoration, building overlays, art analysis, character interpretation and landscape reconstruction.

Reference and Image Source
<https://www.art-glass.it/en/>
<https://vimeo.com/258795938>

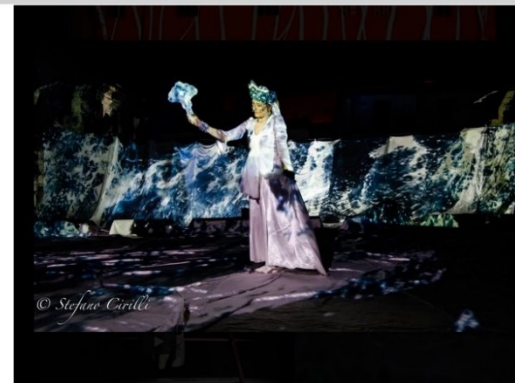
Good practices of multi-disciplinary projects in the cultural landscape revitalization



"Invisible Cities"

Three-dimensionality multimedia installation projects

The architectural masses are utilized in an open space to display buried narrative contents in the physical objects.



This method can create the possibility of reading literature through architecture in an immersive experience for the audiences. The positive points of these types of projects are the collective involvement of the population, which is in contrast to individual use of VR/AR devices.

Director Pino Di Buduo, since 1991 considering the novel "Invisible Cities" written by Italo Calvino, implemented hybrid multimedia techs to narrate the dramatic reading based on this novel concept. "Its main goal is the rediscovery of the historical and cultural identity of the places: cities, districts or regions of any part of the world.

The 3d multimedia content via video-projection tools, blend with live actors performances ,displays in open public spaces where people can engage in this combination of installation art, meanwhile walking through the urban scenes.

The audience could be the witness of an innovative narration by connecting to alive components of this art painting in the form of live performers and 3d multimedia content.



Reference and Image Source
<https://www.teatropotlach.org/citta-invisibili>

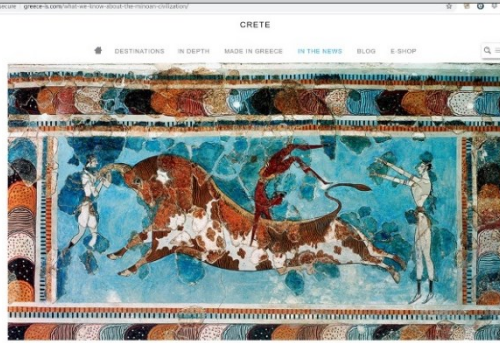
Good practices of multi-disciplinary projects in the cultural landscape revitalization

GP-09

Minoans

Minoans a serious game

based on archeological databases about Aegean cultural heritage

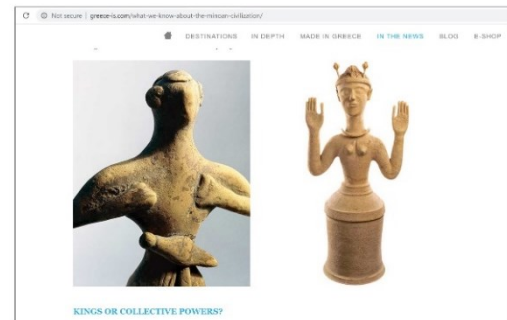


SHARED CULTURAL IDENTITY

Minoan centers exhibit a cultural consistency both in architectural

The “mission is to get cultural institutions aware of the potential of the use of digital resources to play games: therefore, Minoans could be an exportable prototype to investigate the usage of serious games for cultural issues.” (Brand-new, 2017)

By 2D side-scrolling narrative structure, Minoans can be played globally. “It is a lively approach not only increases motivation to acquire competencies about Aegean archaeology but also raises interest in art history and cultural heritage in general.” (Barandoni, 2017)



Reference and Image Source

https://www.wikiwand.com/en/Minoan_civilization

greece-is.com/what-we-know-about-the-minoan-civilization/

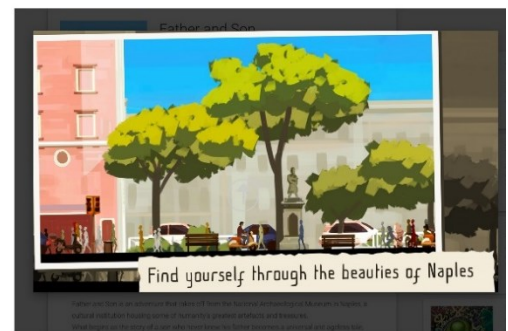
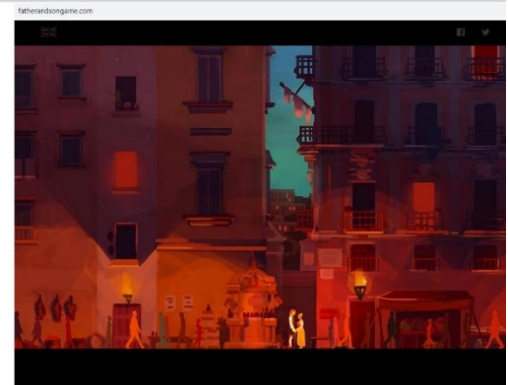
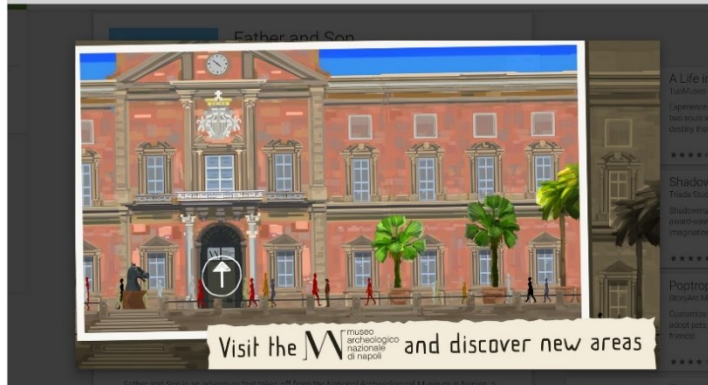
Cristiana Barandoni, Anna Margherita Jasink, Isabella Valinoti 2019. New Fruition of Aegean Archaeology: A Board Game on Minoan Crete.

GP-10

Father and Son

Along the National Archaeological Museum in Naples

Timeless investigative journey to evolving the applicant with historical treasures of Napoli



The publisher of this innovative cultural product, National Archaeological Museum in Naples, claims that it is the first game put away by an archeological museum. On the Google play website, we can read this description about the game: “What begins as the story of a son who never knew his father becomes a universal and ageless tale, with the present and the past making up the setting for Michael’s travels. Seek for yourself the beauties of Naples, experience the last hours of life in Pompeii before Mount Vesuvius erupted in 79 AD, and explore the ordinary day-to-day life in Ancient Egypt.

Reference and Image Source

<https://play.google.com/store/apps/details?id=it.tuomuseo.fatherandson&hl=en>

<https://heritagemotion.eu/himentry/slug-1b6636423c159aa9db02f7d6e24b00a8>

<http://www.fatherandsongame.com/>

GP 11: True Crime Mysteries: Misadventure in Little Lon

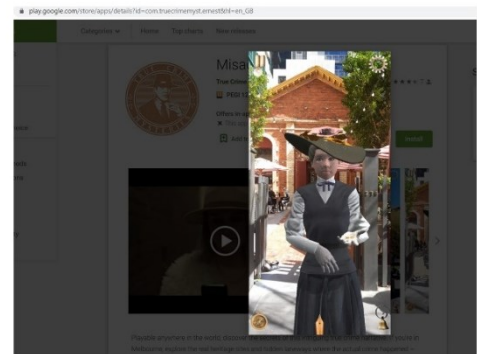
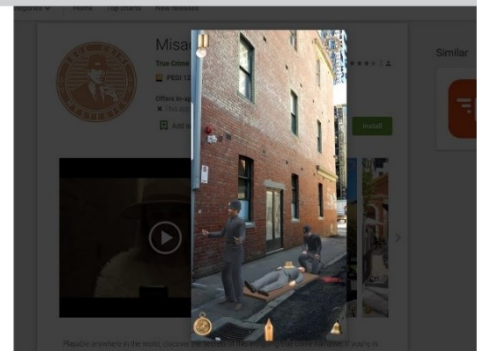
Good practices of multi-disciplinary projects in the cultural landscape revitalization



True Crime Mysteries

Misadventure in Little Lon

The game encounters users in the open immersive environment of augmented reality on Melbourne streets



True Crime Mysteries game encounters users in the open immersive environment of augmented reality on Melbourne streets where the actual crime lied, being sent to the mobile game market in October 2019. User evolves to a historical crime mystery, “propelled on an exhilarating adventure through the streets of Melbourne past, exploring heritage sites where spine-tingling events went down.” Although this game can be worked anywhere in the world but has interconnections with narrative layers of the Melbourne heritage site, and the platform for on-site playing is more interesting because of tangible targets and real surrounding mixed to AR environment.

Reference and Image Source

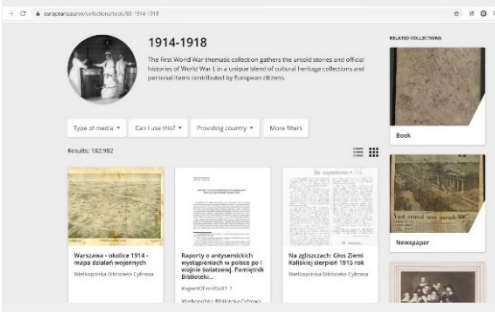
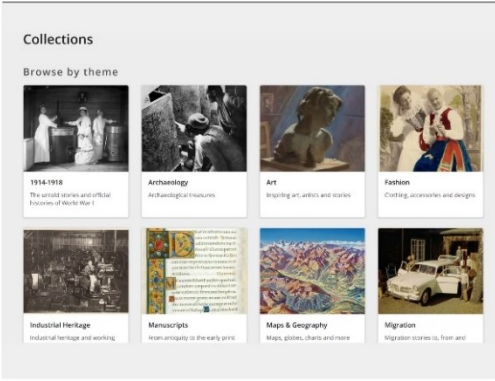
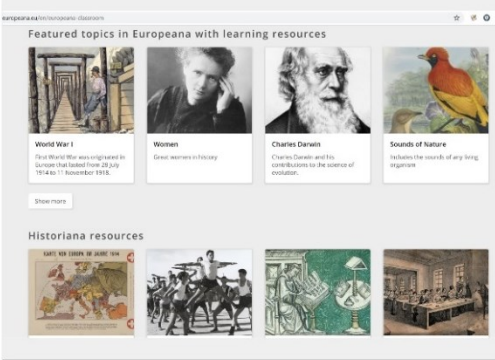
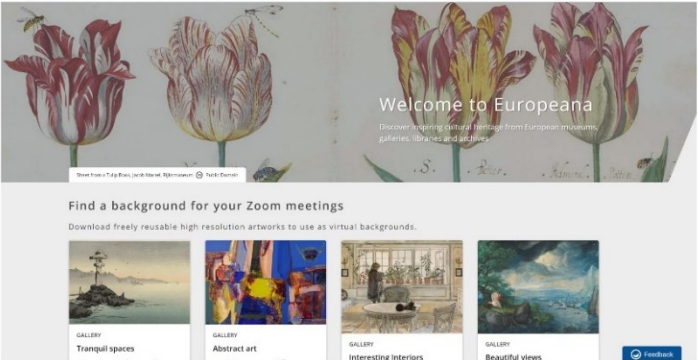
https://play.google.com/store/apps/details?id=com.truecrimemyst.ernest&hl=en_GB

<https://truecrimegames.com/games/>

Good practices of multi-disciplinary projects in the cultural landscape revitalization

GP-12

Europeana project
Beside the Europeana Foundation
Europeana is the important part of European commission



Europeana now has prepared access to about 30 million items which these cultural items are from more than 2500 subdivided groups and organizations. Most of the resources of the institutions in Europe related to cultural field are internet based and generally reusable. Under the services which connects Europe, the EU has funded Europeana as a digital service arrangement that gives access to culture widely and delivers data, tools, technology and services to cultural heritage segments in Europe and the creative businesses. The importance of Europeana was acknowledged from both sides of cultural besides a digital innovation viewpoint, recognize experiments to be addressed and deliver suggestions to the member countries and states, the commission and Europeana

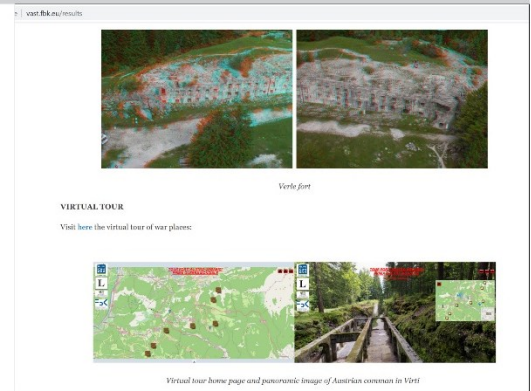
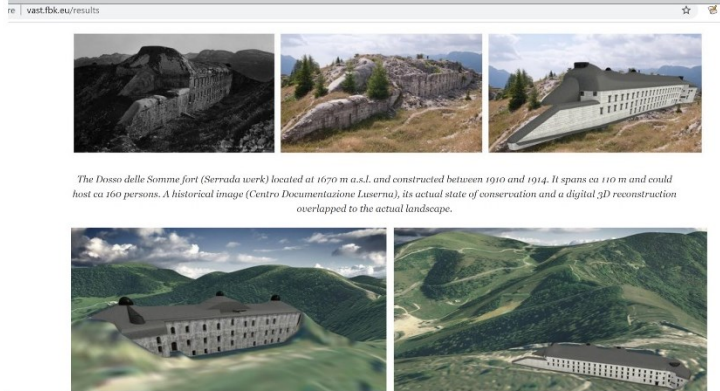
Reference and Image Source
<https://www.europeana.eu/en>
<https://www.europeana.eu/en/collections>



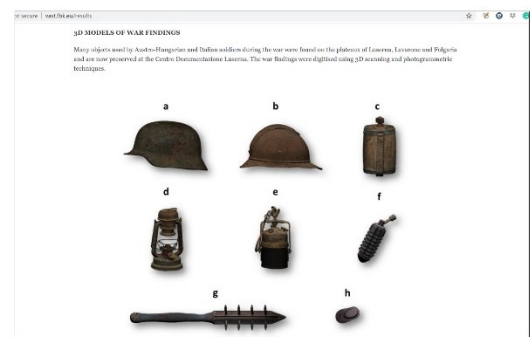
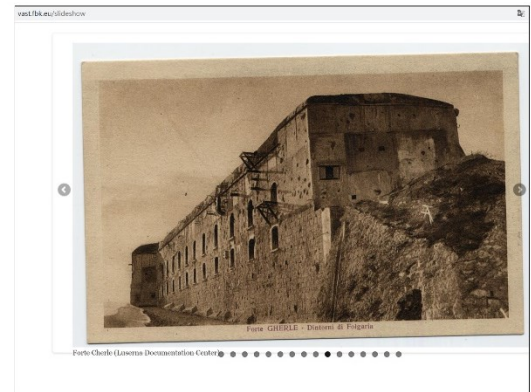
VAST project

Valorization of narrative history and heritage landscape

WWI Military constructions and artifacts surveyed and displayed in 3D



Innovative ICT technologies would have resulted in the valorization and protection of destroyed or considered as "in danger" WWI heritage sites. Subsequently, the key purpose of the VAST project is to turn on the light on the consequences of war for the local community, especially for the today's younger generations that have not any direct experience and memory about the war.



Reference and Image Source
<http://vast.fbk.eu/>
<http://vast.fbk.eu/results>

Good practices of multi-disciplinary projects in the cultural landscape revitalization



MNEMOSYNE project

The See_for_me project 2016-2017

Mobile computer system for intelligent audio guide which is a vision based

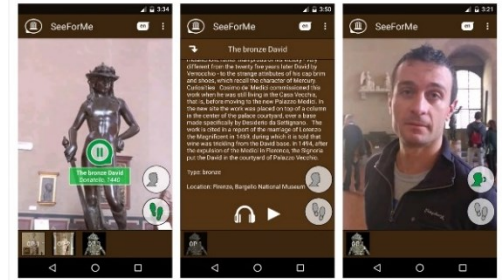
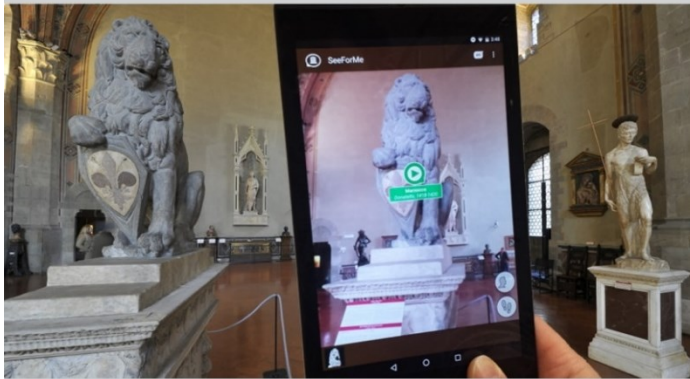


Fig. 7. (left) the user is listening to the description of the artwork, (center) the user is reviewing an item in the history, (right) the user is speaking with someone not focusing on any artwork.

This innovative project installed at the Florence, Bargello Museum. The linkage between mobile video cameras and an artificial vision software to perceive the visitors' trails in museum salons, by following the interested artworks for a visitor, it will define the individual profile that supports the data about artwork.

Broadly speaking, this project was successful in providing the opportunities for computer vision smart technology in coming after the applicant desire and interest and support simultaneously profiling with immediate feedback.

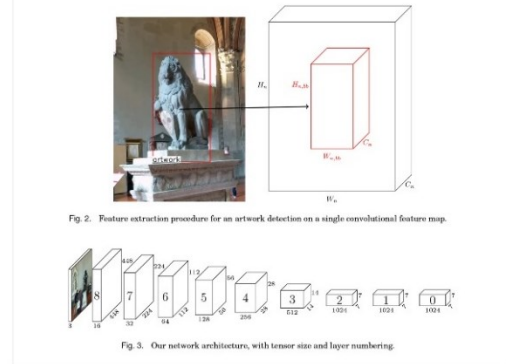


Fig. 2. Feature extraction procedure for an artwork detection on a single convolutional feature map.

Fig. 3. Our network architecture, with tensor size and layer numbering.

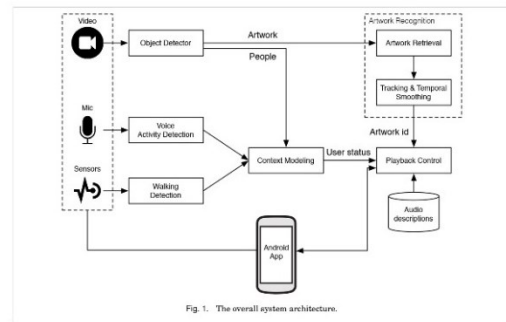


Fig. 1. The overall system architecture.

Reference and Image Source

<https://www.micc.unifi.it/projects/mnemosyne/>

Lorenzo Seidenari, Claudio Bacchi, Tiberio Uricchio, Marco Bertini, Alberto Del Bimbo ACM Trans. Multimedia Comput. Commun. Appl. VOL., NUM., Article ART. (March 2017), 21 pages.

Good practices of multi-disciplinary projects in the cultural landscape revitalization

HERICOAST project

Recall the stories of historical lighthouses

Navigation and naval history through videos, photos and written text

The main purpose of the Coastlight.net project is to recall the stories of historical lighthouses, other supports to navigation and naval history through videos, photos and written text. The primary concept of stories has interconnection with geographical characteristics through the digital map utilization. The domain of services in The Coastlight.net project is in smartphones, common tablets and personal computer machines.

Reference and Image Source
<https://coastlight.net/>
<https://www.interregeurope.eu/hericoast/>

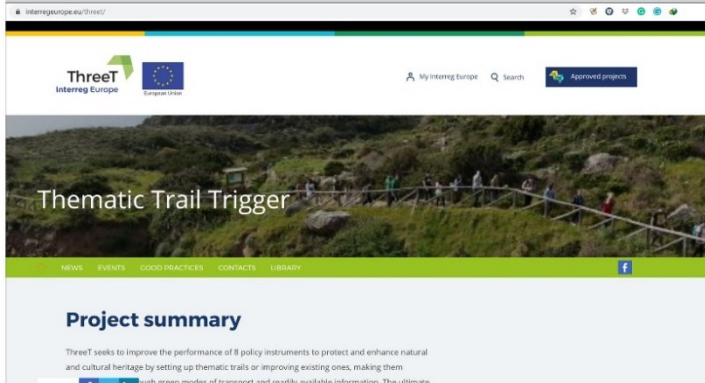
Good practices of multi-disciplinary projects in the cultural landscape revitalization



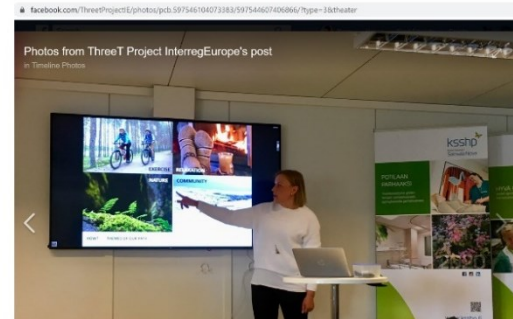
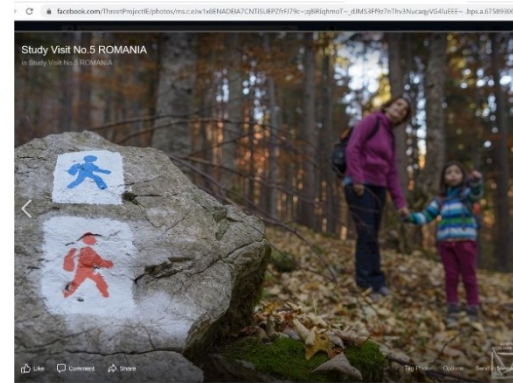
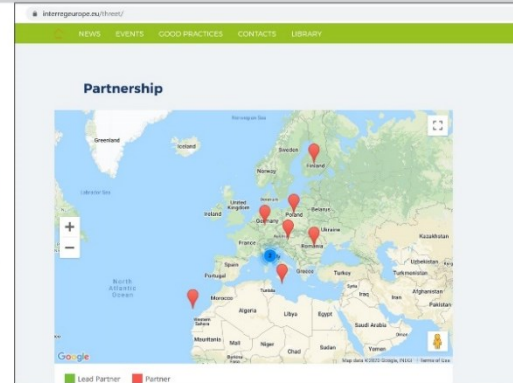
THREET project

To achieve the maximum possible level of eco-tourism in heritage sites

Improving the performance of 8 policy tools for protecting and enhancing natural and cultural heritage



The main idea of the project to be initiated in all project actions is a bottom up method for formulating the Action Plan with the main stakeholders. By applying the scheduled actions, their contribution is predicted to perform as a strong multiplier pedal to share the benefit and regional cohesion of domestic groups. The exciting Stakeholder Groups in the project will establish a permanent environment to be sure of a resilient influence related to the plan problem and resulting activities planned/implemented.



Reference and Image Source
<https://www.interreurope.eu/threet/events/event>
<https://www.facebook.com/ThreetProjectIE/>

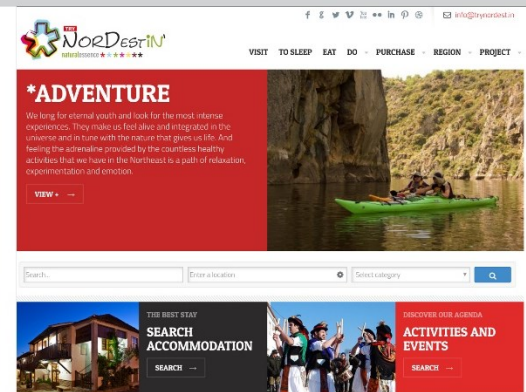
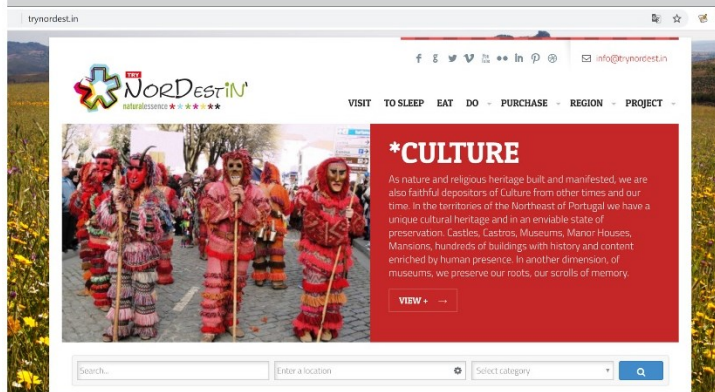
Good practices of multi-disciplinary projects in the cultural landscape revitalization



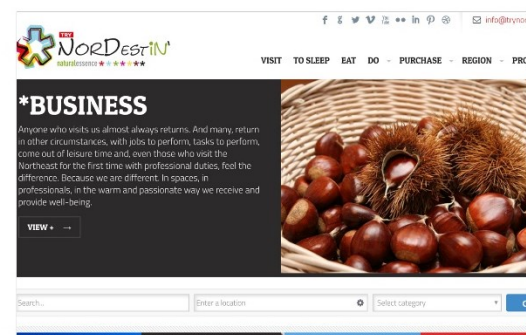
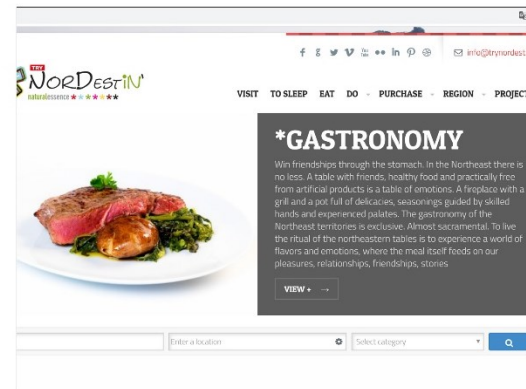
NordestIn project

Intends to cover all the Northeast of Portugal

A platform, a movement of innovation and promotion of territorial tourist destiny



That is a platform, a movement of innovation and promotion of territorial tourist destiny, that intends to cover all the Northeast of Portugal. This program is grounded on a complete Tourist and Business Directory, where identifies all the Points of Interest (POI) of the territories, including natural and cultural spaces, leisure equipment, accommodation, restaurants, handicraft, units of production, and so on



Reference and Image Source
<http://www.trynordest.in/>

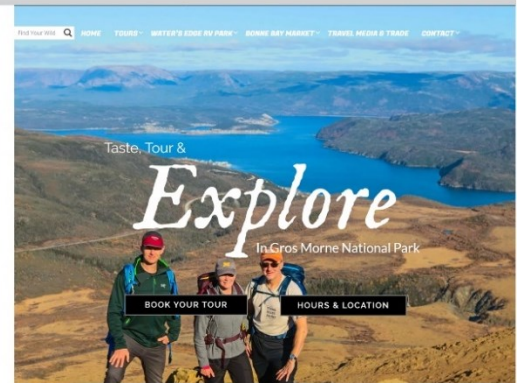
Good practices of multi-disciplinary projects in the cultural landscape revitalization



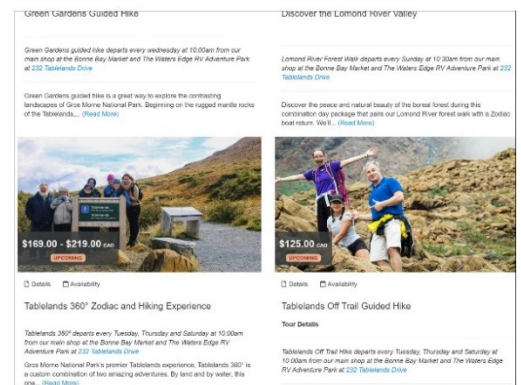
Gros Morne National Park World Heritage Site

A model in heritage protection

Thanks to the collaborative actions of stakeholders and park management



Gros Morne National Park is a 1,805 km² protected heritage area that was established in 1973 as a result of an agreement between the Government of Canada and that of the Province of Newfoundland and Labrador. The park was inscribed under Criterion (vii) of the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage as it is. This collaborative approach has become standard operating procedure in Gros Morne National Park and is the subject of this nomination. The various working groups and collaborative arrangements that have been formed balance the rights of user groups with resource protection needs and help to realize appropriate development opportunities.



Reference and Image Source

- UNESCO,2012, Gros Morne National Park World Heritage Site,A model in heritage protection and presentation thanks to the collaborative actions of stakeholders and park management
- <https://wildgrosmorne.com/>



MEMOLA Project

Mediterranean Mountainous Landscapes

An historical approach to cultural heritage based on traditional agrosystems.



- Research
Main approach 1
- Design
Main approach 2
- Stimulate
Main approach 3
- Apply
Main approach 4



Research of the process of historical landscapes formation in connection to natural resources utilization, in particular soil and water. Introduce the historical perspective (4th dimension), which we consider to be a powerful interpretation key, in landscape studies.

Design context-tailored strategies of preservation, diffusion and valorisation of the tangible & intangible cultural heritage and of the environment. Stimulate sustainable development in rural areas. Analyse the efficiency of these systems and the current problems of survival within the context of global climate change and the framework of European policies.

Stimulate sustainable development strategies in rural areas by analysing the agrosystemic contexts and their current struggle for survival. Develop new methodologies for the study of cultural landscapes, through the creation of scalable working protocols, able to take advantage of the solid background of technologies and analysis methods available to the research group:

Apply a multidisciplinary approach with a wide range of specialists involved in cultural heritage studies, promoting skills-hybridization. Promote skills-hybridization in research work (both humanist and scientific aspects), prompting new forms of job creation.



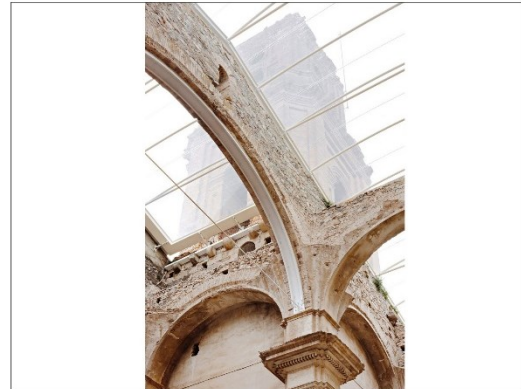
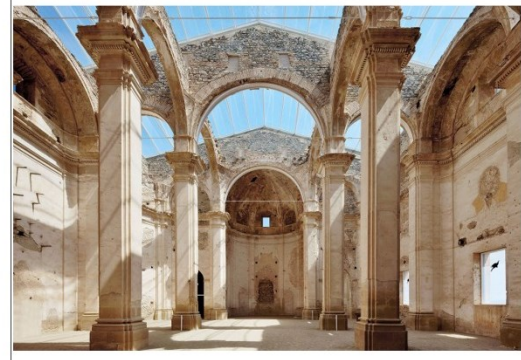
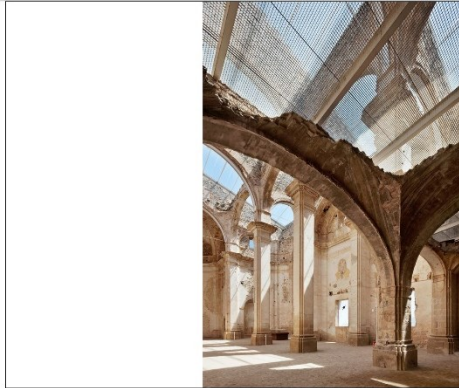
Reference and Image Source
<https://memolaproject.eu/node/2242>



RESTORATION OF THE OLD CHURCH OF CORBERA D'EBRE

BY FERRAN VIZOSO ARCHITECTURE

METALOCUS, DANIEL MADERA

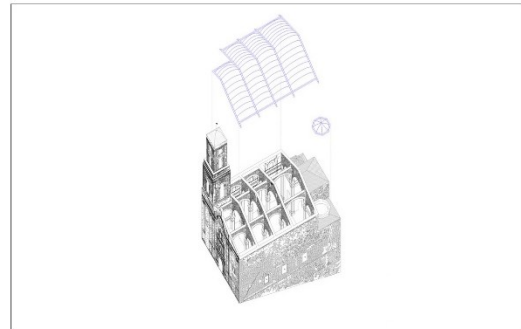


The main objective of the intervention was the recovery of the public use of the old temple without overturning its appearance, symbol and expression of the Battle of the Ebro. Its transformation into a safe new large multifunctional hall did not have to alter the memory of the War Civil that the building represents so well.

From the beginning of the work one thing was clear, the restoration had to preserve the subtle balance between nature and construction, between exterior and interior, that all the ruins have.

The perception of being still outside the "being inside" had to be maintained.

The recovery of the civic use of the old church has closed old wounds and has helped that the older people of the place reconciled with the scenes of its infantile games. This has undoubtedly been the greatest joy that has given us of this work.



Reference and Image Source

<https://www.metalocus.es/en/news/restoration-old-church-corbera-debre-ferran-vizoso-architecture#>

GP 21: The refurbishment project of bridge over the Songyin River in Shicang village

Good practices of multi-disciplinary projects in the cultural landscape revitalization



Bridge at Shimen Village

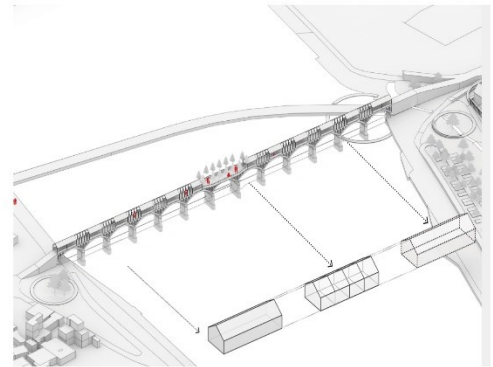
**A model in Architectural Acupuncture
PEDESTRIAN BRIDGE, REFURBISHMENT**

Songyang, Lishui, Zhejiang, China

Architects: DnA, Xu Tiantian

Area: 460 m²

Year: 2017



The architect designed a simple wooden structural element, which defines the new space with its additive sequence. In the middle, a square planted with trees invites spending time. The visual connection to the river, but, even more, the cultural elevation of the bridge, assists the two neighboring villages in defining a shared cultural space that makes it possible to experience their historical link in a new way.



Reference and Image Source

"Shimen Bridge / DnA" 25 Apr 2018. ArchDaily. Accessed 1 May 2020.
<<https://www.archdaily.com/893222/shimen-bridge-dna>> ISSN 0719-8884
Photographs: Ziling Wang, Dan Han

4 Chapter 4: Case Study: Bisotun Cultural Landscape Multi-Criteria Studies

Introduction

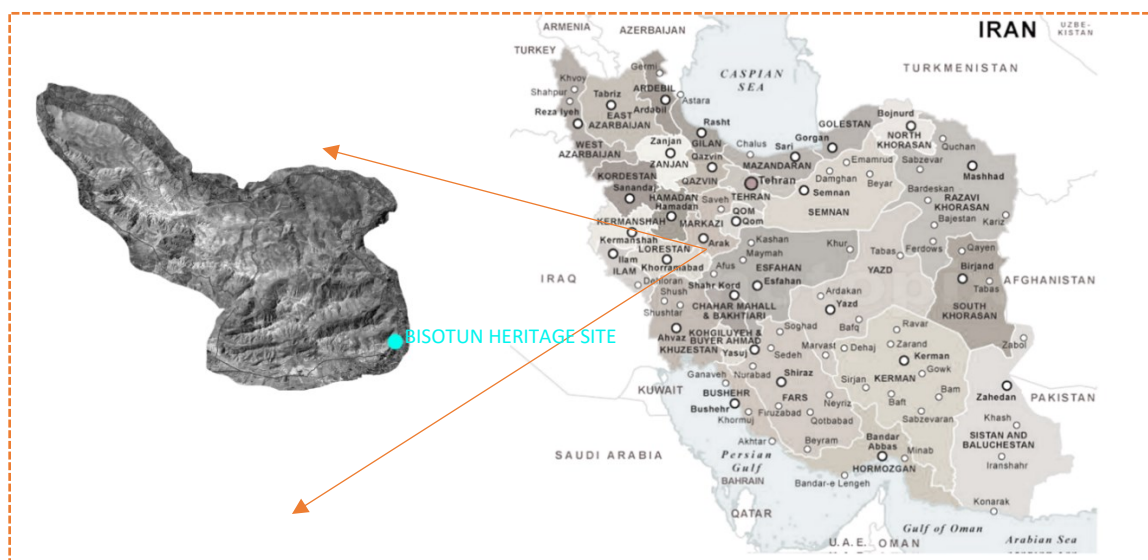
Bisotun region is located 30 km NE of Kermanshah province in the western part of Iran (Map.4-1). The Bisotun is not only the name of a geographical area, but also a mountain, plain, famous rocky cliff, and the wildlife refuge environment, take Bisotun as their prefix. This area, as a wildlife refuge, encompasses unique ecological and natural aesthetical values. Several caves deep inside the mountain (providing habitat for Neanderthal man), and also Gamasiab and Dinevarab rivers, native flora, and fauna all were the influential contexts in shaping the culture-historical events, artistic relics, and pivotal memories. In particular, the natural features of Bisotun were an introduction to the formation of culture and human history in this region. The Bisotun natural landscape features provided the ideal context of flourishing civilization and cultural heritage.

Bisotun Cultural Heritage arises in conjunction Sheer cliff of the sacred mountain and an eternal spring in its foothill. Its core zone location across the ancient Shahi road linking Persia with Mesopotamia and caravan trail and military route from Babylon and Baghdad over the Zagros mountains created the crossroad of cultures in this hotspot (Kleiss²⁷⁷, 1970, WHC²⁷⁸,2006, Khanmoradi²⁷⁹, M., Ghasrian, S. 2011). Outstanding historical values in 35,000 hectares of national protected buffer zones of the Bisotun NCL are more than 190 remnants set out the collection of authentic history and archeological traces from the Paleolithic period to the Median, Achaemenid, Sassanian, Ilkhanid, Safavid, and Pahlavi periods in later centuries. (Herzfeld²⁸⁰, E. 1920, Lushey²⁸¹, 1965, Coon²⁸², Carleton S. 1949. Rezaei²⁸³, H., 2009, Golzari²⁸⁴, M.2017)

Bisotun is remarkable because of the well-known bas-relief and the multilingual cuneiform inscription ordered by Darius I the Great, when he ascends to the throne of the Persian Empire, observable on the inaccessible cliff of Bisotun mountain. It is not only the longest inscription of the Achaemenids but also the most critical document of ancient Persia civilization. This testimony illustrates the turbulent life of the first four years of the kingdom of Darius I the great expression of Achaemenid art in the idiom of his reign (522-518 BC), (Schmitt²⁸⁵. R. 1991, Lushey, 1965,

Golzari, M.2017).Luschey emphasized that Bisotun's so-called is the "gate of Zagros mountains chain," and Hertzfeld called it the Gate of Asia. The inscription of the Bisotun core zone on UNESCO WHC in 2006 raised international awareness about this outstanding universal value. Bisotun deciphers the civilization milestones regarding various tangible traces of rocky sanctuaries, caves, bridges, memorial bas-reliefs, water canals, inscriptions, caravansary, palace and garden, that laid on this site through a time-honored long history.

This context, impulse several pieces of literature narratives and folklore stories mingled with Bisotun. The love legend "Khosrow and Shirin" by Nezami Ganjavi (12th-century Persian poet) and numerous Miniatures (painting) which illustrate the natural landscape of Bisotun result in enduring of this place in memories. This cultural landscape impresses the meaning of "nature" in the labyrinth of history, and a part of history that without nature, could not be formed. Although this unique mountain lies in a historical silence, this silence is replete with many unknown mysteries. A cultural Landscape revitalization stepping-stone in this research is the recovery of the relationship between Bisotun nature and human heritages. Defining principles in a comprehensive revitalization plan regarding three main aspects of the case study coincide. Natural, Historical, and Narrative layers.



Map 1: Location of BISOTUN Region in IRAN, Source: Author, 2020

This chapter will answer to these questions about Zone1 and Zone 2 of this case study:

Practical Questions about Case study

- What are the Strengths, Weaknesses, Opportunities, and Threats of Bisotun Natural Landscape
- What are the characteristic and challenges of acupunctural points of Bisotun Historical landscape

According to the definition of CL in this research:

The cultural landscape is a type of the natural landscape, which the continuous human interactions during history, create obvious cultural indications interlinked with its context, that can be examined tangibly and intangibly. These cultural traces arise in the framework of cultural values and attributes of each cultural area, and in societies where these profound values are progressive and refreshable, they are transformed over time and can be reconfigured in their past context.

The case study of this research, Bisotun site, has distinct characteristics that align with the mentioned above Cultural Landscape definition. Literally, the asserted definition strands of multidisciplinary studies around the entwined layers of the Bisotun as a case study. In this chapter, the border of this definition will be going forward after study results about narrative layers of Bisotun CL, and the meaning of the Narrative Cultural Landscape and two genres of this type of CL will be revealed. The core research questions in zone 3, which, this chapter will answer are:

Theoretical Questions

- How the epic and romantic literature genres perceived from the narrative CL context?
- What are the primary principles of epic and romantic narrative, cultural landscape?

Theoretical and Practical Questions about Case study

- Which type of literature genres bound to the Bisotun cultural landscape?
- Is it possible to find Iranian literature genres (Epic (Pahlavani) and Romantic (Asheghane)) narrations characteristics in Bisotun NCL?

The structure of this chapter has been depicted in the following diagram. (Three selected colors for three zones will use for simplifying finding the relevant content of each zone.)

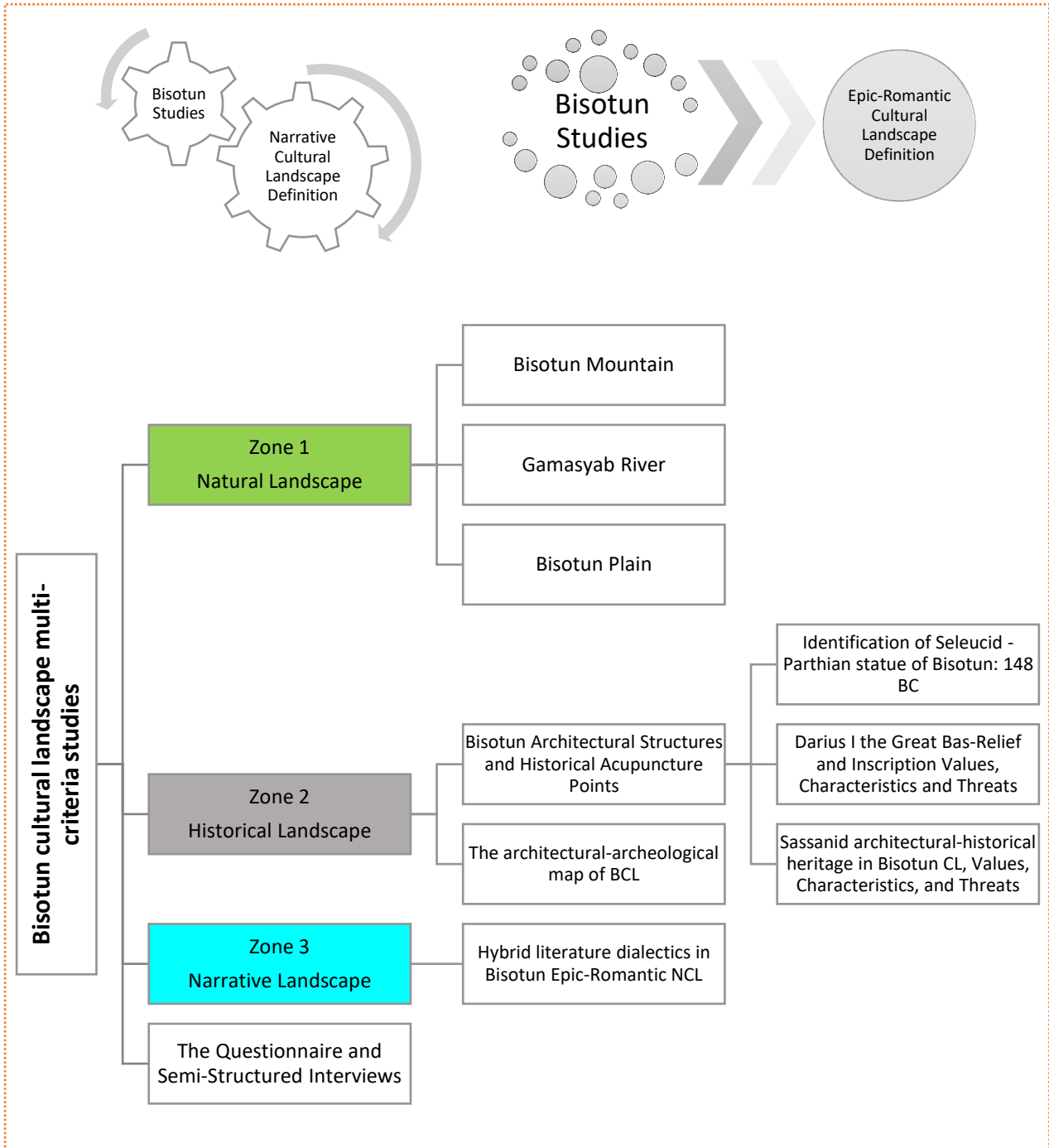


Diagram 18: Relation between Bisotun studies and its theoretical framework of research, Source: Author, 2020

4.1 Zone 1: Bisotun Natural Landscape



Figure 4: Bisotun Natural Landscape-Source: Ali Sohrabi,2016

Protection and rehabilitation of NL is a primitive global necessity, particularly in cultural landscapes that natural features and cultural values are inextricably linked. "The connection between nature and culture is unique in every region of the world and returns to the attitude of every culture to nature. Failure to take into account these differences will lead to inappropriate decisions to protect cultural landscapes²⁸⁶". Effective decision-making and designing a revitalization master plan in these sites require meticulously multidisciplinary studies in ecological structures.

Recognizing this, The IUCN WCPA's²⁸⁷ guidelines and best practice authoritative resource considered in reading the environmental and ecological features and have been implemented in measuring threats and opportunities of Bisotun NL. "For IUCN, only those areas where the main objective is conserving nature can be considered protected areas; this can include many areas with other goals as well, at the same level, but in the case of conflict, nature conservation will be the priority."²⁸⁸.

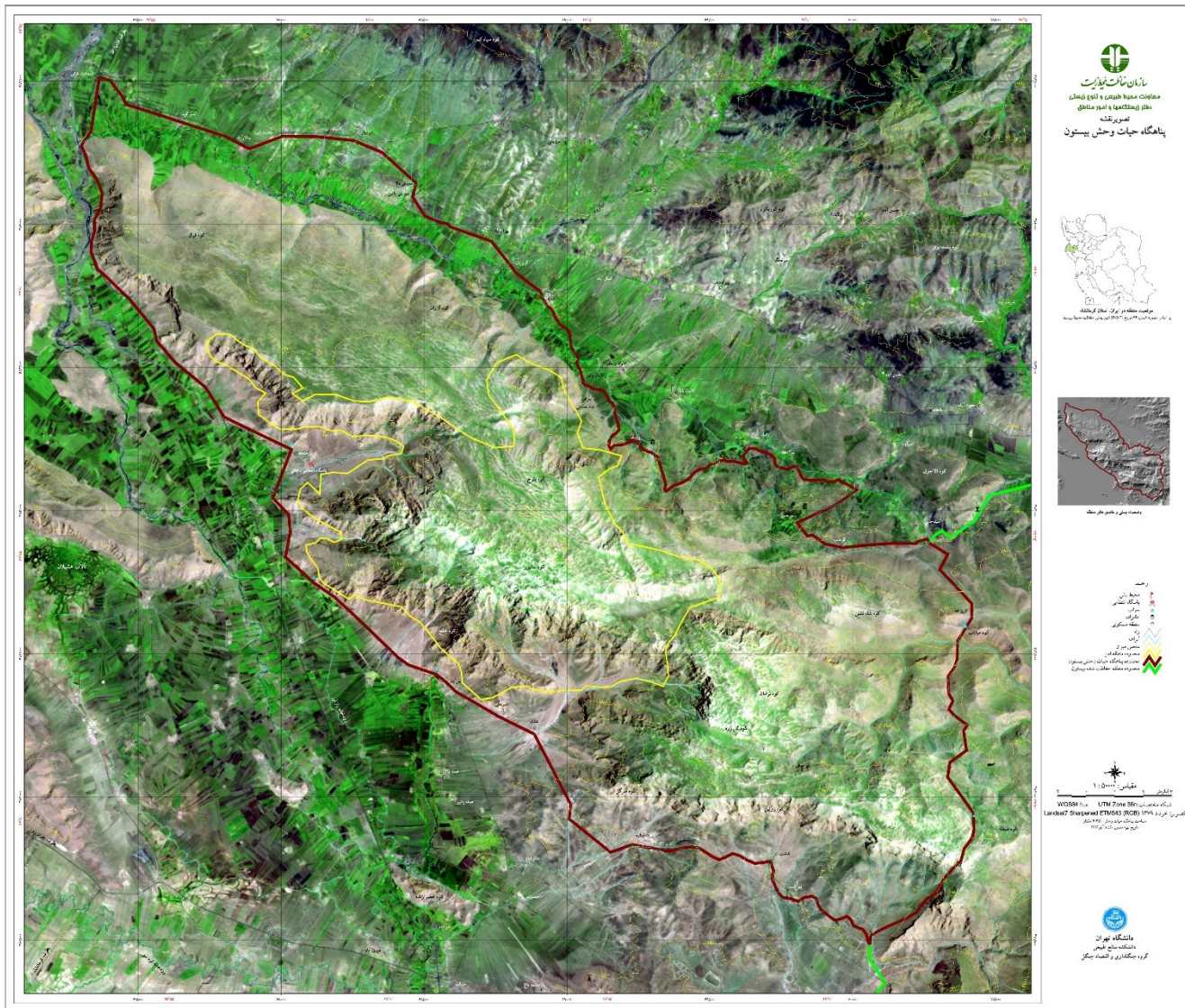
In this research, the study zone 1(Bisotun) includes the part of the Bisotun mountain protected area, plain, and the Gamasiab river, located in Bisotun national landscape boundaries.

Today, despite the ecological and cultural potentials, Bisotun NL confronts escalating ecological crisis and species extinction. It is controversial that this unique wildlife refuge is in danger of degradation, but new industries are still established in its landscape boundaries with long-lasting effects on vulnerable natural features, historical monuments, and the local economy.

This section is the result of field observation, background literature survey, review of the Department of Environment²⁸⁹ reports, and analyzed the results of the questionnaire, which the local peoples filled about the current features and conditions of the Bisotun NL. The results and sample of this questionnaire presented at the end of this chapter. By synthesizing the ecological studies in this chapter, I attempt to pave the way in proposing an action plan and define solutions and design policies in this zone, which have been figured out in chapter 5.



Map 2: Bisotun Protected Area- Source: Department of Environment,2005



Map 3: Bisotun Wildlife Refuge, Department of Environment, 2005

4.1.2 Bisotun Natural Environment: Air, Water, and Soil

Air and Climate: Bisotun's climate is governed mostly by the high-altitude windward mountain. The region is generally classified in semi-arid climates. Precipitation begins in mid-autumn with an influx of damp Mediterranean fronts to the east and ends in mid-spring. Averaged annual rainfall over land is 450 mm. Generally, the dry period (vegetative growth) is practically from May to September. Moist air in the cold season condense and fall out as snowfall, remains in the catchment area and then gradually melts in the warm season, feeding on surface water bodies and groundwater resources. During the warm weather, it is predominantly in the form of thunderstorms, flowing rapidly to land and rivers, and its effect on groundwater recharge in ephemeral, causing flooding and deterioration. The maximum temperature during the year ranges from 30 to 35 °C, with a minimum temperature of -12 to -13 °C. The average annual temperature ranges from 13 to 16 °C. One of the acute effects of temperature fluctuation in the area of rock degradation is weathering. The cycle of mechanical stresses due to freeze/thaw and wet/dry cause to collapse the stone material and significant threat to historical monuments on Bisotun cliff.

Air pollution: The emergence of polluting factories inside the boundaries of Bistoun's NL, including sugar beet factory, dairy industry, textile mills, cement factory, asphalt plant manufacture, and thermal power plants, are the culprits of the region's air pollution. Furthermore, the most life-threatening pollutants in the Bistoun NL refer to Petrochemical Company, which was established nearly two decades ago contrary to cultural-environmental regional laws. Nongovernmental environment agencies and cultural heritage activists and ecological experts have long been calling for the relocation of contaminating factories infringing Bistoun NL. The situation of pollutants in these factories has been so high that the director-general of Kermanshah Environmental Protection Organization in December 2017, complaining about them and called for concrete steps in reducing contamination emission in the region. The air chemical reaction with industrial pollutants causes the atmospheric gases of carbon dioxide CO₂, sulfur dioxide SO₂, and nitrogen dioxide NO₂ and acidic rains that accelerated weathering, stones biogeophysical and biogeochemical problems like

lichen which caused to the stone degradation and the silent death of the historical surfaces on Bistoun rocks.

Water resources: The predominant natural surface water resources in the area are two rivers: *Gamasiyab* and *Dinevarab*, which naturally replenished by precipitation and springs. After rivers, the permanent mirages locally called Sarab are the most critical surface sources in the region like *Barnaj* and *Sohrab* Sarab. Mirages are springs above the level of the rivers that flow naturally in the plain and are also part of surface water resources.

Surface Water Resources in the Bistoun NL: In general, the surface flow regime in the watershed of the region is seasonal, and runoff occurs after heavy rainfall or thawing winter snow that can last up to two months. The existence of numerous water caves in Bistoun mountain confirms the occurrence of underground rivers in this natural landscape. Surface water flow in most waterways is usually short-lived and is related to a few days or even hours after heavy and prolonged precipitation. Thus, surface flows that can seep into the cracks and pores of the rock fracturing in karstic limestone layers collide with low-permeability layers and at topographic postures, appear as large mirages. "Several types of karst features, the surface kind especially, have been developed because of high rainfall in the area, tectonic crushing and high purity of the rocks²⁹⁰"

There are about 70 permanent springs in this region based on available data that are exploited by the locals as the safe drinking water. The unsustainable excessive aquifer extraction by the deep wells for agriculture and industrial intentions has led to a sharp decline in water table levels in the region and will cause groundwater to be lost in the future

Soil: Geologically, the surface runoff over the Bistoun plain has caused fine-grained sediments to form on the surface of the soil and to form underneath layers the sand. Therefore, the layers that form the surface of the soil are very fertile, and the lower layers play the role of filter, which helps to provide proper aeration and moisture to the upper layers

On the other hand, due to the absence of a sustainable soil management framework in the region, numerous factors have caused increasing soil erosion in the area. Water and wind erosion are

natural reasons of soil erosion in the Bistoun plain, although the influence of human activity in exacerbating these factors cannot be overlooked.

Human-induced actions such as industrial agriculture, road construction, mining, and land degradation to build factories, overgrazing pastures, deforestation, and bushfire are activities that can underpin soil deterioration and intensify erosion factors.

The foremost reason for land degradation urged by the pressing construction projects in the region. Building multiple garrisons and military camps and roads to access and connect them and, on the other side, constructing massive industrial projects, break down the geomorphology landform and natural landscape structures.

Additionally, besides the ecological effects, the construction projects also cause irreversible damage to the archaeological layers of the Bisotun land.

Because the mechanical pressure on the ground surface and accumulating chemical contaminants cause crushing the historical layers. Archaeologists have warned against any development activities in the Bistoun plain. However, various construction administrations continue to dig wells, building roads, and underground piping in the area without regard to these warnings.

4.1.3 Bisotun Natural Landscape Acupuncture Points

Zone 1: Bisotun natural landscape and ecological features

- **Mountain, Plain, River, Vegetation, and Wilderness**

The panoramic overview and analysis of Bisotun NL features and components:

In this subchapter about zone 1 of the case study, the following issues have been examined and analyzed:

- The predominant critical points of Bisotun natural landscape
- The channels and natural corridors of ecological flow among points.
- The outside elements in enhancing or destroying the vital points of Bisotun natural landscape and the obstacles through the ecological canal flow.

Quantitative measurements of the value and feature quality of Bisotun NL have been reckoned out the results of observations, questioner analyzing, ecological map, reports of the Department of Environment, and Ministry of Cultural Heritage organizations in Kermanshah province, and independent researchers' outcome. (The applied methodology in this study has been explained meticulously in section 1-9).

The final measurements are figured out in SWOT analyzing Matrix to identify strengths, weaknesses, opportunities, and threats related to Bisotun NL studies (Zone 1).

- **Strengths:** Natural landscape features of Bisotun that cause the site outstand in the region, country, or global arena. (Acupuncture points of Bisotun NL)
- **Weaknesses:** obstacles on Bisotun NL that have disadvantages in the sustainable rehabilitation process of the site, which interrupt the ecological flows among the acupuncture point of Bisotun NL.
- **Opportunities:** Driving force in the environment that can be seized and applied to enhance the protection, rehabilitation, or valorizing the Bisotun NL site.
- **Threats:** elements in the environment that could cause interruption on continuous streams among substantial points
 - **Internal factors:** The strengths and weaknesses are internal factors of the Bisotun natural landscape cybernetic system.
 - **External factors:** The opportunities and threats are external factors aside from the Bisotun NL system.

4.1.4 Bisotun Mountain

Bisotun is the name of landforms of the mountain, peak, and a cliff, which is linked to Parow elongated mountain ranges with 1020 kilometers in length. In panoramic view extends from Zagros Mountain chains and so-called The Gate of Zagros. The height of Bistoon Peak is 2440 meters above sea level. In this mountain, the largest calcareous cave in the world and its structure is

related to the third period of geology., called Bistoun Cave, was registered as the second National Natural Heritage Site in Kermanshah which has a depth of 751 meters and a length of 1.36 KM and has 26 wells. This cave located in 3050 meters above sea level, which is the highest cave in the world and well known as Everest of world caves. D5 degree of difficulty recognized as one of the hardest caves to caving.

According to the Karstic, and permeable characteristic of the mountain has abundant sources of underground water. The particular prehistoric human habitation in the Zagros Mountains is tracked down in five natural caves (Markhar, Maraftaw, Martarik, Mardoudar, and Hunters) in Bisotun mountain which is the testimony of the Neanthedral human and inhabitant in this region dating back to the Paleolithic era. Bisotun rock wall, the grandest limestone wall in the world with 5km width and 1200m height, perpendicular to the flat plate of the plain. Shahbazi, director of the Kermanshah mountain climbing federation, announced in 2019 that more than 100 climbing routes opened on this cliff. (equipped with bolts and chains)

The Bistoun World Climbing Festival (Big wall Climbing Festival) has been held four times since 2010, and 120 competes in the last festival in 2018 rolling cliffs for five days .Nonetheless, due to problems with the lack of organization of the festival and foreign policy problems in the country that overshadow all activities of the tourism industry this international event does not regularly hold.

(Photo collection in BZ1-Bisotun Mountain-1,2)



Bisotun Mountain (1)



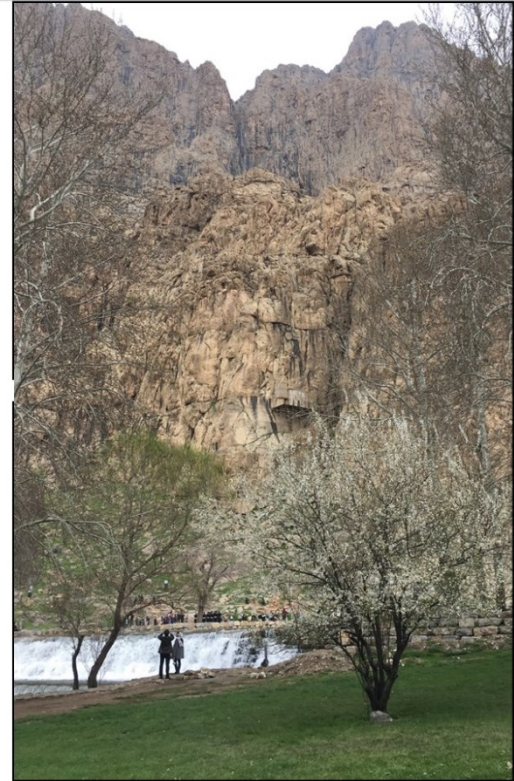
1: Bisotun mountain and Safavid Caravansary



3: Artificial Jungle in Bisotun foot hill



4: Bisotun Mountain , Local communities Kurdish dance



2: Bisotun cliff and Bisotun spring(Sarab)

Source

1: Ali Sohrabi 2016

2: Author 2019

3: Ali Sohrabi 2016

4: Author 2019



Bisotun Mountain (2)



5: Bisotun Mountain vegetation



2: The cave opening is a small hole



1: Parau Cave -Paraw cave or Ghar Parau is located in 3050 meter above sea level



4: Bisotun Mountain wildlife



3: The Bisotun big wall festival

Source

1: <https://www.itto.org/iran/attraction/parau-cave-kermanshah/>

2: <https://www.itto.org/iran/attraction/parau-cave-kermanshah/>

3: <https://fr.irna.ir/news/3653623/Le-festival-international-de-Big-Wall-Climbing-%C3%A0-Bisotun#gallery-16>

4: Hamed Tahmtan.ISNA

5: Author 2019

4.1.5 Gamasiab River

Gamasiab River is part of Dinevar watershed. This basin is limited to Gavrood watershed from north, Bistoun, and Paraw Mountains from the south, Nokhodchal Mountains from the east, and to Raazavar river from the west. The major drainage of the region is with Dinver River, which at last, joints to the Gamasiab River with 110 km long, which is one of the longest rivers in the country—feeding on subsurface water and a large number of karstic springs-. Gamasiab river confluences to the Qarahsu urban river of Kermanshah. The source headwaters of the river are Gamasib spring located in Hamedan province .

The foundation of a dam (Garin dam) on the Gamasiab source will be advancing toward completion in the near future. With the implementation of the Garin Dam, the Gamasiab spring, fall ten meters underwater. Excessive drain exploitation, both directly and indirectly, of the river, has caused the water shortage flow and even dry up its bed. The construction of this dam, filling the reservoir of 22 million cubic meters at the primary source of its spring, is the last blow to the river's life.

Gamasiab Ichthyofauna overview:

The term of the Gamasiab composed of: Ga, which means cow and Masi means fish in the Kurdish dialect- fish as large as a cow- river of huge fishes. The Gamasiab River is one of the main habitats of huge Barbus species, freshwater fishes, of Iran. Like many other large rivers in the Zagros basin, it is the source of many large sizes, species such as the Sung fish, the shrimp family, the Capour family, and the Soleiman fish family. These fish are the most valuable in the country inland waters. Unfortunately, until now, unknown and their potential value in artificial breeding and release into their source waters has not been addressed. According to observations by local fishers in the Gamasiab River, large fish have been abundant in past decades. Endangered fisheries, which are the most extensive inland waters habitat destruction due to excessive commercial overfishing, farming, poaching, river pollution (industrial and rural sewage discharge), and the dam construction, damages habitats, exposed to extinction or contributed to a decline in their numbers.

Gamasiab river pollution:

Gamasiab River Pollutants in the study area of zone 1 in this research are mostly industrial pollutants from the discharge of wastewater from many factories and industries in the region. However, the role of wastewater from agricultural land runoff includes pesticides, fertilizers along the river margin should not be overlooked.

Pollution from petrochemical activities has continually destroyed the Gamasiab River environment, either through contaminated groundwater or direct discharge of chemicals into the river bed.

In the catastrophe of the Gamasiab River aquatic deaths in the year 2010 due to the Urea (NH_2CONH_2) and Ammonia (NH_3) leakage from the Petrochemical manufacturing, the river ecosystem was in a severe biological dilemma²⁹¹.

In another case, in 2017, inputs from the sugar plant effluent entering the Gamasiab River, raw, without any treatment and with high pollution loads, resulted in at least six kilometers of aquatic death along the river²⁹². In the early years of the onset of the Petrochemical industry in the area, the rate of river water pollution was low. In the Sharifi research paper in 2003, it has been stated that River Gamasiab, compared with the larger river in more industrialized parts of the country, is moderately polluted. Since there is not a point source of pollution such as those producing heavy metals or organic micropollutants in the watershed area, it is, therefore, reasonable to consider the gross pollution caused by raw sewage and city runoffs as possible sources of toxicity in the River Gamasiab.²⁹³

Ten years later in 2013, Tayebi²⁹⁴ examined the quality of the Gamasiab river and definite that: Comparing the water quality parameters in Gamasiab River with water quality classification table in physical, chemical, and biological parameters showed that this river water quality is in waters with moderate pollution category. So, at present, this river can do self-purification of pollution. However, because of the policy of developing the Aquaculture Industry in Iran, especially Hamedan province and no controlling and monitoring of pollutant sources, this river would have serious problems such as purification in the future.

Although more recent research is lacking in this area, indeed, the growing trend of industrialization of the marginal regions and water flow decline due to dam construction and extravagant outgo of the Gamasiab River sources has no consequence other than higher water pollution level.

(Photo collection in BZ1- Gamasiab River)

List of Fish species in this region listed below.

Fish species Family Scientific name:

Cyprinidae Barbus esocinus-Cyprinidae Barbus grypus-Cyprinidae Barbus lacerta-Cyprinidae
Capoeta damascina-Cyprinidae Capoeta trutta-Cyprinidae Carassius auratus-Cyprinidae
Chalcalburnus chalcoides-Cyprinidae Garra rufa-Cyprinidae Leuciscus cephalus-Cyprinidae
Luciobarbus capito-Mastacembelidae Mastacembelus mastacembelus-Balitoridae Nemacheilus
frenatus-Balitoridae Nemacheilus kermanshahen



Gamasyab River



1: Gamasyab River and Khosrow Bridge



2: Gamasyab Spring in Nahavand, Hamadan



4: Garin Dam on Gamasyab in Nahavand, Hamadan



3: Gamasyab River route in Bisotun plain



5: GAMASYAB River flood 2019

Source

- 1: Bisotun World Heritage Research Centetr.
- 2: No Ref
- 3: <https://www.pinterest.co.uk/amp/pin/561683384751510896/>
- 4: <https://www.irna.ir/news/83289440>
- 5: <https://darhashiyeh.com/news/>



Map 4: Some of the industrial zones on Bisotun plain, Source: Author,2020, Map Source: <https://www.bing.com/maps>, 2020

4.1.6 Bisotun Plain

In the eastern, southern, and western slopes of Mount Bistoun, the vast and lush Bistoun plain covers an area of 28,600 hectares and 1350 m above sea level. The Gamasiab river crosses with the Dinevar river and passes through the Bistoun Plain. The plain ground covered with meadows, scattered trees and shrubs, and fertile agricultural land. This plain is one of the oldest areas where cultivation has begun. In the plain of Bistoun, grains, beets, sugar beets, tobacco, cotton, saplings, and fruit trees are cultivated. Another primary product of this plain is poplar wood and similar trees. Agriculture and horticulture in this plain is the occupation of most of the inhabitants of Bistoun. Rashid Yasemi²⁹⁵ Believes that the natural vegetation of the Bistoun plain has made it one of the leading centers of quality horse breeding. Therefore, the plain was also of military value because the breeding horses needed by the troops were carried out in the plain.

(Photo collection in BZ1-Bisotun Plain)

Wildlife

Specific natural characteristics of Bisotun NL such as:(i) Various-altitude range (high to low elevations), (ii) Mountain forests, (iii) Plentiful springs, (v) Ecological zone connection (among plain, river margins, and mountain species) create a proper environment for wildlife organism adaptations. Markedly, in the not too distant past, this region had a rich biodiversity habitat structure.

Bisotun Protected Area and Bisotun Wildlife Refuge (BPA & BWR)²⁹⁶ with about 95000 hectares the zone 1 study in this research is part of this area, but because of the ecological movements of wildlife in this encompass the all BPA region, the characteristic of wildlife in this region demonstrated briefly.

This natural district is home to a variety of mammals, birds, and reptiles, and has long been considered one of the best habitats for wild goat, wild boar, and wild sheep. Bisotun wild goat was exceptionally large in size and horn length (about 150 cm); however, the excess of prey has led to the extinction of them in this region.

The most well-known species of mammals in the region that have been identified in BPA & BWR are Golden jackal, Wolf, Wild goat, Striped hyaena, European hare, wild sheep, North Persian leopard, Wild boar, Brown bear, Common fox, Northern Caracal, Species of Bats, Wild Sheep, Lynx, and Hedgehogs. In table 4-1-1, the mammals' family and scientific name have been listed. The most familiar species of birds is Phasianidae (scientific name: *Alectoris chukar*) .the birds families are separated in two native and immigrant groups the predominant native birds which compose the half percentage of bird species in the region are: Golden eagle Raven, Owl, rock Dove, Rook, See- see partridge, Magpie, Red-billed and Chukar partridge. In table 4-1-2, The birds' species in BPA & BWR with family and the scientific name has been listed.

Amphibians: Frogs, Ranidae, and Green toads' family, which all of these amphibians as an important species in connecting plain, river margins, and mountain food cycle. The reptiles found in BPA & BWR include snakes, turtles, and lizards. Reptiles are cold-blooded animals, and so far, about 26 reptile species have been identified in the region. A native lizard of the region lives in one of Bistoun's caves, the only habitat for this lizard in the world, and is a global gene repository. 60 million years have passed since the evolution of this species, known as the " kermanshahensis *Asaccus* " which is discovered by Pouyani²⁹⁷ in 1996 The existence of such unique lizards helped to create the conditions and criteria for registering the natural environment of the Bisotun region in the World Heritage List.

Wildlife status:

The existence of garrisons and military camps and the inability to monitor their field activities inside the wildlife refuge, especially in sensitive habitats and critical conservation buffers on the one hand, and the development of foothill settlements, and finally, the expansion of livestock grazing and cattle and sheepdog presence, On the other hand, are the critical factors in wildlife vulnerability in the mountainous habitats of Bistoun NL. The soaring decrease in an impressive number of wild goats in mammals and Chukar in birds mostly refers to illegal hunting. Indigenous people collecting birds' eggs and chicks and unlawful shooting to mammals cause to perishing the native prey of the

wildlife food chain, and the other animal above the food pyramid (like north Persian leopard) cannot adapt to this situation. Additionally, due to human-induced interfering developments, Bisotun NL (BPA & BWR) turns into an ecological island that its vital link with its surrounding habitats severed. The existence of asphalted roads and broad highways, numerous industrial centers, agricultural fields, and fruit farms have been critical obstacles in wildlife motion and seasonally migration. The impossibility of commuting and mixing of populations of animal species, especially mammals, has provided the conditions for species isolation.

Disruption of this natural flow cycle is a high-influenced factor in the extinction of wildlife species in this region. Khoram²⁹⁸ and his colleagues in 2014 after comprehensive studies in this research, various animal and plant species were recognized through documentary analysis and also directs field observations. The obtained result indicates that major threats have occurred in biodiversity and the ecosystem of BPA & BWR during 1980-2010. During these years, the study area has ultimately failed and lost some of its biological diversity. Limiting factors that affect wildlife population growth, including destruction and conversion of habitats, illegal hunting, and high-frequency presence of animals and humans, have influenced the restoration potential of wildlife, habitats, and other conservation areas.

Species	Family Name	Scientific Name
Mammal species (Bisotun Protected Area and Bisotun Wildlife Refuge)	Canidae	<i>Canis aureus</i> (Golden jackal)
	Canidae	<i>Canis lupus</i> (Wolf)
	Bovidae	<i>Capra aegagrus</i> (Wild goat)
	Felidae	<i>Felis silvestris</i>
	Muridae	<i>Gerbillus nanus</i>
	Erinaceidae	<i>Hemiechinus auritus</i>
	Hyaenidae	<i>Hyaena hyaena</i> (Striped hyaena)
	Hystriidae	<i>Hystrix indica</i>
	Leporidae	<i>Lepus europaeus</i> (European hare)
	Muridae	<i>Meriones persicus</i>
	Vespertilionidae	<i>Miniopterus schreibersii</i>
	Muridae	<i>Mus musculus</i>
	Ochotonidae	<i>Ochotona rufescens</i>
	Bovidae <i>Ovis</i>	<i>Ovis orientalis</i> (wild sheep)
	Felidae	<i>Panthera pardus saxicolor</i> (North Persian leopard)
	Erinaceidae	<i>Paraechinus hypomelas</i>
	Vespertilionidae	<i>Pipistrellus kuhlii</i>
	Rhinolophidae	<i>Rhinolophus euryale</i>
Sciuridae	<i>Sciurus anomalus</i>	
Suidae	<i>Sus scrofa</i> (Wild boar)	
Ursidae	<i>Ursus arctos</i> (Brown bear)	
Canidae	Canidae <i>Vulpes vulpes</i> (Common fox)	

Table 3: Mammal species (Bisotun Protected Area and Bisotun Wildlife Refuge), Source: Department of Environment in Kermanshah province, 2014

Species	Family Name	Scientific Name
Bird Species Bisotun Protected Area and Bisotun Wildlife Refuge	Accipitridae	<i>Accipiter gentilis</i>
	Accipitridae	<i>Accipiter nisus</i>
	Alaudidae	<i>Alauda arvensis</i>
	Phasianidae	<i>Alectoris chukar</i>
	Phasianidae	<i>Ammoperdix griseogularis</i>
	Anatidae	<i>Anas crecca</i>
	Anatidae	<i>Anas platyrhynchos</i>
	Anatidae	<i>Anser anser</i>
	Apodidae	<i>Apus apus</i>
	Accipitridae	<i>Aquila chrysaetos</i>
	Accipitridae	<i>Aquila heliaca</i>
	Accipitridae	<i>Aquila pomarina</i>
	Accipitridae	<i>Aquila rapax</i>
	Ardeidae	<i>Ardea cinerea</i>
	Ardeidae	<i>Ardea purpurea</i>
	Strigidae	<i>Athene noctua</i>
	Strigidae	<i>Bubo bubo</i>
	Accipitridae	<i>Buteo buteo</i>
	Sylviidae	<i>Cettia cetti</i>
	Columbidae	<i>Columba livia</i>
	Columbidae	<i>Columba oenas</i>
	Columbidae	<i>Columba palumbus</i>
	Coraciidae	<i>Coracias garrulus</i>
	Corvidae	<i>Corvus corax</i>
	Corvidae	<i>Corvus corone</i>
	Corvidae	<i>Corvus frugilegus</i>
	Corvidae	<i>Pica pica</i>
	Corvidae	<i>Pyrrhocorax pyrrhocorax</i>
	Ardeidae	<i>Casmerodius albus</i>
	Phasianidae	<i>Coturnix coturnix</i>
	Cuculidae	<i>Cuculus canorus</i>
	Ardeidae	<i>Egretta garzetta</i>
	Emberizidae	<i>Emberiza melanocephala</i>
	Falconidae	<i>Falco cherrug</i>
	Falconidae	<i>Falco peregrinus</i>
	Falconidae	<i>Falco subbuteo</i>
	Falconidae	<i>Falco tinnunculus</i>
	Alaudidae	<i>Galerida cristata</i>
	Corvidae	<i>Garrulus glandarius</i>
	Accipitridae	<i>Gypaetus barbatus</i>
	Accipitridae	<i>Gyps fulvus</i>
	Accipitridae	<i>Hieraaetus fasciatus</i>
	Sylviidae	<i>Hippolais pallida</i>
	Sylviidae	<i>Locustella luscinioides</i>
	Sylviidae	<i>Locustella naevia</i>
	Alaudidae	<i>Melanocorypha calandra</i>
	Meropidae	<i>Merops apiaster</i>
	Passeridae	<i>Montifringilla nivalis</i>
	Accipitridae	<i>Milvus migrans</i>
	Accipitridae	<i>Neophron percnopterus</i>
Passeridae	<i>Passer domesticus</i>	
Passeridae	<i>Passer hispaniolensis</i>	
Passeridae	<i>Petronia brachydactyla</i>	
Sylviidae	<i>Phylloscopus trochilus</i>	
Picidae	<i>Picoides major</i>	
Picidae	<i>Picoides medius</i>	
Picidae	<i>Picoides minor</i>	
Picidae	<i>Picoides syriacus</i>	
Pteroclididae	<i>Pterocles coronatus</i>	
Pteroclididae	<i>Pterocles orientalis</i>	

Table 4: Birds species (Bisotun Protected Area and Bisotun Wildlife Refuge), Source: Department of Environment in Kermanshah province, 2014

Vegetation: The economy of local communities tied to the environment. For sustainable productivity in agriculture and husbandry, it is required to protect the natural landscape sources, and with continuing this excessive exploitation, the intensive feedbacks will be for these locality economies. The specific environmental characteristics of Bisotun NL made the hot spots of diversity and unique flora genetic according to the landscape level. Include forest cover, plain-mountain, native species, and crops in the low hill and plain lands. Based on field studies, "About 387 plant species have been identified in the region of which 42 species are endemic of Iran and should be managed as a genetic reserve²⁹⁹"

Available tree species are West Oak, *Acer monspessulanum*, *Lonicera nummularifolia*, and *Crataegus*. Shrub species that grow in the area include *Rhamnus*, *Amygdalus scoparia*, *Pistacia atlantica*, *Ficus carica*, *Prunus incana* and *Amygdalus lycioides*. The vegetation symbol is the oak forest. The scientific Oak species found in the area is *Quercus brantii* Prsica. The following table summarizes a list of the most known plant species in the region with their family and scientific name. Apart from endemic plant species in the hand-planted species are also noticeable in the Bisotun foothills. In 1970 (9 years before the revolution in Iran), the artificial forest is planted in the Bistoun Mountain foothills. An artificial forest of 200 hectares east of the historic Bistoun site begins with the planting of pine, cedar, oak, almond, juniper, and acacia seedlings which irrigated by wells and underground water resources. Unfortunately, after the revolution, due to the lack of responsibility for the preservation and development of this artificial forest, the irrigation network pipeline components were removed, and no consideration was occurring in the conservation and development of these human-made planting forests.

Flora current statues: Most native plant species in the region are highly vulnerable and at risk of extinction. Three species of the mountain: (i) *Alkanna frigida* , (II) *Jurinea carduiformis*, and (iii) Shallot (*Allium hirtifolium*) recorded in the Red List of Research Institute of Forests and Rangelands and need more conservation attention. Most native plant species are in poor growing conditions,

and what is seen is often grazed by stocks. Most of the foremost progressive problems confronted by flora in Bisotun NL involve the following issues:

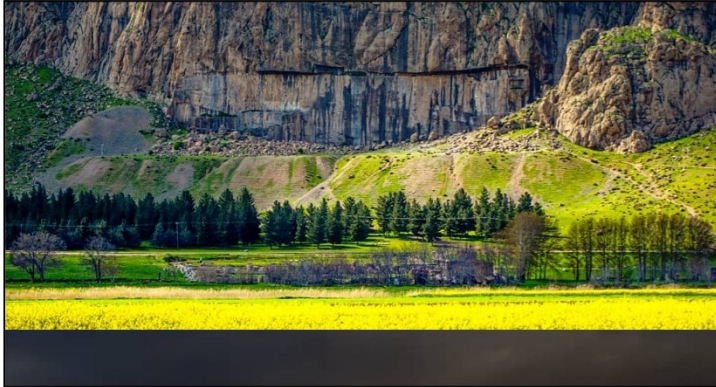
- Branching and customary use of forest resources-Felling trees in the area for fuel usage
- Bare and compacted soil surface because of soil erosion
- Drought and climate change as the natural factors exacerbating vegetation poverty
- herders from neighboring areas are pressing pastures by cattle grazing
- Illegally harvesting: forage, fruits from wild fruit trees, and also medicinal plant harvesting.
- Due to the rocky area, the vegetation reviving process is time-consuming and complicated.
- The soils of native forests have been damaged and eroded due to over-livestock traffic and over-season exploitation. It caused unsuitable seed germination conditions.
- Less than 10 percent of the species in the range of plants are suitable for nature conservation: Of the approximately 387 species identified in the region, only 35 species are used for the restoration, and reviving of degraded vegetation can be implemented.
- Destruction and depletion of water resources in the rangelands due to several unsuccessful agricultural project exploitations.

Species	Family	Scientific name
Flora in Bisotun Protected Area and Bisotun Wildlife Refuge	Caryophyllaceae	<i>Acanthophyllum</i> sp.
	Rosaceae	<i>Amygdalus scoparia</i>
	Boraginaceae	<i>Anchusa</i> sp.
	Asteraceae	<i>Anthemis</i> sp
	Papilionaceae	<i>Astragalus</i> sp.
	Campanulaceae	<i>Campanula</i> sp.
	Ulmaceae	<i>Celtis australis</i>
	Rosaceae	<i>Cerasus</i> sp
	Asteraceae	<i>Cirsium</i> sp.
	Rosaceae	<i>Cotoneaster</i> sp.
	Rosaceae	<i>Crataegus</i> sp.
	Asteraceae	<i>Echinops</i> sp.
	Euphorbiaceae	<i>Euphorbia</i> sp.
	Moraceae	<i>Ficus johannis</i>
	Lilliaceae	<i>Fritillaria imperialis</i>
	Fabaceae	<i>Glycyrrhiza glabra</i>
	Anacardiaceae	<i>Pistacia atlantica</i>
Fagaceae	<i>Quercus brantii</i>	
Ranunculaceae	<i>Ranunculus</i> sp.	
Rosaceae	<i>Rosa canina</i>	
Asteraceae	<i>Senecio</i> sp.	
Poaceae	<i>Taeniatherum crinitum</i>	

Table 5:Flora in (Bisotun Protected Area and Bisotun Wildlife Refuge), Source: Department of Environment in Kermanshah province, 2014



Bisotun Plain



1:



4: Bisotun plain meadow and gardens



2:



3: Sarab Bisotun and agricultural lands in Bisotun plain



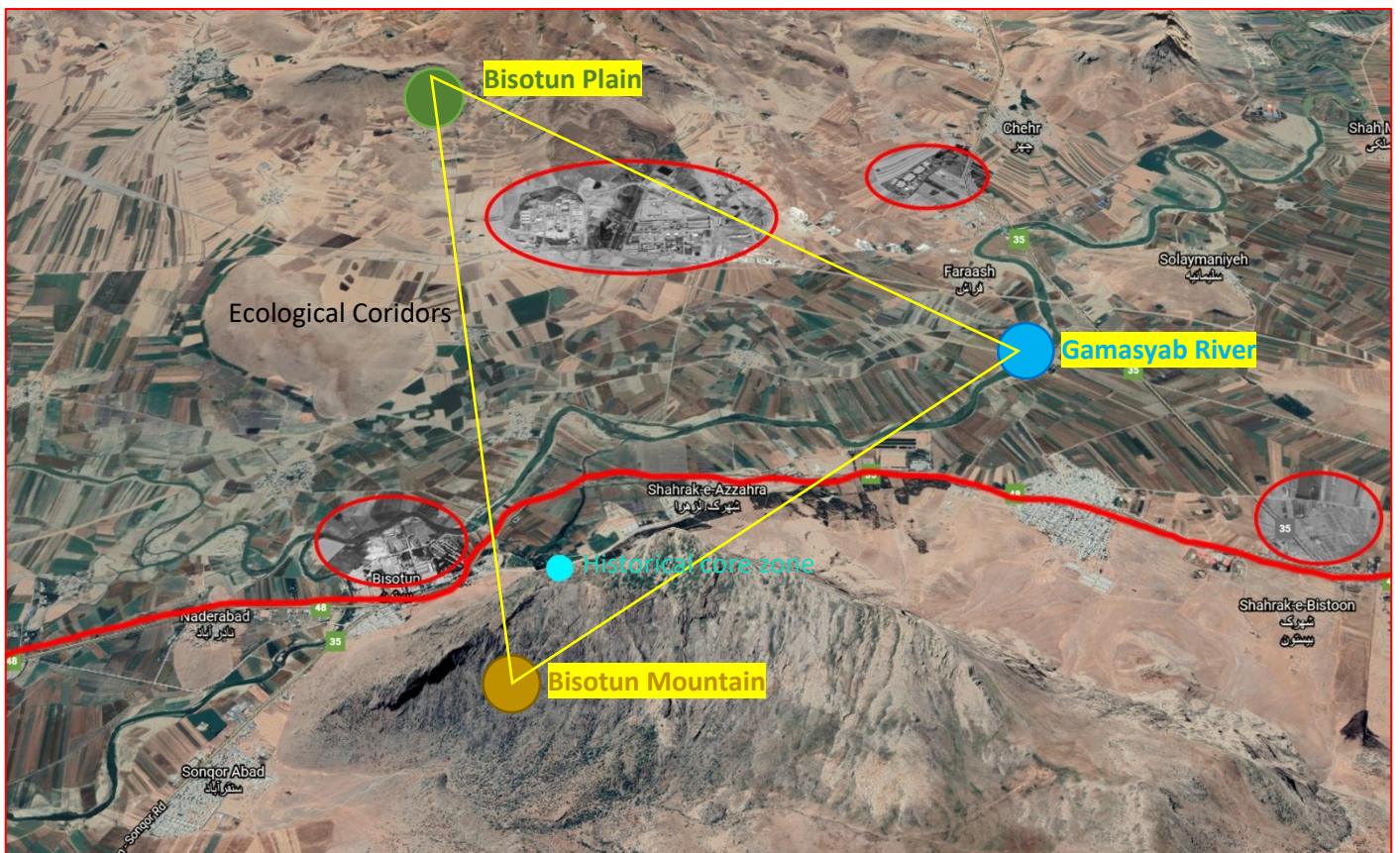
5: Rural landscape in Bisotun Plain

Source

- 1: Ali Sohrabi | علی سهرابی https://picbabun.com/media/2274963794694746414_6237976359
- 2: Ali Sohrabi | علی سهرابی https://picbabun.com/media/2279923094351020483_6237976359
- 3: Bisotun Research Center,2015
- 4: KARNAVAL.IR
- 5: Bisotun Research Center,2015

4.1.7 SWOT analysis of Acupuncture points and Channels in Bisotun NL

In the following 3d map, the acupunctural point of Bisotun natural landscape and obstacles which wrecked the landscape integrity have been illustrated. In three separate tables, the SWOT analysis, which stands for Strengths, Weaknesses, Opportunities, and Threats in the dissection of these acupunctural points, has been cleared. The obstacles in the ecological flow of Bisotun natural landscape, such as wildlife movement among these points and people flow in visiting a coherent landscape, have been measured. Regarding these obstacles, the Bisotun NL can not be an intact structure that reflects its natural associations.



Map 5: Obstacles in red color: (industrial factories and highway) Acupunctural points of Bisotun natural landscape. Source: Author, 2020, Map Source: <https://www.bing.com/maps>, 2020



Bisotun Natural landscape Threats



2: Highway divided the Bisotun heritage site in two separated sector and disconnect the ecological flow between plain and mountain



3: Sugar factory and the other industries discharge the toxic sewage in Gamasyab river



1: Bisotoon Petrochemical Plant pollution in Bisotun Natural Landscape



4: Pumping water from the riverbed



5: Rural landscape in Bisotun Plain

Source

1: Author, 2019

2: Author 2019

3: Author 2019

4: Author 2019

5: <https://www.irna.ir/news/83148133>

SWOT analysis of Acupuncture points and Channels in Bisotun NL

ZONE 1: Bisotun Natural Landscape

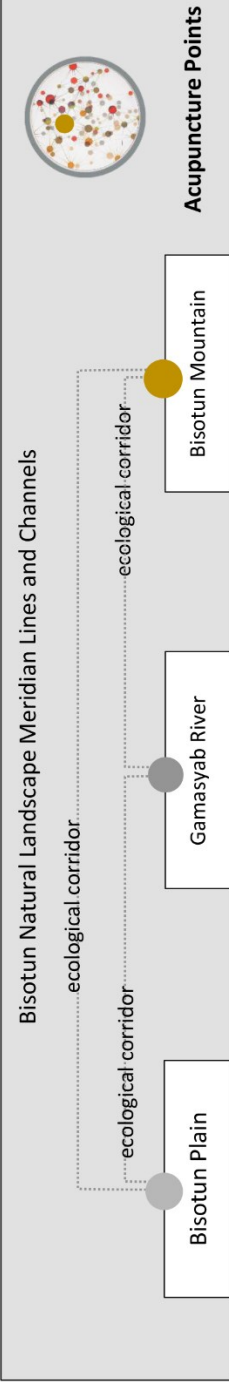



 <p>Bisotun Natural Landscape Meridian Lines and Channels</p> <p>ecological corridor</p> <p>ecological corridor</p> <p>ecological corridor</p> <p>Bisotun Mountain</p> <p>Gamasyab River</p> <p>Bisotun Plain</p>	 <p>Acupuncture Points</p>	 <p>Bisotun Mountain</p>		<p>Obstacles</p> <div style="border: 1px dashed orange; padding: 5px; margin-top: 20px;"> <p>Industries inside the Bisotun NL zone</p> </div>
	Factors	SWOT	Description: SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) of Acupuncture points of Bisotun Natural Landscape Bisotun Mountain	
	Internal	S	<ul style="list-style-type: none"> Parow cave as the deepest cave in the Middle East Aesthetic geological values The permanent source of ground and surface water Inhabitant for a variety of flora and fauna The habitat of 42 species of native Iranian plants Altitudinal zonation Five prehistoric caves spread on Bisoutun mountain slope. 	
		W	<ul style="list-style-type: none"> The surface rock of the mountain makes the process of vegetation reclamation prolonged and labor-intensive Sharp decline in population or extinction of rare species of mammals such as Bisotun wild cat and otter 	
External	O	<ul style="list-style-type: none"> Proposing regular cliff mounting international festival to evoke the awareness and attract people The geo-tourism routes on Bisotun mountain due to watching austenitic natural values Visiting access of prehistoric caves regarding protection guidelines The touring direction of Parow cave 		
	T	<ul style="list-style-type: none"> lack of unified mountain rehabilitation plan Disconformity among stakeholders, local communities, and organizations in the preservation and reclamation projects/ Air pollution of industries inside the NL zone 		

Table 6:SWOT analysis of Bisotun mountain, Source: Author, 2020

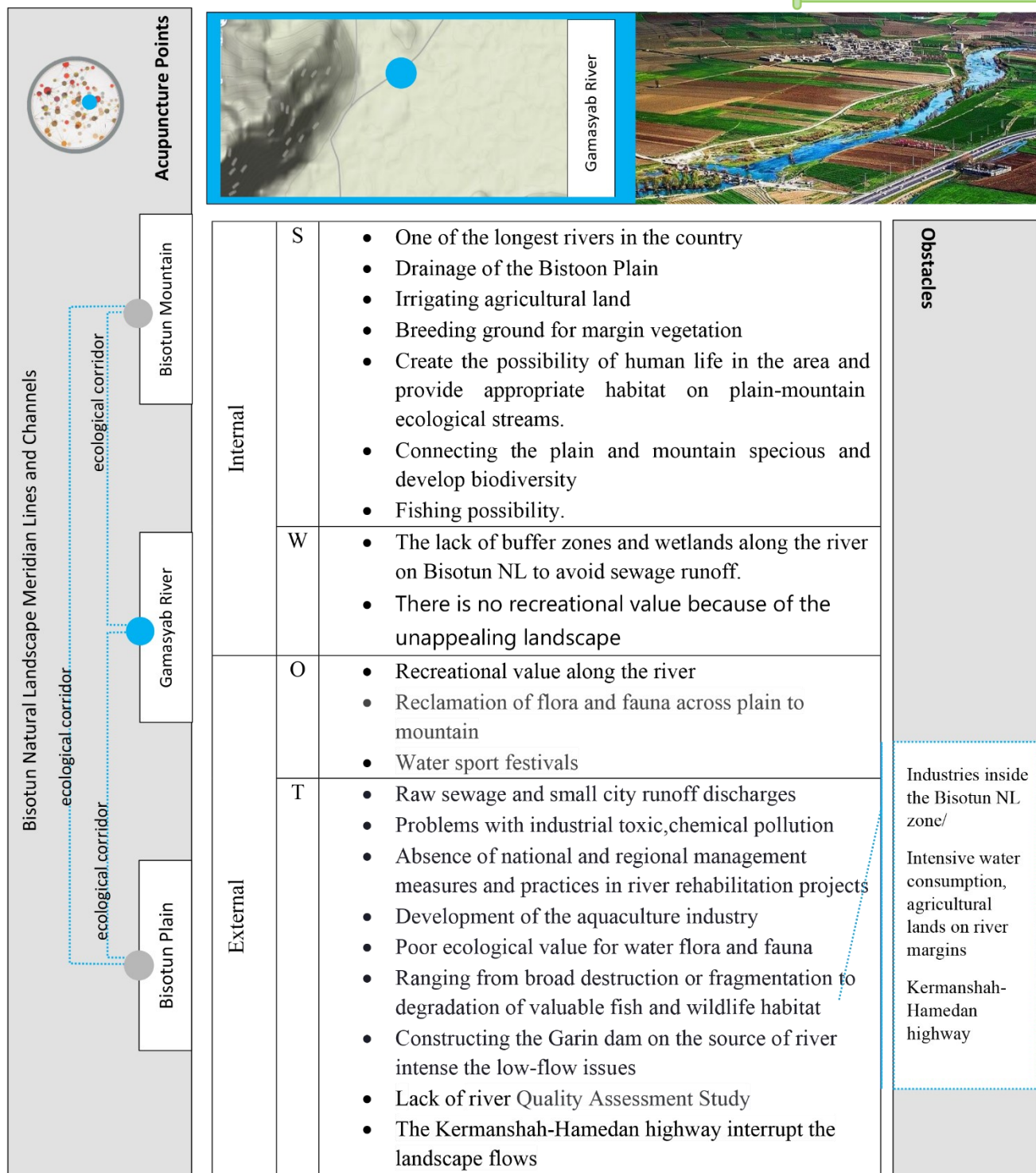


Table 7: SWOT analysis of Gamasiab river, Source: Author, 2020

SWOT analysis of Acupuncture points and Channels in Bisotun NL

ZONE 1: Bisotun Natural Landscape

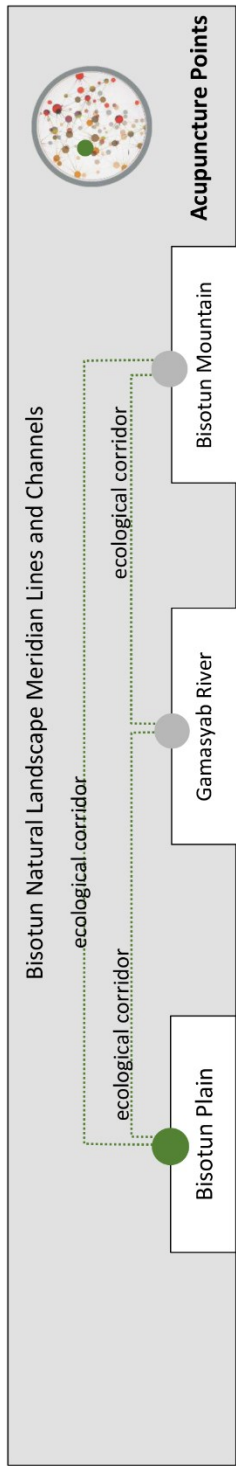


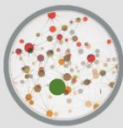
 <p>Bisotun Natural Landscape Meridian Lines and Channels</p> <p>ecological corridor</p> <p>Bisotun Mountain</p> <p>Gamsyab River</p> <p>Bisotun Plain</p>	 <p>Bisotun Plain</p>		<p>Obstacles</p> <p>Industries inside the Bisotun NL zone/ Residential towns, Military camps, Industrial building construction/ Kermanshah-Hamedan highway</p>	<p>Acupuncture Points</p> 	<p>Factors</p> <p>SWOT</p> <p>Description: SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) of Acupuncture points of Bisotun Natural Landscape Bisotun Mountain</p>
				<p>Internal</p> <p>S</p> <ul style="list-style-type: none"> One of the most fertile and primary agricultural lands where cultivation arose in Iran. cultivating grains, sugar beets, tobacco, cotton, saplings, and fruit trees. Landform aesthetic value Well-known horse breeding hub during the history 	
				<p>W</p> <ul style="list-style-type: none"> only 10 percent of vegetation species, can be implement for plant reclamation projects. Water and wind erosion of soil on plain Scarce native plant /wildlife species in extinction danger. Landscape disruption of the plain and its connection to Bistoon mountain owing to highways, residential towns, military camps and industrial building construction 	
				<p>External</p> <p>O</p> <ul style="list-style-type: none"> Performing resource-based agriculture approach. Focuses on the soil protection via biological technologies. Valuable archaeological sites in the Bistoon Plain . The Bisotun wide and flat plain is an exceptional spot for gatherings in national and regional festivals, such as annual horse-riding festivals. 	
					<p>T</p> <ul style="list-style-type: none"> Hunting, logging trees and shrubs Local community ignorance about preserving the natural sources in Bisotun plain. Lack of integrated sustainable policies A variety of stakeholders with opposite aims exploit the Bisotun plain potentials Communities and industries damages by tillage, constructing, piping, digging road and wells Intensive grazing livestock on the plain meadow Agriculture destroyed the aesthetic values of plain landforms and native vegetation

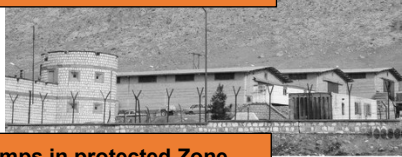
Table 8: SWOT analysis of Bisotun plain, Source: Author, 2020



Birds and Mammals Hunting



Discharged Sewages – Intensive Agricultural LandUse



Military camps in protected Zone



Seasonal Water Flow Shortage



Highway Industrial Pollution



Exploit of ground water– Poverty in Local Community

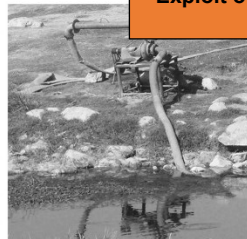


Figure 5: Critical Obstacles of Bisotun Natural Integrity, Source: Author, 2020, Map Source: <https://www.bing.com/maps>, 2020

4.2 Zone 2: Historical layers (National and World defined buffer zones)



Figure 6: Bisotun Historical Landscape-Source:Author,2019

Bisotun, Bisetun, Bistun, or Behistun is the abridged form of Bagistanon or Boghestan. The word is composed of two parts: Bogh that means God- Mithra goddess, in Old Persian language- in Avesta, this word has been repeatedly named to the "God" (Ahuramazda), and "estan" that is place-name-suffix in Persian, accurately indicates the mysterious location of this cultural heritage (Bayju and Carpets³⁰⁰, 1990, Dekhoda³⁰¹, 1958, Lushey³⁰², 1965).

"The first European who visited the site was the Frenchman Jean Otter in 1734. Then, Bisotun was visited by other French visitors such as Olivier (1756-1814), Jaubert (1779-1847), and Gardanne (1765-1822). J. Kinneir visited the site in 1810, but could not climb up the rock. In 1818, R. Ker.

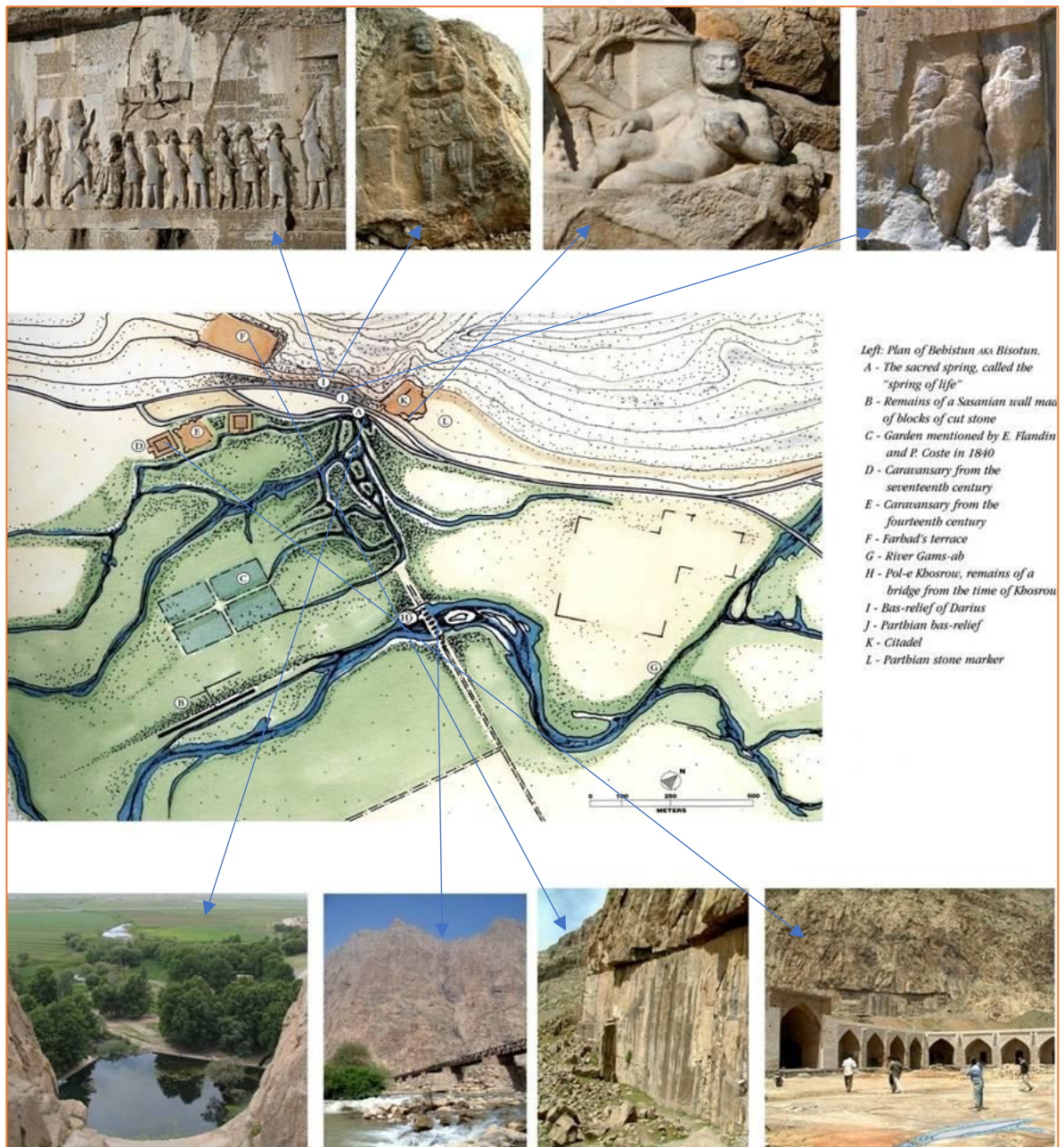
Finally, in 1837-38, Henry Rawlinson visited the rock-reliefs and decided to copy and to decipher the cuneiform inscriptions which resulted in the final decipherment of the Old Persian script in 1847.³⁰³"The name clearly shows that the place had been holy from time immemorial and Darius's monument was well known to the ancients the various archeological remains at the site, reflecting almost continuous use since prehistoric times. According to archaeological studies, several cultural materials found that declare the long history of the inhabitants before the Achaemenid era, which turns on the light on the significance of this place before Darius inscription as well. The comprehensive studies about Darius inscription stated in the sector 4-2-2 of this chapter.

Bisotun Cultural Landscape as a "remarkable spot, lying on the direct route between Babylon and Ecbatana, and presenting the unusual combination of a copious fountain, a rich plain, and a rock suitable for sculptures, must have early attracted the attention of the great monarchs who marched their armies through the Zagros range, as a place where they might conveniently set up memorials of their exploits³⁰⁴."

In this chapter, not only the background literature about Bisotun historical remains analyzed but also the new approaches and theory in conceiving the selected historical traces have been provided. This sector figures out the unrevealed values of Darius I inscription; illuminates the neglected architectural remains of the Bisotun heritage site; develops new questions about the identification of Seleucid-Parthian statue, and analyses the Sassanid architectural-historical

heritage in this site. According to a mixture of the periods and hybrid historical layers of Bisotun CL, this part of studies about Bisotun necessitated profound multi-criteria studies to find the accurate way among contradictory sources. Building the bridge between classic studies and recent ones and filling the gaps to imagining the integrated historical layer of this site was one of the most complicated challenges in this research. The summary of these endeavors in reading the tangible and intangible, written, and hidden values impulses of the interlocked cybernetic systems of Bisotun Historical Landscape declared in this sector. After reviewing the several references about the historical remains of Bisotun heritage site, the brief chronological explanation about them depicted in table 4-2-1 in this chapter. All of the explained historical acupuncture points illustrated in map 4-2-2 by exact position and number. In the next chapter, according to this map, the acupuncture revitalization strategies will be declared. The structure of this sector based on five subtitles:

- 1) Bisotun Architectural Structures and Historical Acupuncture Points**
- 2) The architectural-archeological map of BCL**
- 3) Identification of Seleucid -Parthian statue of Bisotun: 148 BC**
- 4) Darius I the Great Bas-Relief and Inscription Values, Characteristics and Threats**
- 5) Sassanid architectural-historical heritage in Bisotun CL, Values, Characteristics, and Threats**

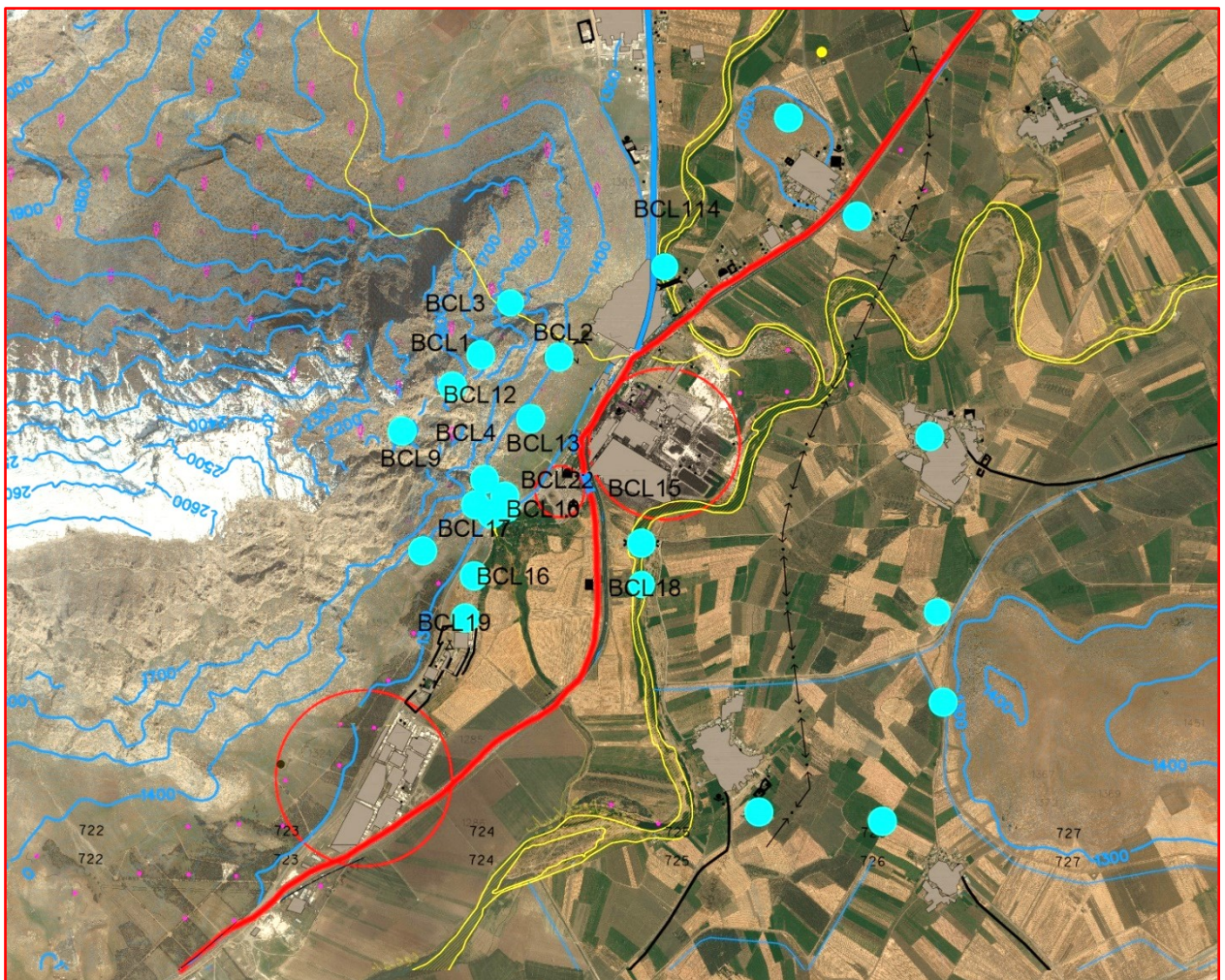


- Left: Plan of Behistun aka Bisotun.
- A - The sacred spring, called the "spring of life"
 - B - Remains of a Sasanian wall made of blocks of cut stone
 - C - Garden mentioned by E. Flindin and P. Coste in 1840
 - D - Caravansary from the seventeenth century
 - E - Caravansary from the fourteenth century
 - F - Farbad's terrace
 - G - River Gams-ab
 - H - Pol-e Khosrou, remains of a bridge from the time of Khosrou
 - I - Bas-relief of Darius
 - J - Parthian bas-relief
 - K - Citadel
 - L - Parthian stone marker




Map6 : Plan of Bisotun(Behistun) historical remains Source:Author,2018,Map source: Khansari 2003 Khansari M. , M. R. Moghtader ,Minouch Yavari 2003 . The Persian Garden: Echoes of Paradise




4.2.2 Bisotun Architectural Structures and Historical Acupuncture Points



The 23 remarkable acupuncture points highlighted in the following map, the obstacles in reconnection and people flow among these points rendered in red color. The obstacles include Industrial factories, highway, residential places inside the heritage buffer zone, and the new cemetery and shrine(Emamzadeh Bagher) inside the heritage zone. Table 4-2-1 explains the 23 cultural acupuncture points. Table 4-2-2 presents the chronological classified of Bisotun Heritage site remnants.

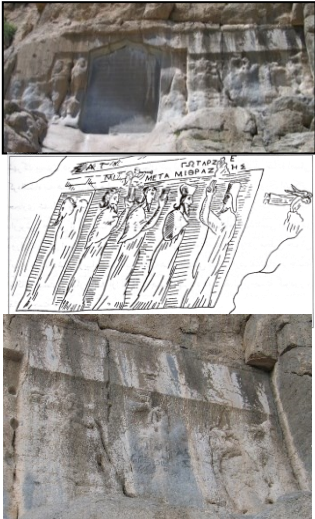






Map 7: Obstacles in red color: (Industrial factories , highway , residential places inside the heritage buffer zone, the new cemetery inside the heritage zone), Acupuncture points of Bisotun historical landscape in blue color. Source of the map: <https://www.bing.com/maps>, 2020



Point code	Heritage name	Historical Period	Description	Figure
<u>BCL1</u>	Mar-Aftaw cave (Maraftab)	Palaeolithic	This cave is located on the slopes of the Bisotun Mountains. The cave is 26 meters long, and its mouth is about 6 meters high. The area of the cave is 160 meters. The Neanderthals culture tools include scrapers and punctures, rocky artifacts, and a triangle bone tool that categorized as techno-complex tools of the Mousterian period that have been discovered in this cave.	
<u>BCL2</u>	Mar-Kher cave (Markhul)	Paleolithic, Neolithic	The cave is in 500 meters distance of residential houses. The achievements gained from this cave are from 40 thousand, new Paleolithic, Epipalaeolithic, Neolithic period, and the latest traces are The latest artifacts from the Markhul Cave belong to the Sassanid era. The identified traces are included: thick blades, engraving tools, blades and cobblestones, micro-blade, rough pottery with crushed straw, and 56 animal bone samples.	
<u>BCL3</u>	Mar-Tarik cave	Palaeolithic	This cave is located in the northwest part of the Markhul Cave. The cave is 25 meters deep and about 80 square meters area. The cultural material discovered in this cave is stone artifacts, including mother rocks, scrapers, punches, chisels, and conical tools, which classified in the Mousterian period tools.	



<p><u>BCL4</u></p>	<p>Hunter cave</p>	<p>Palaeolithic</p>	<p>Bistoun Hunters' Cave (Shekarchian) is a small cave that is located on the slopes of Bisotun Mountain inside the WH buffer zone and close to the spring. The cave has space for six people, probably was a temporary shelter for hunters, where they prepared the carcasses in this butcher's awning. More than twenty thousand things identified, which includes stone tools from the Middle Paleolithic period, pottery from historical periods to the present day has been discovered in the cave. The remains of animals such as deer, gazelles, cattle, horses, and boars have also discovered.</p>	
<p><u>BCL5</u></p>	<p>Nazlian Mound</p>	<p>Late Neolithic/Late Copper</p>	<p>This mound is one of the 150 historical hills of the Bistoun Plain, which contains relevant data from various pre-historical periods. The Nazlian as the highest archeological mound in region with 14 meters high provides useful information from the Neolithic, Late Copper, and Bronze Age life in Bisotun site.</p>	
<p><u>BCL6</u> <u>BCL7</u> <u>BCL8</u></p>	<p>Tang Hussain Abad Shelters (I, II, III)</p>	<p>New Palaeolithic</p>	<p>Tang Hossein Abad's three shelters are located in the vicinity of a village of the same name in the Bistoun Plain. The first bunker is 10.5 m wide and 5.5 m deep, and the second shelter is 5 m wide; 4.8 m deep, and the third fortification is 16.5 m wide and 5 m deep. With numerous stone tools from these shelters include abrasives, drillers, thick blades, micro-blade, and engraving tools, of Neolithic period work. The cultural materials are similar to mountain caves' findings, which can be the</p>	



			proof of human and wildlife movement between Bisotun mountain and plain.	
<u>BCL23</u>	Bisotun Spring (Sarab-e-Bisotun)	Prehistoric to Present	The role of this mirage fountain has influenced human habitation from the Neanderthal to the last millennium. Paleontologists study of Sarab Bisotun sediments can provide new information on tree planting in the Achaemenid and Sassanid periods in the area. The existence of this mirage was the main reason for caravans transport along the Bistoun ancient road. According to Iranian beliefs, the spring-fed pool at the foot of the mountain was sacred, and the site of building ancient memorials chosen in such hotspots. The excavation findings around the pond refer to various historical periods.	
<u>BCL9</u>	Median Sanctum	Median(700 B.C.)	This fortress is located below, the Darius I bas-relief. It has been built on the stone platform at 1.5 heights. The 7 meter length corridor reaches a small chamber, and both sides are blocked by a rock slit and the back wall. The pottery findings are similar to the other Median sites in Iran (Godin Tapeh and Noshijan), another explanation refers to the remains of a bronze triangular fibula of the 8th/ 7th century B.C that was found in its wall. The primary materials of the building are large and small rough stones.	
<u>BCL10</u>	Darius I bas-relief and inscription	Achaemenid (520 B.C.)	The full description depicted in 4-2-2 section.	

<p>BCL11</p>	<p>Relief of Mithridate II (Mehrdad II) and Relief of Gotarzes</p>	<p>Parthian (228-50 B.C)</p>	<p>Mithridate's II (123-87 B.C.) bas-relief relates to the second king of the Parthian empire. Four Satrapies (dignity persons) stand respectively in a line before the king, with all the figures in profile, of Mithridate's II, and he raises his right hand to show his respect for them.</p> <p>This relief actually indicates the transfer of power from Mehrdad to each of these dignity characters.</p> <p>Next to this trace, the Gotarzes II (50 B.C.) has been carved. In this statue, Gotarzes II figure illustrated while he is mounted on an armored equestrian horse, attacking his enemy with a long spear and overturning him.</p> <p>The most important part of both bas-reliefs obliterated by the insertion of a Waqf inscription by the Statesman Shaykh Ali Khan Zangeneh in 1094 / 1684-85. and Gotarzes II (50 B.C.)</p>	
<p>BCL12</p>	<p>Vologaeses Bas-relief (Sang-e Belash)</p>	<p>Parthian</p>	<p>The Parthian bas-relief carved on almost a pyramid-shaped rock (between 51 to 228 B.C.). The middle visage represents the Parthian king's Balash in full 180cm length. He has a formal garment, necklace a waistband, and loose trousers. He has a cup in his left hand, extending his right hand into a fiery furnace and apparently throwing something into it. On the left side of the king's Balash figure, there is a 163cm-long person with a garment similar to him; it seems that he is walking and want to be stepping to the king.</p>	

			<p>He holds an object in his hand. On the third surface of the pyramid, a dignity Parthian person, like the previous one, moving towards the king, wearing a torso that is up to his knees, a waist belt, and a necklace hanging around his neck.</p> <p>Due to erosions, the pyramid rock had collapsed, and parts of it were crushed. The relief was reattached and restored in 2000.</p> <p>The inscription is engraved in 9 lines on the fiery furnace in the Pahlavi language³⁰⁵.</p>	
BCL13	Mitra/ Hercules Statue	Seleucid / Parthian	The full description depicted in 4-2-3 section.	Images illustrate in 4-2-3 section.
BCL15	Khosrow II Bridge	Sassanid (590-628 A.D)	The full description depicted in 4-2-4 section.	Images illustrate in 4-2-4 section.
BCL16	Hydraulic Structures and retaining wall		The full description depicted in 4-2-5 section.	Images illustrate in 4-2-5 section.
BCL17	Sassanid Terrace (Farhad Tarash)	Sassanid (590-628 A.D)	<p>This hand-made polished rock with a 200*30 meters dimension has been created on the Bisotun mountain slope. At the foot of this surface, a platform at the foot of this chiseled rock supported by a retaining wall with 150 meters long. The wall material was constructed of dressed stone blocks (Pak Tarash) and crushed stone with specific plaster mortar. The ultimate purpose of preparing and polishing this surface has not evident yet, but in several studies, mentioned that it was prepared for Khosrow II massive bas-relief. Until the year 2000, rock climbers</p>	 

			used this sheer cliff for their training exercises. Experts indicated that the sport's instrumental damage to this monument and in 2000 any climbing practices were prevented.	
BCL18	Khosrow II Palace		<p>Khosrow Palace: This almost rectangular building with east-west orientation is facing Farhad-Tarash; it has two separate parts that were connected with a corridor. The dimension of the east part is 80*85, and the west part is 44*55. In the Ilkhanid period(about1400AD), the eastern part changed to several small rooms to utilize the building as a caravansary. A severe earthquake caused drastic damage to this building. There is not any shelter above this Sassanid remains, and the absence of any rehabilitation plan for this heritage is noticeable³⁰⁶.Four fully decorated capitals of columns were found around this site(in 1796)as the first architectural findings, which is the precious architectural trace depicting Sassanid art and architectural ornaments. On each capital, the king is represented on one side and the Anahid goddess on the contrary side. Each capital and its column connect to the adjacent by a Mazedar arch.</p>	
BCL20	Takht-e Shirin	Sassanid	<p>The Takht-e-Shirin site has not yet been excavated and studied, and its exact date is unknown, but traces of Sassanid and Islamic times have been found. The trace of Takht-e-Shirin remains are spread in 500 m long, 300 m wide, and 3.5 m high area, which confers the sign of unfinished building constructions</p>	

			in the Sassanid era. Local communities are calling Takht-e-Shirin to the large boulder at this site.	
<u>BCL21</u>	Ghozivand Bridge	Sassanid-Pahlavi	Ghozivand Bridge has 18/30 m long and has three piers and two openings. From the first base, only its western face is seen, and the rest of it is covered by debris. In the southern facade of this base, parts of the Sasanian period piers are visible, with a slight retreat, in the Pahlavi era (1927), the pillars in smaller dimensions built and arches reconstructed. Archaeological evidence suggests that the stone foundations of this bridge were built in the late Sassanid period but it never ended in that era.	
<u>BCL19</u>	Shah-abbasi Caravanserai	Safavid	The building was established in 1588 - 1629 under the construction projects by Shah Abbas the Great, across the country. It has been the reconstruction of ruined Caravanserai destroyed in a drastic earthquake in 15th Cent. The architectural style is in the four eyvan (terrace) design, which has roots in the former Iranian architectural technique, the inner courtyard is 49 x 42m, the masonry is brick on dressed stone socles. The Caravanserai is semi-reconstructed in 2015 to preserve its past function as lodging for passengers passing through ancient roads.	

<p>BCL14</p>	<p>Kohneh bridge</p>	<p>Sassanid-Safavid</p>	<p>The Kohneh Bridge, which is built on Sassanid piers, is approximately 144 meters long and 7.5 meters wide, with an east-west direction of the Dinevar River. The bridge consists of four openings, two smaller openings, and two larger ones. All of the arches used in the construction of this bridge are Tizedar except the one used in the largest span, which was rebuilt entirely in the Pahlavi period in the Mazedar arch form.</p> <p>Recent studies with the laser scanner revealed that the bridge was also about 30 meters taller than its current length, and its buried piers are not visible today, indicating the long history of the bridge before the Safavid era.</p>	
<p>BCL22</p>	<p>Shaykh Ali Khan Inscription</p>	<p>Safavid</p>	<p>The inscription, which is 363 long and 276 cm wide, describes an endowment proclamation dedicated to the Safavid era. The inscription is written in Sols³⁰⁷ calligraphy, commanded by Sheikh Ali Khan Zanganeh³⁰⁸, the statesman during Shah Suleiman Safavi in this region. This inscription has damaged the significant parts of the Parthian work.</p>	

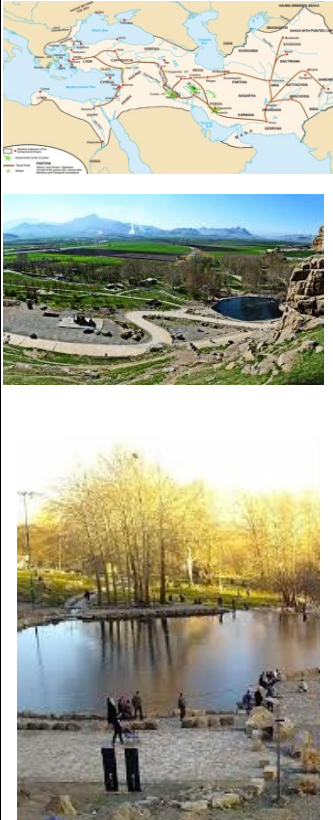
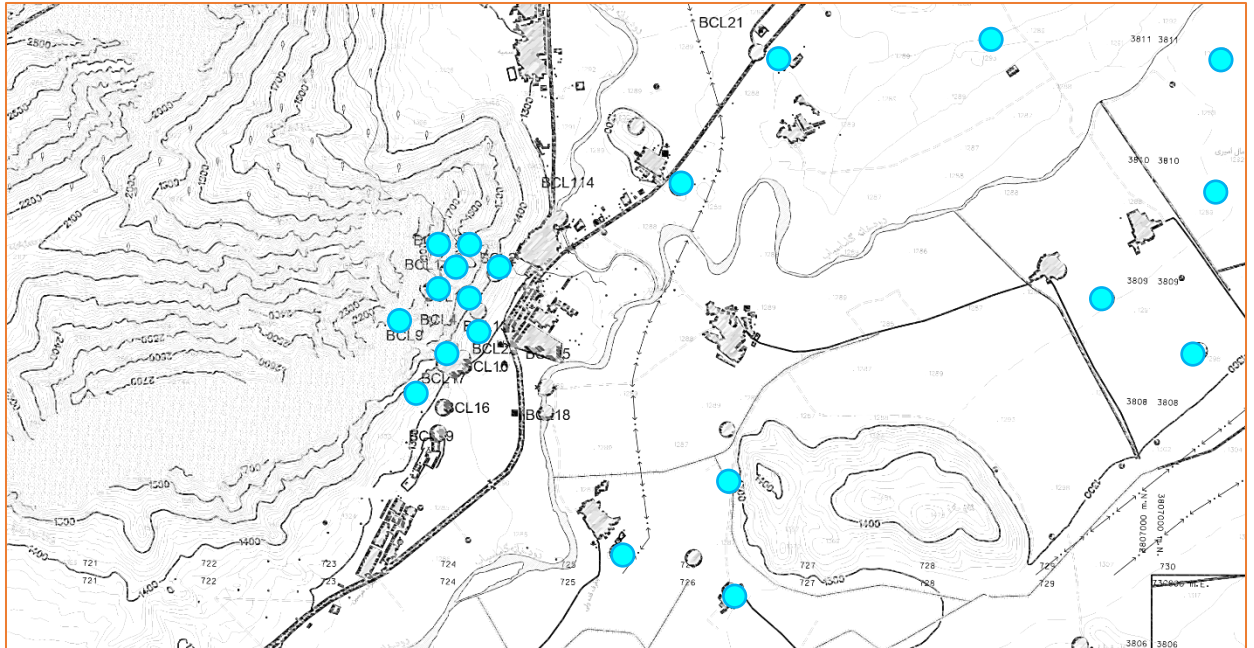
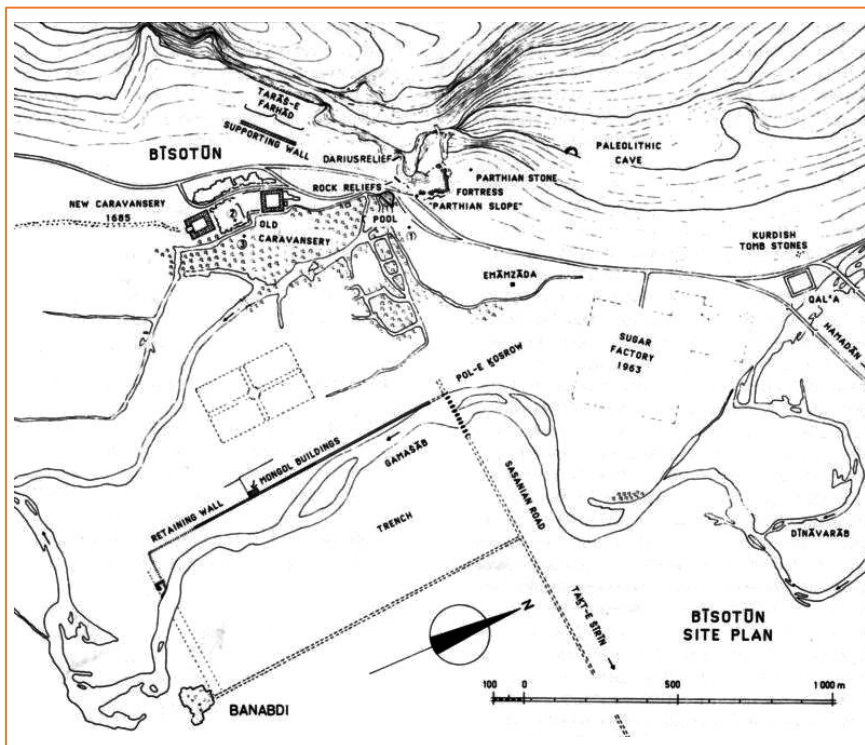
<p>BCL24</p>	<p>Shahi Road (Persian Royal Road)</p>	<p style="text-align: center;">Achaemenid- Sassanid</p> <p>The Shahi road is the first known highway in Iran, one of the deeds of Darius I , who commenced the construction of this road as a west-east highway. Linking the Mediterranean to the Persian Gulf, running from Sardis to Babylon. From near Babylon, it is split into two routes, one traveling through Ecbatana and on along the Silk Road, the other continuing east through the Susa and Persepolis. The vestige of the royal road. It can be seen in the 350-meter-long road made of stone blocks that stretch from the upper part of Bisotun mirage to the Khosrow II Palace. Although the foundation of this road refers to the Achaemenid era, it has been restored and developed throughout history. It conceives that the remnants in the Bisotun site relate to the construction projects during the KhosrowII era. This archaic road, has been the most bustling route for people, tradesmen, and soldiers. During the Seleucid period, this road was a passage and had a significant role in connecting Median lands with Mesopotamia. In the Sassanid era, the two main capitals of the time, Ctesiphon, to Ecbatana connected via this route. In the Islamic period, it was part of the Khorasan highway.</p>	
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Table 9: the brief chronological explanation about Bisotun Cultural Landscape (BCL) points, Source: Author, 2020



Map 8: , Bisotun Cultural Landscape (BCL) Acupunctural point, Source: Author,2020 .Map source: Bisotun Research center,2014



Flandin and Coste visited the Bisotun site in 1841 and provided exceptional drawings and maps. In 1963-1967, Kleiss after honoring archeological studies represented the historical map of this site. According to these studies, the former visage of this site can be imagined.

The proposed map of the intact historical landscape of Bisotun CL without today's obstacles illustrated defining the location and plan of ruin architectural traces. The acupunctural connection points were not intersected by highway and factories in the heritage buffer zone.

Map 9: Bisotun Cultural Landscape (BCL) Acupunctural point, Source:Author,2020,Map Source :Bisotun Research center ,2019



Figure 7: -Bisotun Massif (Iran), Signed: Dessiné & Lithographié par Eugène Flandin; Gide Editeur; Imp. J. Rigo, Pl. LXXVI, Flandin, Eugène (dess. et lith.); Rigo, J. (imp.); Gide et Cie. (ed.), 1851, Eugène Flandin; Pascal Xavier Coste: Voyage en Perse pendant

Identification of Seleucid -Parthian statue of Bisotun: 148 BC

The statue is on a two-meter-long platform, a 147cm naked man leaning on a lion skin, attached to the mountain holding a bowl in his hand. A quiver full of arrows hanging from a tree branch behind him and his mace is on the edge of the platform. The head of the statue stolen in 1992. In 2006, a copy of his head was made and attached. It was announced that the original was found and owned by the Cultural Heritage Organization. The other deliberate damage to this sculpture is referring to the removal of its penis after the Islamic Revolution in Iran (1979).

The identification of this work has been the subject of controversy among various scholars. Some scholars believe that this work is a figure of Hercules, the Greek god in which the essential document for this claim is the inscription on the back of the statue's head. On the other hand,

according to this inscription, the icon has been created in 148 BC, which is the year of Mithridate's victory over the Seleucids in the west of Iran. Roberts³⁰⁹ (1963, 1967), Justin³¹⁰(1974) and Bivar³¹¹(1983) confirm that this victory was in 148 B.C Since this was the most crucial battle of Mitradet I, (the founder of the Parthian empire), which brings back the western parts of Iran, Median lands, to the former cultural boundaries. This justification arises this idea that the statue is Miθra/Mehr/Mithra³¹² the major deity who assures the great victories in Iranian mythology, and it is not the Hercules.

Boyce ³¹³discussed the identity of this figure, he believes that the concept of Heracles is equivalent to his counterpart Verthraghna (Varham, Bahram), and when he describes the rock statues characteristics stated that a quiver of arrows hanging from a tree is an unusual detail. Neither Heracles nor Verethraghna was a riding or hunting god, and the mysterious bowman has been as originally Mithra.in Mihr Yasht (of the longest and most important hymns of the Avesta, roots reach back to the prehistoric Indo-Iranian civilization) Mithra's chief attributes are illustrated in detail:

On Mithra's chariot, there are a thousand well-made bows, a thousand well-made arrows, a thousand well-made spears, a thousand well-made metal clubs, ...

He is mighty among the mightiest, strong among the strongest, having by far the greatest insight among the gods. Being victorious, he is accompanied by glory

Miθra's exclusive epithet is "of extensive grazing."

Mithra, the skillful charioteer, whom Ahura Mazdā appointed to guard and supervise the productiveness (frauuōiš) of the entire material world. he is well-built, lofty, and strong

The leaders of the countries worship Mithra as they go into battle against bloodthirsty enemies,

The god will favor whichever of the two warring countries worship him first. Mithra rises at dawn and oversees all Aryan countries, their mountains rich with pastures and water,³¹⁴

From the author's point of view, since no statue of the Greek gods is not common in Iranian heritage sites³¹⁵, the presence of the figure of the Greek deities on the Bisotun sacred mount, which

is stored Iranian ancient culture and beliefs, is doubtful and contradictory. On the other hand, since this area has been the site of inscribing the great Iranian conquests, it may well be the best place to install a statue and even a temple of Mitra (the God of Victory).

Adjacent to this sculpture, and also cross over the Bistoun Plain, there are several archeological materials relating to the Parthian era. It is not out of mind that perhaps a temple has been built for Mithra, the supreme god of the Parthians, which has not been excavated or identified to this day. Last but not least, it is a remarkable note that Mithradet I (Mehrdad I,) after the victory over the Seleucids, determined the Hegmataneh (modern-day Hamedan) as the summer capital, and Ctesiphon as the winter capital, and he Bisotun sacred mountain is in the way between these two capital cities.

Since the Parthians regarded themselves as successors to the Achaemenids and introduced themselves as a continuation of their paths, creating a monument on Bisotun mountain by Mithradet I, is not out of logic. To him, which his name and his son's name means given from Mitra, it is predictable that after this huge victory inscribed his worshiped god name in this sacred place.



Figure 8:Seleucid -Parthian statue of Bisotun, Source:Author, 2019

The **Safavid caravansary** was built by Shaikh 'Alī Khan Zangana, the same man who destroyed a large part of the relief of Mithridates to make way for his waqf inscription. The interior courtyard is 50 x 52 m and has four ayvāns. The adjacent sleeping rooms are vaulted, and there is vaulted stabling behind. This plain, monumental building is one of the larger Safavid caravansaries still in a good state of preservation, **Safavid bridge** that piers has been founded in Sassanid era, is in the ancient road from Kermanshah to Baghdad. The bridge with the length of 140 meters and a width of 5.7 m has four-spans that two spans are smaller

1600 a.d
Safavid

Carvansary and Bridge



Ilkhanid's Palace:



1400 a.d
Ilkhanid

This structure was discovered by the writer in a reconnaissance along the bank of the Gamašāb. A mound of debris could be seen there on a site roughly 25 m wide and 30 m long and the presence of 14th-century potsherds and fragments of cut brick

Sasanian remains. On each capital the king is portrayed on one side and the goddess Anāhīd on the opposite side; the remaining two sides are carved with floral ornament, including finely detailed lotus plants

Pol-e Khosrow. Remains of a bridge. The masonry consists of a rubble-concrete core faced with stone blocks. Nine piers, each pointed on both sides, are still standing, but none of the superstructure remains.

Khosrow Palace: The monumental stone blocks still standing in the outer wall have the same shape and the same masons' marks as Sasanian art.

Tarāš-e Farhād . This section of the cliff is of key importance in understanding the entire Sasanian building program at Bīsotūn. It is thus the biggest such work in Iran .

Sasanian

600 a.d



Chronological analyze of Bisotun heritage site monuments and architectures

<p>The relief of Mithridates depicts four satraps in a line before the king, with all the figures in profile, and thus is still strongly within the Achaemenid tradition. The relief of Gotarzes, which shows horsemen in combat and Nike hovering above</p>	<p>123-50 b.c Parthian</p>	<p>Reliefs of Mithridates II and Gotarzes</p> 
<p>Heracles Rock carving</p> 	<p>148 b.c Seleucid</p>	<p>It is a clumsy piece of work, not up to the standard of the period, but important because of its datable Greek inscription. Perhaps inspired by a carving from the time of Alexander; it is an early example of the tradition of portraying Heracles reclining.</p>
<p>Darius's Inscriptions</p>  <p>The monumental relief of Darius I, King of Persia, representing the king's victory over the usurper Gaumāta and the nine rebels, is surrounded by a great trilingual inscription in Old Persian, Elamite, and Babylonian. This inscription is the most important document of the entire ancient Near East and a major key to understanding its languages.</p>	<p>520 b.c Achaemenid</p>	 <p>800 b.c Median</p>  <p>Remains of a fortress on the mountain slope Probably it was the old fortress named Sikayauvatiš where Darius and his companions slew Gaumāta</p>
<p>Prehistoric</p>  <p>Cluster of five caves cutting into the basal cliff on the southeastern face of Bisitun. <i>Mousterian</i> stone tools as the earliest evidence of human presence at the spring-fed pool of Bisotūn</p>	<p>Middle Palaeolithic 200,000 to 40,000 years ago</p> 	

Table 10: The chronological classified of Bisotun Heritage site remanents, Source: Author 2018, the content Source: (Yarshater, Ehsan. *Encyclopedia Iranica*. Vol. IV, Fasc. 3, p. 289 London; Boston: Routledge & Kegan Paul, 1982. ISBN 0710090900 978071

4.2.3 Darius³¹⁶ I Bas-Relief and Inscription, Values, Characteristics, and Threats

The monumental relief of Darius I, King of Persia, representing the king 's victory over the usurper Gaumāta and the nine rebels, is surrounded by a great trilingual inscription in Old Persian, Elamite, and Babylonian. This inscription is the most crucial document of the entire ancient Near East and a significant key to understanding its languages. It alone made it possible to decipher cuneiform writing and thus to open the door to previously totally unknown ancient Maintain or introduce functions that are useful to society and that are compatible with the structure and nature of the buildings, spaces, and sites of which it is made up. in that sense, it has had a value comparable to that of the Rosetta stone for Egyptology. (Prášek³¹⁷, 1968, UNESCO³¹⁸)

This hotspot is the most significant acupuncture point in zone 2 of case study research. Profound analysis of this monument is the stepping stone for proposing a practical action plan in its protection and valorization plans.

The great monumental bas-relief of Darius I and inscription on the sheer cliffs carved in 521 BC on Bisotun mountain. When Darius the Great delegated for accession to the throne of the Persian empire, he commanded for creating this tri-lingual royal inscription that contains a proclamation in Elamite, Old Persian, and Babylonian languages, that is nearly inaccessible thanks to its high position. The Darius I inscription in Bisotun (D.I.B) as the longest outstanding Achaemenid written evidence is a well-known immemorial masterpiece in Persian art expression. The authentic value of this inscription is not only referring to its tangible aspects, but also it has a substantial impact on multi-discipline research scopes such as Persian civilization, Persian art history, ancient linguistics, global geopolitics, ethnic geography, socio-cultural structures, and commemoration calendar³¹⁹. Alongside these intangible values, this inscription, according to the accurate description of Persian cultural pillars, its remarkable role in Iranian collective memories and identity is irreplaceable when the epic narrative history as the pioneer of Persian epic literature identifies in this cultural heritage.

This subchapter focuses on the descriptive-analytic method and field observation of (D.I.B), proposes these objectives: 1) The motivations and reasons for creating D.I.B. 2) The influence of D.I.B in Persian Collective Memory and identity. 3) Multidisciplinary research about today's challenges and threats confronts in its tangible and intangible integrity and continuity.

After these profound studies in chapter 5, the practical acupuncture strategies for the revitalization of this heritage value will be discussed. **(Photo collection in BZ2-Achaemenid)**

Darius I relief and inscription at Bisotun (D.I.B) heritage site

The Darius I relief and "inscription is unique being the only known monumental text of the Achaemenids to document a specific historical event, that of the re-establishment of the Empire by Darius I The Great. It was the first cuneiform writing to be deciphered in the 19th century.³²⁰" The intangible values of this inscription can be considered in a variety of disciplines. "The aura of the intangible meaning of such tangible practices haunts memorialization and its rituals of remembrance in ways that we see vividly today not simply intangible memorials but in disputes about the meaning of such memorialization.³²¹"

Bisotun is a widely known spotlight that seems immortalized thanks, Darius I inscription, however, before and after of this vestige, it has always been respected. "More than five hundred years B.C. the Great King, the king of Kings, the King of Persia, the King of the Provinces, Darius, took counsel where he should worthily grave the story of his reign. It must be set in a place which all should see, and yet be safe from the ravages of time and the malice of enemies; it must be written in several languages, that foreigners, as well as Persians, might know his glory; it must be shown in the picture as well as in the written word, that those poor illiterates who could not read might yet tremble at the great king's vengeance³²² "Darius I the Great was the third Achaemenid king of kings.

He was born in 550 B.C.E., the eldest son of Vištāspa (Hystaspes) and Vardagauna. Before he acceded to the throne, he served Cambyses (529-22 B.C.E.) as a spear bearer in Egypt³²³ The primary sources are of four basic kinds. First, there is Darius' record relief at Bisotun. The second

category includes texts and monuments from Persepolis.^{324 325} The third source is a detailed and colorful narrative by Herodotus. Finally, there are briefer notices by other classical authors ^{326,327}."

Darius I relief and inscription at Bisotun is the only known monumental text of re-establishment of the Empire by Darius I and had influences in monumental art and writing in the territory of the Persian Empire."A glance at the relief shows that it was carved into a flattened rectangular rock surface measuring about 3 x 5.5m. Darius is portrayed standing and facing right, wearing a Persian garment, the 'royal' shoes, a bracelet, and a crenulated crown of an, especially elaborate design. In his left hand, he holds a bow, a sign of sovereignty often portrayed in this form.

His right hand is raised at face level. With his left foot, Darius is treading on the chest of a figure who lies on his back before him and, according to the legends, represents Gaumata, the Median Magus and pretender to the throne whose assassination led to Darius's reign. Gaumata, who is also dressed in Persian attire, which is no indication of any specific ethnic group, is raising his arms sign of submission. ³²⁸

"The inscription was written in three different cuneiform script languages: Old Persian, Elamite, and Babylonian. Once deciphered in the 19th century, it opened the door to previously unknown aspects of ancient civilizations. In that sense, the Bisotun inscription has value for Assyriology comparable to that of the Rosetta Stone for Egyptology.³²⁹"The Old Persian text contains 414 lines in five columns; the Elamite version includes 593 lines in eight columns, and the Babylonian text is in 112 lines³³⁰. "

"Darius states that he had the Old Persian cuneiform script made to compose this inscription:

By the favor of Ahura Mazda, this [is] the form of writing [OP dipicifa] which I have made, besides, in Aryan. ... And it was written down and was read aloud before me. Afterward, I have sent this form of writing everywhere into the countries. The people strove [to use it]³³¹."In a part of this inscription, he introduces himself, and all nations united to the Persian empire during the first three years of his monarchy.

"And Darius the king says: These (are) the nations who called (themselves) mine (and, by) the intercession of Ahuramazda, I placed kingship over them: The Persians, and the Elamites, and the Babylonians, and the Assyrians, and the Arabians, and the Egyptians, and the Sea-People, and the Sardinians, and the Ionians, and the Medes, and the Armenians, and the Cappadocians, and the Parthians and the Drangians, and the Areians, and the Chorasmians, and Bactrians, and the Sogdians and Parauarisana(?), and the Scythians and Sattagydia and Arachosia and Maka, a grand(?) total (of) twenty-three nations.

After that, I prayed to Ahuramazda, Ahuramazda sent me aid.

He explains his activities about the restoration of the ancient temples, different religions that can practice their ceremonies freely, rebuilding houses, and regenerating natural resources.

I made the temple(s) of the gods that Gaumata the Magus had destroyed, and I restored to the people, to them, pasture lands and herds and workers and all houses that Gaumata the Magus had taken away from them. I placed the people in their (rightful) place, both the Persians and the Medes and the other nations, and accordingly, as it was formerly. I, what had been taken away, that I brought back. (By) the petition of Ahuramazda, this I did.

Great Darius says: *You who shall hereafter see this tablet, which I have written, or these sculptures, do not destroy them, but preserve them so long as you live!*^{332"}

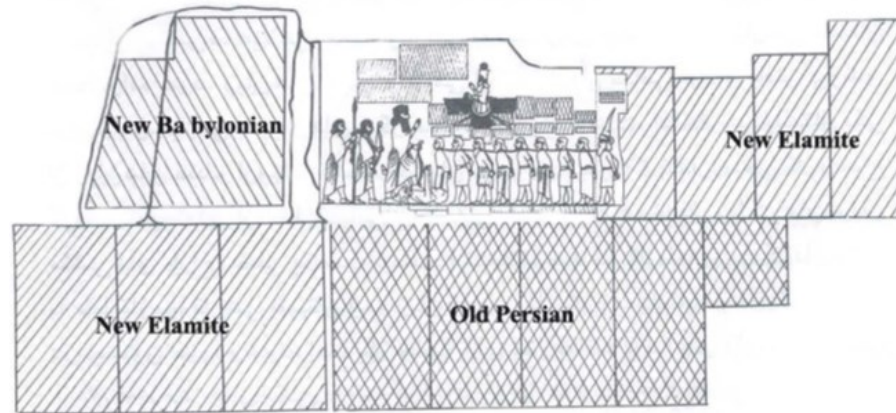


Figure 9: Different stages of the construction of the Darius inscription-1998-(Iranian Cultural Heritage and Tourism Organization) ICHTO (Bisotun Research Base)

4.2.3.1 The motivations and reasons for creating the “Darius I relief and inscription at Bisotun heritage site:

Motives that inspired Great **Darius** to choose **Bisotun** mountain for this mission are discussed in the following four justifications:

1) Bistoun sacred mountain of deities: “The original Old Persian form of the name *Bisotun* can be recovered from the Greek rendering *Bagistanon (oros)* “Mt. Bagistanon” in Diodorus Siculus as *Bagastana* “place or stand of the god(s)”³³³ . Magnificence and peculiar glory of the natural landscape in the Bisotun region create a spectacular place for connecting to spirituality and worship God. “The name clearly shows that the place had been holy from time immemorial, and Darius’s monument was well known to the ancients³³⁴”.

2) The Anubanini inscription has attracted Darius I: The Anubanini rock relief, of the Lullubi king Anubanini, dated to circa 2300 BC, and which is located not far from the Behistun reliefs at Sarpol-e Zahab can inspire Darius I to inscription reliefs at Behistun. The attitude of the ruler, the trampling of an enemy, the lines of prisoners are all similar, ^{335,336}. The inscriptional tradition of the Achaemenids, starting primarily with Darius I, is thought to have derived from the traditions of Elam, Lullubi, the Babylonians, and the Assyrians³³⁷.

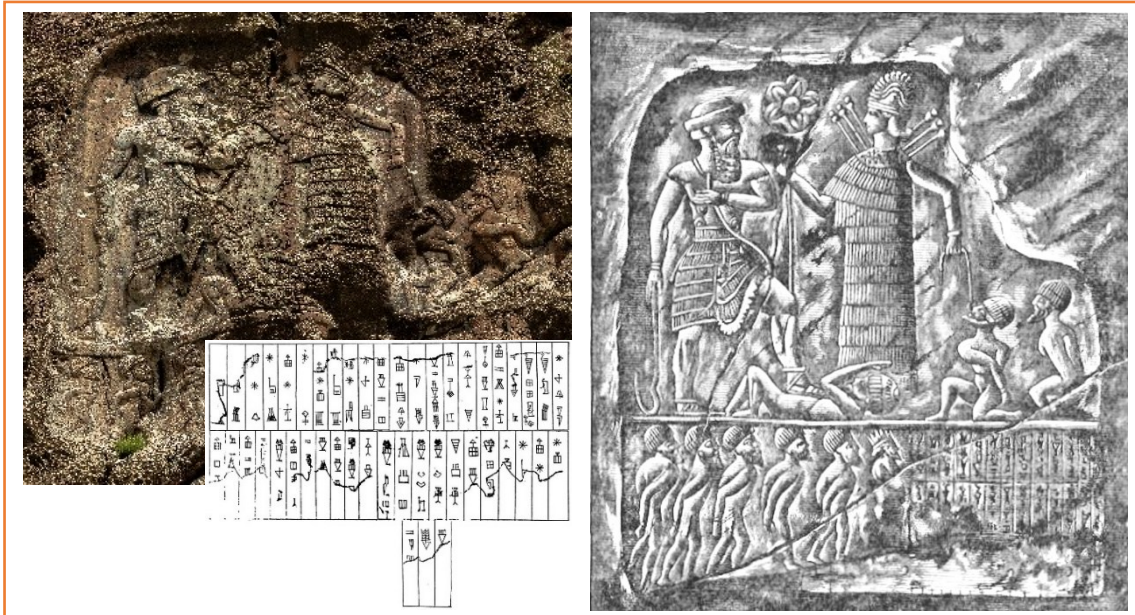


Figure 10: Anubanini rock relief inscription- Maspero, G. (Gaston), 1846-1916 - *Recueil de travaux relatifs à la philologie et à l'archéologie égyptiennes et assyriennes* Publication date 1870

Figure 12: Anubanini Rock Relief_Sarpol Zahab_Kermanshah Province_Iran-Koorosh Nozad Tehrani - <https://www.flickr.com/photos/25071770@N05/31113036603/>

Figure 11: Anubanini rock relief woodprint: Maspero, *History of Egypt, Chaldea, Syria, Babylonia, and Assyria*, 1918

3) Historical battles in Bisotun plain: Biglari ³³⁸ believes that the Bisotun plain was the location of the historic battle of Kundro, which had crucial importance to Darius the Great. One of the reasons that caused him to elect this point for his historical proclamation and carving the inscription is that Bisotun mountain witnessed the victory of Darius in the Kundro battle. The battle between Fravartish rebellion in Media and Darius took place at Kunduru. (Fravartish (PHRAORTES) identification has not been distinguished definitely yet, and different discussion and doubts is around his real name and personality.) Culican stated that “Kunduru was the decisive battle for Darius and he chose the rocks at Behistun overlooking the plains of his victory as the site for his official monument³³⁹.”

4) Gaumata the Magus captured at Bisotun Median fortress: According to some sources, Guillaume Magus, the most serious enemy of Darius I and the Persian dynasty, was captured and killed in this place, so Darius adopted this point of declaring his most crucial proclamation.

The terrace below the relief of Darius, which is called Median fortress or sanctum “fully explored by W. Kleiss.³⁴⁰ In its construction, with rectangular buttresses, it resembles the fortress at Tepe Nushi-Jan(Median architecture), which is not very far away from the Bisotun mountain. Probably it was the old fortress named Sikayauvatig where Darius and his companions killed Gaumata, as reported in his inscription. ³⁴¹” (Median Sanctum photo in Table 9)

4.2.4 The influence of Darius inscription in Iranian Collective Memory

“Intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.³⁴²”

Revitalizing relationships to the Persian heritage civilization depends upon exploring past knowledge layers in DBI. This unique inscription provides extraordinary evidence about global geopolitics, ethnic geography, socio-cultural structures, choreography and commemoration calendar, customs, and beliefs during the Achaemenid Empire (550 BC–330 BC) .On the other hand, profound influences on modern studies on ancient linguistics, and in Persian art. the integrated reading of DBI demonstrates how the linkage between heritage and culture, which is created by the tangible inscription, “also assumes an intangible notion of the value of community to which it must appeal³⁴³.”

The Zoroastrian philosophy and ethics as the reflective layer in realizing the intangible values of Darius inscription:

Boyce confirmed that Zoroastrianism creates an intellectual, social and material revolution in the land of Iran and in her writing in 1985³⁴⁴ “The Religion of Cyrus the great” insisted that during the Achaemenid empire, the main the exceedingly accepted religion of kings was Zoroastrians; they stated in their inscription that we renovate the world and bring happiness for people. She had no doubts that all of them were respect Zorastors doctrine, “it is the kings who make effective the will

of God on earth. Darius in an inscription at Susa proclaims that he copies the work of God for he, like God, makes the world excellent (Frasha)³⁴⁵

“In Darius’ royal inscription in the Behistun, Persian great god, Aurammazdā plays a proactive role. Accordingly, Aurammazdā’s name is one of the most occurred words in the inscription. In other words, we can presume him as the patron god of Darius, the royal dynasty, and, most importantly, legitimizing the god of Achaemenid rule.³⁴⁶”

Darius the King says: After that, I prayed to Ahuramazda, Ahuramazda sent me aid.

It is the Avestan name with the title of a great divinity of the Old Iranian religion, who was subsequently proclaimed by Zoroaster (great Iranian philosopher) as God. Some scholars render it as Mazdā, others as Mazdāh; some interpret it as a substantive, “Wisdom,” others as an adjective, “wise,” qualifying Ahura “lord.³⁴⁷” Zarathustra living time is not clarified, and the spectrum between 2600 to 4000 years ago has been assumed in different references. He “was the first monotheist prophet believing in only one God.³⁴⁸” He never calls himself a prophet, but a teacher that found the first monotheism philosophy in ancient Iran. “He established three main principles in his teaching, which sought to establish co-existence in harmony between those: God, human beings, and nature. He described the laws and conflicts of nature as possibilities for learning and creating such harmony.³⁴⁹” “Zarathustra expected from his followers to prove through their thoughts, language, and actions that they lived in harmony with God. Their duties in this regard were not only directed towards other people but also encompassed animals, plants, and the greater environment. He ordered that animals and trees be protected, the soil cultivated, and the water to be kept unpolluted³⁵⁰”. Zoroastrian philosophy bases on two main pillars as the future-oriented inspiration:

- **Sustainable land use and respect of nature influences in nature conservation and planting:** “Under Zarathustra’s influence, thousands of kilometers of subterranean water channels (Qanats) were built in ancient Iran for the watering of fields, as well as many dams and aboveground channels. The greatest beacon and stimulation of Zarathustra’s

teachings was the praise of agriculture. It was a good cause and a triumph to regenerate and cultivate the land from the desert and to plant useful trees³⁵¹”

“The Persian Kings Darius and Cyrus proudly showed their guests what they had planted with their own hands. Moreover, in each letter to the governors (Satrapi), the planting of trees was recommended. Darius wrote (about 550 b. C.) in a letter to his servant Godates: *That you may cultivate my land carefully and plant trees from Syria and lower Asia. For that, I salute your good intention and gratitude is owed to you in the house of the King.*³⁵²”

Nature conservation resulted in sustainable land use and agriculture and shaping the permanent habitat for a human that capable of cultivating and living with nature in interdependence. Animal sacrificing was forbidden in this philosophy and happiness for people, and any creature in the world was a significant purpose and prosperity.

- **Righteousness, wisdom, and future knowledge:** in this philosophy, any ideological discrimination is outlawed, and any decision should be based on knowledge and science. “This concept denotes harmony, righteousness, and existential order, or harmony in the righteousness with the existential order³⁵³.” “Knowing that the three leitmotifs of Zarathustra's philosophy established around 3000 years ago are: right thinking, right speaking, and right acting, we are going to see how our 'man' conceives and interprets the word "right"; how he achieves it and how he integrates it in his self.³⁵⁴”

Great Darius emphasis Righteousness and says that *I am not a liar* .when he introduces rebels in minor inscription next to each one, points that *he lied to people, and I punished him.*

Surprisingly these two pillars are related to one of the oldest philosophies that its vision is not far from nowadays pioneering interpretation about nature conservation and human responsibilities in the world.

4.2.5 Challenges that Darius inscription confronts in its tangible and intangible integrity

“From a global perspective, cultural heritage is threatened by multiple factors, such as war, illicit trafficking, mass tourism, and limited budgets. All of these can severely compromise the consumption and enjoyment of heritage by future generations.³⁵⁵” Furthermore, urban development and other courses of development, agricultural expansion,” and industrialization are critical threats in various cultural landscapes that result in irrecoverable damages to cultural heritage. “These dramatic losses, the results of natural processes and human action, have renewed awareness of the vulnerability of our cultural inheritance - a heritage which includes places whose attributes are of ‘Outstanding Universal Value and awareness of the commitment of the overall international community to the common purpose of preserving and transmitting it to future generations.³⁵⁶”

Threats to physical features

a) Industrial pollution: Over the millennia, all the inscriptions on the rock at Bīsotūn, especially the Babylonian version, have suffered severe damage from erosion by rain and drifting sand and from seasonal torrents.³⁵⁷

“On the other hand, industrial development pressures that result in air pollution and acid rain is the critical challenge that severely damaged this inscription: “One of the most problematic issues in Bisotun is the rapid industrial development of the surrounding valley including biochemical installations. The valley as a whole is, in fact, the heart of industrial activity and the agricultural center of the region. Some of the factories are old and are going to put an end to their activity and will be removed (the nearby sugar factory, for instance). The new ones, if they are polluting, will be subject to regular and strict controls.³⁵⁸”

b) Rain and drifting sand: “Over the millennia, all the inscriptions on the rock at Bīsotūn, especially the Babylonian version, have suffered severe damage from erosion by rain and drifting sand and from seasonal torrents. Calcareous deposits on the engraved cuneiform characters caused by

water seepage have obscured several passages, but at the same time, they have preserved them from weathering³⁵⁹.”

c)Underground water flows: George Cameron writes in his reports:“ beneath the relief, was responsible for part of the damage, for this was the exit of an underground "river After a rain lasting less than seven hours, for instance, water issued from the fissure and washed down across the face of the inscription for more than 52 hours. Since the rock itself was limestone, centuries of tumbling water had eaten it away to a depth at times of five or six inches - and of course, all the writing upon such spots is now gone. Nevertheless, all inscriptions beneath its path had not disappeared. Although the water has dissolved the limestone at the top of each column, it has itself been deposited, upon the face of t inscription, lower down. Where once there had been wedges or signs carved into the rock, signs long thought to be destroyed, there was now a solid deposit of rock. This was not "destruction" at all, but preservation. It was a stalactite formation over the surface of the original inscription. ³⁶⁰”

Nowadays, underground water flows cause severe damages to this inscription.



Figure 13:Underground water flow in D.I.B- <https://www.koochar.com/en/wiki/iran/cities-of-iran/kermanshah->

Fig: Darius bas-relief remote and unseen able position, inconvenient facilities-2018-Author

Threats to intangible attributes

Today, visitors of Bisotun heritage will encounter the historical site without any plan for introducing and valorization of its intangible values. There is not any festival, celebration, or union during the year. Neglect to invisible attributes of this site adopted in the shadow of deliberate or accidental decisions that have influences in the spirit of place. Controversial in up down management strategies, the role of local communities and public cultural attributes and traditions do not consider. There is not any cultural activities program and plan for public awareness about Bisotun's exceptional intangible values. The unsustainable decision makings resulted in the loss of roots of the cultural atmosphere in this site. Furthermore, This inscription is un seeable and inaccessible for tourists, and there is not any modern facility to bring visitors close to D.I.B. many visitors, after facing this situation, became so disappointed and found Dario's Inscription under the siege of neglect.

Concluding Remarks

"Darius could have found the no better or more conspicuous place for his project than the last peak of a long, narrow range which skirts the plain of modern Kermanshah. At the foot of the mountain, springs bubble up into a pool of crystal-clear water and supply a small stream, which flows past the village of Bistoun and away into the plain. From time immemorial, caravans have watered their beasts at these springs that lie on the age-old caravan trail between Ecbatana (modern Hamadan), once a center of the Medes and Persians, and fabled Babylon.³⁶¹"

This sector highlighted both tangible and intangible characteristics of Darius I relief and inscription of Bisotun. Afterward, discuss the challenges that currently threaten the authenticity and integrity of this Heritage of Humanity.

4.2.6 Sassanid Architectural Heritage: Values, Characteristics, and Threats

Sassanid Architectural method and technology in Bisotun CL: “Extensive imperial, as well as private, programs of constructing bridges, dams, and canals are attested for the Sasanian period (Huff³⁶², D. Kleiss, W., 1989)”. Referring to the archaeological and historical researches that have been done by Iranian, European and American scholars (Rawlinson³⁶³, 1839, Kleiss³⁶⁴, 1970, Luschet, 1965, Rahbar³⁶⁵, 1978, Khanmoradi³⁶⁶, Ghasrian, 2011) the magnificent wide-ranging construction projects in Bisotun CL launched in Sassanid era, reign of K̄osrow II (Xusro II) (590-628) the last great Sasanian king (shah) before the Arab conquest of Iran. Extensive construction master plan from Bisotun to Tghi-Bostan ³⁶⁷ that has been called “Khosrow Paradise” by Luschet, designed after K̄hosrow II return from Jerusalem triumph In 613 and 614. (Baka³⁶⁸ W., 2015, Shahbazi³⁶⁹, A. 2005)

Since Bisotun has been on the royal road connecting the east and west of the Sassanid empire, it justifies demanding to construct bridges for connection across Gamasiab and Dinevarab that were roaring rivers on at that time. Three bridges that recognized as Sassanid bridges in Bisotun CL are Khosrow, Kohneh, and Ghosivand bridges. Eventually, most of the Khosrow plan remained uncompleted due to his death in 628 (Golzari, Luschet). The primary material used in this construction was, qualified cut *stone* (Pak-Tarash) that has been prepared from Bisotun mountain and also vernacular hydro mortar (Giro-Charo and “Sarooj”)(Pirnia³⁷⁰, M., 2003).



Figure 14: Khosrow ruined palace in Bisotun site, Source: Author, 2020

The cut stone (Pak-Tarash) masonry preparation site can be seen today across the Farhad-Tarash terrace. The cut stone blocks are outspread along 7 km from the core zone of BCH in different places of site sporadically. (Khanmoradi, Ghasrian, 2011)



Figure 16: Dressed Stone blocks in Bisotun CL, The Masons' Workshop(stone-cutting workshop), Source: Author,2019



Figure 17: The handmade channel above the Farhad Tarash, Bisotun Research Center,2010

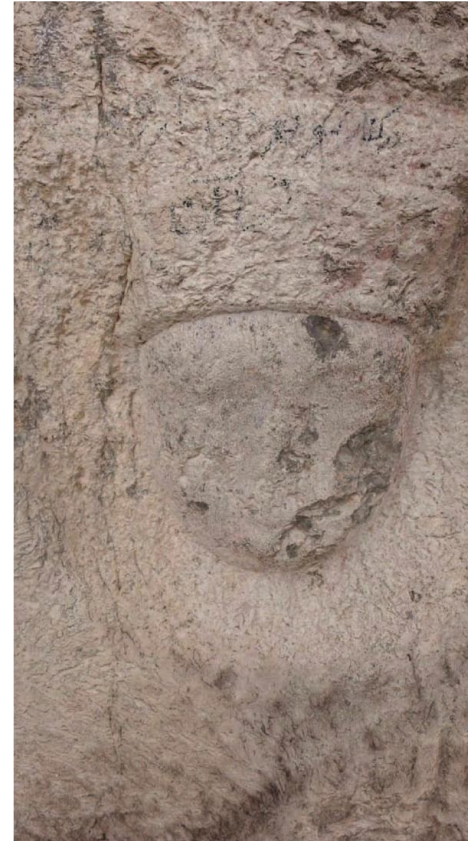


Figure 15: The Relief of a woman on Farhad Tarash surface (probably the visage of Shirin the Farhad's Mistress, Bisotun Research Center,2010

During the Sassanid dynastic period (224-651 CE) one of the Persian civilizations peaks has emerged as "golden age" of pre-Islamic Iran. In historical architecture achievements, authentic design and construction techniques and attributes this era classified in "Parti" order (Shive Parti) by Pirnia (2003). The remains of this style are widespread in several sites in Iran and other countries in Sassanid territories. Two main principles of this order are: 1) Applying vernacular materials:

dressed cut stone and brick 2) Employing the curved structures for covering vertical and horizontal spans (arches, vaults, and domes)(Christensen³⁷¹, A (1939), Pirnia,2003 Pop³⁷², A. 1994.). “Taking into account the scant supply of good timber in Iran, architects employ materials more durable than wood, on the one hand, and the knowledge of advanced vaulting techniques, on the other, it seems more probable that stone or brick vaults were commonly used to span the piers. (Pope, 1939, Huff, D. Kleiss, W., 1989)” Several bridges and hydraulic structures have been built in the “Parti” style. The arch forms inbuilt vaults in the “Parti” style are “Mazedar,” which was the main form of Iranian architecture arches mostly before Islam conquest. Mazedar arches (Pirnia, k. 1994) have been built without molding in large openings, that the most well-known example of applying this kind of Persian Arch is in Taghi kasra in Ctesiphon in 25meter span. The construction techniques are different from Roman arches, which “requires a heavy temporary supporting frame under the arch, which must not be removed until the two sides of the arch are joined.”(Petralla, S. 2012)

After reconstruction, most of the Sasanid bridge in later centuries, the form of arches changed to “Tizedar.” The stream bed has been covered by attached rocks that are the conventional technique in reinforcing the bed level in Sasanid bridges (Luschey, 1965)

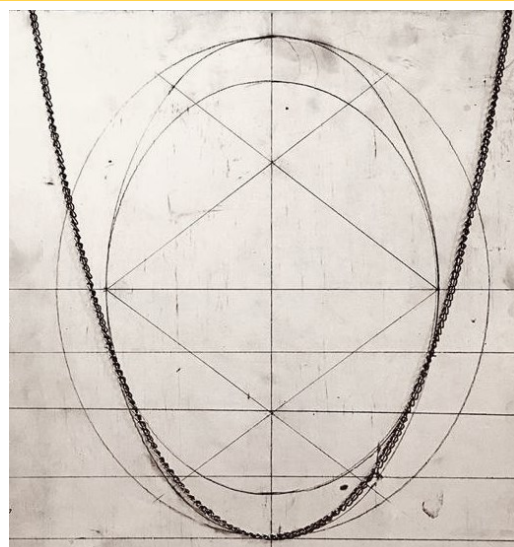


Figure 18: Mazedar Arch drawing order, Source: Mud-Esfahak, 2019



Figure 19: Tize dar Arch Pole-Kohne, Bisotun, Bisotun Research Center, 2017



Figure 20: Pole Dezful , Azarakhsh temple in Darabgard ,Sassanid era, Source: www.ichto.ir, 2018

4.2.7 Khosrow II Bridge (Pol-e Khosrow) (612-628 A.D.)

In Khosrow bridge, the integrated large stream bed made by rocks and hydro mortars. In order to recognize the underlying layers in the Khosrow bridge site and determine the holistic structural form of its piers the geophysical studies by seismic and electrical methods (Sahra-Kav Consulting company³⁷³, 2006) have been measured in up to 20 meters deep drainages along the bridge and surprisingly testifying three buried piers along the ancient road linking KB to Bistoun plain villages. The bridge has 11 piers that only seven piers are visible today, composed of rubble concrete covered with cut stone. Piers are in the square form with 7.2 meters dimension on each edge, that are based on a 14.3-by-7-meter rectangle footing foundation, and with triangular piles as a breakwater on both sides. Integrated rock constructed bed level was carried out to 50 meters along the river to prevent the erosion of the bases and bed level under the footing of the Khosrow bridge. The ancient road stretches from east of Khosrow bridge to the first destination, which is the Takht-Shirin remains.



Figure 21:Khosrow Bridges bed level and piers, Source: Author,2018 Figure 20: Khosrow Bridge location and Gamasy auo river, Source: Author,201920:

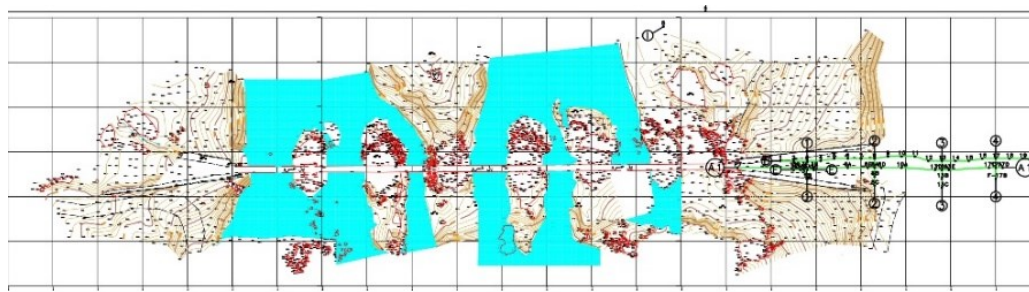


Figure 22: Khosrow Bridge geophysical map with defining the location of three buried piers, Source: Sahra Kav Consulting company, Bisotun heritage site research center, 2006

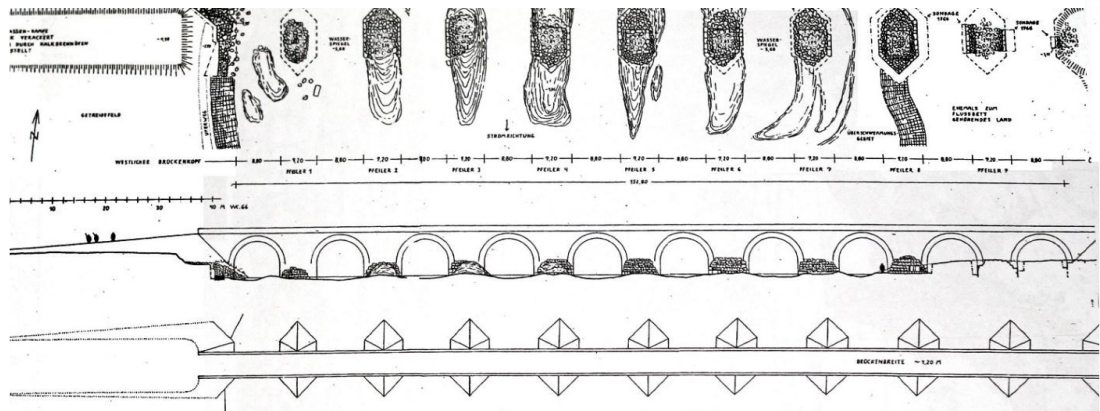
By in-depth studies about the other bridges on Bisotun CL site and the other similar concurrent bridges in Sasanid territories, the followed idea can be raised in proposing the structural form of Khosrow bridge:

Revising the last theories about Khosrow bridge arch forms:

It seems that two prognosis reconstruction designs by Kleiss (1963) should be revised, according to the architectural and historical evidence. He depicted that Khosrow bridge had a wooden deck, and it was more similar to the Trajan's Bridge (a Roman segmental arch bridge). The second predicted sketch refers to the Roman arch structures that he perceived this bridge designed in Roman style. Both of these suggestions are not acceptable due to "Parti" architecture style principles and the geometric form of "Mazedar" arches. Unfortunately, the cohesive interdisciplinary studies about this uncompleted bridge have been limited to Kleiss reports, the geophysical surveys, and some insignificant notes that all of them have copied the Kleiss point of view.



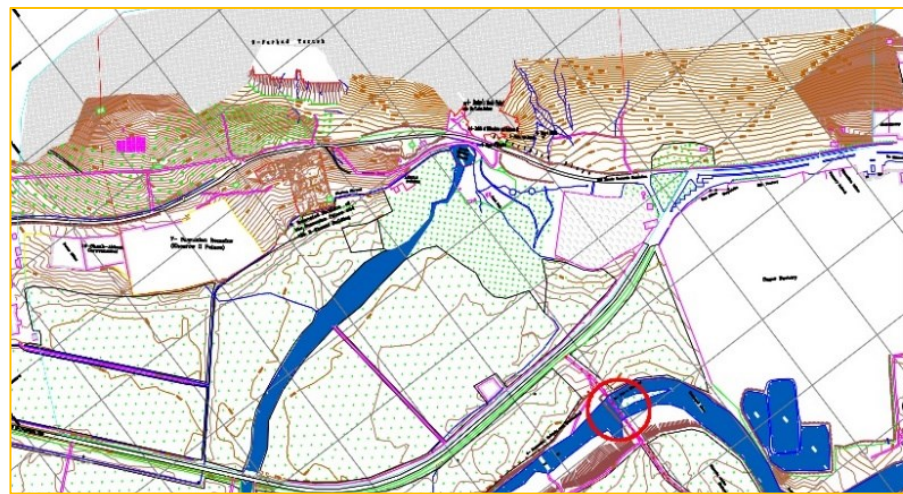
Figure 23:Khosrow Bridges bed level and piers, Source: Author,2018



Map 10:Khosrow Bridge reconstruction drawings, Roman arch, Kleiss (1963)

4.2.8 Khosrow Bridge's challenges and integrity threats

Today, Kermanshah-Hamedan highway passes through the buffer zone of Bisotun CL and interrupts the historical, natural, and cultural integration of this bridge and other historical remains of BCH. Continuity and primary idea of bridge construction in creating connections (tangible and intangible) to Darius I inscription, which shows a kind of attempt by the Sassanid king to commemorate the emperors before him, this bridge and natural landscape flow disappeared by this highway. Khosrow bridge, as an acupuncture point in this context, has been isolated by unsustainable development pressure in BCH. (Moradi³⁷⁴, A. 1998) Environmental challenges have a side impact on Khosrow bridge architectural structure. Contamination from industrial activities and the Gamasiab river water flow decline has been discussed in zone1 studies of this research. The mentioned it is mostly discharging chemical wastewaters from the Suger factory without effluent treatments to the Gamasiab river cause to increase damages in bridge piers and foundation drastically. On the other, it seems that the lack of water flowing is destructive for hydro mortars that used. The Khosrow bridge has been utilized by motorcycles without any fortification actions: This bridge is the sole access route to the Cham Botan Village as the closest local community around this bridge. It is still used by people every day, which has increased the human damage and destruction to this bridge.



Map 11: The location of Khosrow bridge in BISOTUN Core and Buffer Zones, Source: I.C.H.T.O Iranian Cultural Heritage and Tourism Organization, University of Tehran

4.2.9 Hydraulic Structures and retaining wall around Khosrow II bridge

The scattered rocks along the Gamasiab River appear to be remnants of the Sassanid Hydraulic Structures that the German - Iranian archeologist Joint Committees³⁷⁵ in 1936-1967 excavated and scrutinized. In their report, it indicates that: This Khosrow II Sassanid bridge is part of a rectangular Hydraulic Structures installation with 1100 m long and 530 m wide. The portion of the retaining wall made by huge boulders of the river bank. This rectangle is restricted on the north by the Sassanid bridge and road, on the east by the dam, and on the west by the riverbank, and on the south by the rock structures, which are probably the crest of a dam.

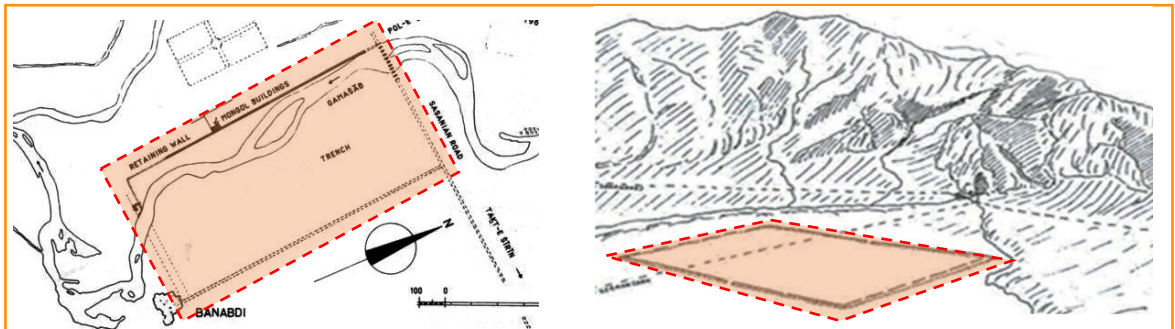
The southern part of the is a rectangular hydraulic structure acted as a dam, as the scarce remnants prove it. The water of the Gamasiab River, passing through these rectangular fortifications, surrounded by the mentioned structure and formed an artificial swamp. This rectangular pool as a human-made marsh probably designed for both agricultural water reservoir structure and royal hunting place. Since it is discussed in zone 1 about wildlife in the Bisotun area, the wild boars and wild goat were the prominent fauna in the region. Some of the scholars (Luschey, H. 1965, Kleiss, W. Calmeyer, P. 1963-1967) believed that Hydraulic systems around the Khosrow bridge that adopted as a pool and human-made wet hunting ground.

Hunting was the most prevalent favorite practice for the majority of Persian, Parthian, and Sassanid kings. Royal hunting scenes rendered in several heritage sites as one of the ancient traditions of the Iranian kings. A well-known visage of Khosrow II royal hunting scenes can be seen in the Tagh-Bostan heritage site in a 25 kilometers distance from the Khosrow II bridge and hydraulic structure in Bisotun site. This stone carving is on the left side of the large porch of the Tagh-Bostan monument.

In this royal hunting scene, the process of hunting in an artificial swamp has been illustrated in several episodes³⁷⁶. It shows that the king rides a boat in the swampy hunting territory, and the

herdsmen push wild boars forward to be shot by the king's arrows. A woman close to him offers an arrow, a group of women musicians playing the harp in another boat close to him.

By considering natural landscape studies and historical architecture remains around the Khosrow bridge, the theory mentioned above about the rectangular facility function as the royal hunting artificial swamp has been more reinforced. According to the ICOT report in 2006: The rest of the wall has been either destroyed or is still buried under the cultivated surface. Many of the stone blocks of the wall were removed and used in a new bridge, which was built towards the south 4km downstream on the road to Harsin; they can still be recognized there.



Map 12: Kleiss reconstruction drawings about Hydraulic Structures and retaining wall around Khosrow II bridge, (1963)



Figure 25: Taq-e Bostan, a low-relief depicting a boar hunt of King Khosrow II, contemporaneous with Sassanid construction projects in Bisotun
Source: Author, 2019



Figure 24: Taq-e Bostan, rock reliefs about Khosrow II, 25KM far from Bisotun site, Kermanshah, Source: Author, 2019

Results and Discussion

Twenty-three acupuncture points of Bisotun zone 2 studies have been analyzed in this sector. The contradictory interpretation of the identification of one of them (Hercules statues) discussed. The Darius I inscription values illuminated, and Meanwhile, more thorough studies about the Sassanid architectural methods and traces in Bisotun heritage site discoursed.

Diagnosing the present challenges and threats of historical landscape points paved the way for developing the proper revitalization acupuncture strategy in the future. In the next chapter, the practical recommendation and action plan for revitalizing these points will be discussed meticulously.

BZ-2

Achaemenid (520 B.C.)



2: Behistun Inscription, describing conquests of Darius the Great



3: Behistun Inscription



1: Darius I the Great bas relief on Bisotun cliff



4: Artificial Jungle in Bisotun foot hill



5: Bisotun Mountain , Local communities Kurdish dance

Source

1: Date: 14/07/2006 Author: Babak Sedighi Copyright: © UNESCO whc.unesco.org/en/documents/113941

2: Hara1603

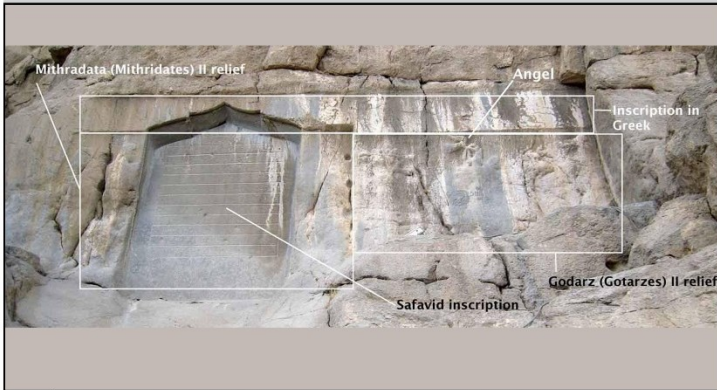
3:

4: Bisotun World Heritage Research Centetr.

5: Source From own collection Author KendallKDown

BZ-2

Parthian (228-50 B.C)



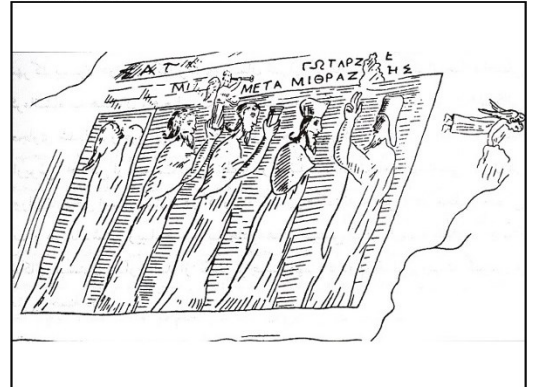
5: Relief of Mithradate II (Mehrdad II) and Relief of Gotarzes



1: Mitra/Hercules Statue



2: Vologaeses Basrelief (Sang-e Belash)



4: Mehrdad II bas-relief before demolition by Safavid inscription



3: Relief of Mithradate II (Mehrdad II) and Relief of Gotarzes

Source

- 1: Author 2019
- 2: Bisotun World Heritage Research Centetr 2019
- 3: Author 2019
- 4: 17th century, Venetian Painter in Bisotun
- 5: Bisotun World Heritage Research Centetr 2019

BZ-2

Sassanid (590-628 A.D)



5: Khosrow II Palace



1: Sassanid Terrace (Farhad Tarash)



4: Khosrow II Palace



2: Khosrow II Bridge



3: Khosrow II Palace

Source

- 1: Author 2019
- 2: Author 2019
- 3: Bisotun World Heritage Research Centetr 2019
- 4: Author 2019
- 5: Author 2019

BZ-2

Safavid



5: Shah-abbasi Caravanserai



1: Shah-abbasi Caravanserai



4: Shah-abbasi Caravanserai



2: Shaykh Ali Khan Inscription



3: Kohneh bridge

Source

- 1: Laleh Hotel Group,2019
- 2: Author 2019
- 3: Bisotun World Heritage Research Centetr 2019
- 4: Ali Sohrabi 2016
- 5: Laleh Hotel Group,2019

4.3 Zone 3: Narrative layers in Bisotun Cultural Landscape



Figure 26: Khusrau stand on either side of the canal built to supply Shirin with the milk of goats and cows, taken from the Khamsa of Nizami- circa 1610. Source: © The Trustees of the British Museum, Museum number 1920,0917,0.267

The Proclamation of Masterpieces of the Oral was created by UNESCO's General Conference in 1997, and in 2001, 2003 and 2005 have been revised. Intangible Heritage marks a crucial step in UNESCO's strategy for the safeguarding of our living heritage. The Proclamation's primary objectives were:

- to raise awareness on the importance of oral and intangible heritage and need to safeguard it;
- to evaluate and list the world's oral and intangible heritage;
- to encourage countries to establish national inventories and to take legal and administrative measures for the protection of their oral and intangible heritage;
- to promote the participation of traditional artists and local practitioners in identifying and revitalizing their ICH (Intangible Cultural Heritage). The program honored two categories of intangible cultural heritage:

1) forms of popular or traditional expression

2) cultural spaces, the latter being defined as "places in which popular and traditional activities are concentrated."³⁷⁷

According to this UNESCO classification, the Bisotun CL includes both of the intangible cultural heritage categories.

Bisotun, beyond its historical values, has a favored position in Iranian memories. This popularity refers to Khosrow & Shirin's romantic story/ history, which the remarkable episodes and milestones of this story occurred in Bisotun CL. "Although Nezāmi never left his hometown, Ganjeh, on the northern side of the Araxe River, and thus never saw Bisotun, he had access to information recorded by geographers in the 4th /10th century and passed on as part of the literary tradition."³⁷⁸

"The poem relates a love affair that takes place in a historical setting: the deposition, imprisonment, and blinding of the Sasanian king Hormoz (579-590 CE), during an insurrection led by two maternal uncles of prince Khosrow, designated to become king and probably a party to the rebellion. These events, documented in the historical sources, and narrated in detail in Ferdowsi's *Shah-nāma*, are only briefly referred to by Nezāmi, who focuses his attention on the love relationship between

Kosrow and Širin.³⁷⁹In the following subchapter, the concise narration of this story's milestone and episodes that occurred at the Bisotun site stated briefly.

What can be perceived in narrative literature genres coexist in Bistun NCL, is two distinct literary mediums. The epic theme of Darius I the great inscription and, on the other hand, the romantic genre bond with Khosrow II heritage vestiges in Bisotun NCL. Subsequently, studying the core concept and roots of **epic- romantic** narration in Iranian literature, the principles explored in two primary literature references:

1)Shahname Ferdowsi: The aptly chosen manuscript source is the perfect representation of Iranian epic literature: Shahname(The Epic of the Kings), which is paradoxical thematic aspects, the hybrid literature in this masterpiece is a delightful tale of reconciling of genres. Reuben Levy who has translated Shahnama in French points out that: in Shahname "the full range of poetic arts are brought into play so that no two sunrises are described in the same terms or the same manner, and no two laments are identical³⁸⁰". The outcome of the combination of literature mediums and historiographical approach in Shahname is a fluent perceptible literature heritage that even today is readable for the Persian language speaking. Amazingly "this astonishing diversity in no way detracts from the literary excellence of the work. The author is a poet to his fingertips and a master of a pure and simple style.³⁸¹"

2)Panj Ganj epopee of Nizami: In the second section, which is about the **romantic** literature, the Khosrow and Shirin (1177–1180 AD) poem from the Panj Ganj of Nizami chosen for illuminating the romantic manuscript reference. *Khosrow o Shirin*, which is composed in around 6,500 couplets, is the most popular romantic inscription in Iranian literature. Panj Ganj "(**Kamsa of Nezami**), the quintet of narrative poems for which Neẓami Ganjavi (1141-1209) is universally acclaimed. The influence of Neẓāmi's work on the subsequent development of Persian literature has been enormous. Not only each of his poems but also the *Panj Ganj* as a whole became a pattern that was emulated in later Persian poetry.³⁸²"Nezami is considered as one of the greatest lyric poets

that not only in writing romances, and he has expressed the struggle between love and reason very well.³⁸³

4.3.2 Iranian Epic (Pahlavani) narrations characteristics, focusing on the Darius the Great inscription in Bisotun NCL

The rather counterpart of the word Epic in the Persian language can be denoted in the term “Pahlavani,” which is in prose or poem form narrates the heroic talents of Iranian Paladins warriors in triumphs and defeats.

Despite that, the content, purpose, and composition of this genre are different from the epic genre in western literature, but for finding the stepping stone in this topic and developing the discourse, I tried to concentrate on common features between epic and Pahlavani genre in Iranian literature. The reasons for the disconformity in determining the epic genre for Persian literature will be brought up in the next few steps.

Epic genre roots in Persian literature: The roots of epic stories in Iranian literature can be found in Avesta (Zoroastrian core manuscript), as “the earliest literature produced by Iran, included the twenty-one nasks(volumes) dealt with religion, philosophy, ethics, medicine, and various sciences.³⁸⁴” The hymns (Yashts) of the Avesta contain numerous allusions to the deeds of the heroic and demonic figures³⁸⁵ and have an immeasurable impact on epic(Pahlavani) canon in Iranian literature. “Following Alexander’s conquest, the Avesta was supposedly destroyed or dispersed by the Greeks after they translated the scientific passages that they could make use of³⁸⁶”. This Zoroastrianism scripture memorized, recollected, and recension during the Parthian empire(247 BC – 224 AD) “the fragments collected, not only of those that had previously been written down but also of those that had only been orally transmitted³⁸⁷”.

Picking up various meanings the Pahlavani term in the broad spectrum refers to the Parthian dynastic family name that was derived from Pahlo³⁸⁸, Pahlav , Pahlavān, Pahlavi (the vast territory in the northeast of Iran). Regarding recent research by Pourshariati³⁸⁹ essentially after the Arab invasion to Iran, the Parthian dynastic survivor generation diligent presence and endeavor had a

crucial role in preserving and developing the Pahlavani culture. The majority of their collected literature heritage flourished in the versified Ferdowsi's masterpiece that highly likely his origin was from the Parthian (Pahlavi) family. Amozgar and Pourshariati believe that Pahlavani being accounted as the Parthian language, the theory that can be verified in Shahname as well.

Alongside with Iranian written and oral epic (Pahlavani) compositions, ancient inscriptions sculpted on the rocks can be assorted as the most antiquated authentic epic literary primely sources.

It is a notable step in this research that introduces the Darius I inscription as the foremost pattern of epic literature. The multidisciplinary perception of this piece of literature in the framework of the Pahlavani literature genre is a novel approach to the historiographical content of these heritages.

Darius the Great' accession inscription in Bistoun is coined as the longest multifaceted, ancient text written in the Iranian epic literature genre (Pahlavani), which its simultaneous translation into the three major languages of that time is reminiscent of the global audiences of this proclamation and since nowadays leave a visitor in awe. The translation and explanation of this inscription discussed in section 4-2-2.

"Regardless of whether the Bisotun inscription was the first inscription written in Old Persian,... or whether the old Persian script had already been invented and used to write down minor royal inscriptions *prior* to Darius the Great' accession, the fact remains that the Bisotun inscription represents the first attempt at composing in writing a *longer* narrative, and it is hence probable it may display traces of oral literature.³⁹⁰"

What shines forth in the Iranian collective memory recorded over this inscription is the distinct epigraphic words of Darius I, the depiction of his victories, "legitimacy³⁹¹", and refreshing the fundamental Iranian Farhang (cultural – see diagram 6) values which were eclipsed by rebellions.

The Epic(Pahlavani) essence in Darius inscription:

"Explaining the causes of the rebellions "Falsehood [*drauga*] made them rebellious³⁹²", he warned against the "Lie" and invite all humankind to avoid untruth way. However, the timeless essence of this autobiographic epic composition is the *Truthfulness*.

Darius the Great, his commanders and immortals³⁹³ warriors by eliminating lies phenomenon through the Persian empire³⁹⁴, founding the most critical morality of pahlavans. In Naghsh Rostam inscription in Fars he says:

“nor was I a liar, nor was I a despot, neither I nor any of my family. I have ruled according to righteousness. Neither to the weak nor to the powerful did I do wrong.”³⁹⁵

This righteousness and contributing in bringing prosperity for weak ones are two essential attitudes of Pahlavani moralities that have been the exile of Iranian epic literature.

Obviously these strategic exiles cause to enduring the great Persia empire that Badi³⁹⁶ claims that throughout the 230 years of Achaemenid rule, not even an Iranian betrays his Shah(king) and his country.

Vakili³⁹⁷ stated that, in Bisotun inscription, Darius illustrates the image of the worthy heroic patriot warrior who is narrating the most extensive, wonder battle of the world that there was not any presumably in the past and up to 400 years the world has not experienced it again. In this complicated, multifaceted war, Darius the Great as the genius hero appears and have supports of the great commanders of the powerful class of the army loyally. Surprises his warriors are coming from the recently opened lands (Egypt, Libya, and Newly opened Cyprus and Lodia and the Balkans) that are without any claim for rejection or separation supports him to reestablish the Achaemenid throne. Darius the Great, meanwhile, identifies himself as Cyrus' right successor, and one of his achievements is that it has recorded the truth in this evaluation. He had transmitted Iran into an affluent, magnificent, developed nation.

❖ Regarding two inscriptions in Bisotun and Naghsh Rostam³⁹⁸ that have been written in the first and last years of his kingdom, the human values that Darius the Great sought are summarized in four attributes: righteousness, nations' happiness, wisdom in governing, and striving for the land prosperity in this world. All of these values are the basic principles of Pahlavani ethics that have been underlined in the epic canon of Iranian in later centuries. So, indeed, the Bisotun landscape is an epic(Pahlavani) NCL that its cultural values lie in the sedimentations of Iranian collective memory, played a unique role in preserving and transmitting

the epic(Pahlavani) concept throughout history. These narrated values valorized and refreshed in the content of epic literature and also Andarzname (moral texts) in the following centuries. Davaran stated that: "I will read, particularly closely the ethically relevant elements of the proclamations of Darius the Great that anticipate the later moral texts of the Andarz and Adab literary genres³⁹⁹." Spreading out the discussion about Andarz and Adab genre in Iranian literature is far out of the focal point of this research, but apparently, the differences in the concept of epic in western and Pahlavani in Iranian literature can be disclosed briefly.

The differences in the concept of epic in western and Pahlavani in Iranian literature:

Pigeonholing Iranian classical literature in western literature genres is the contemporary discussion, which its complexity in content and variousness in features have never been molded appropriately. "The non- Western literature was classified according to the proximity of the genres, both in form and content, to what was perceived to be their European counterparts. This scholarly endeavor of taxonomy, which was undertaken by the first- and second-generation orientalists, resulted in force-fitting Persian literary works into molds that failed to contain them. However, despite this obvious mismatch, no one has ever bothered to point out that if there is a misfit, the problem might be with the container and not the content.⁴⁰⁰"

"In divide between the factual and the fictional, the so-called epic literature of Iran finds itself in an odd position. Having been coined as epic since the time Western scholars showed an interest in it, the entire corpus was designated to be the territory of the literary scholar. This is true even in the case of Ferdowsi's magnum opus, the Shāhnāme, a work that has also been called Iran's national history⁴⁰¹."

The writers' and poets' goal were not to put their thoughts into a predetermined literary form but to tell part of the unrevealed history of Iran in the form of their literary work. What has been the reflection of all aspects of human life in intertwined layers, from love and war to celebration and mourning. Referable to the overwhelming long history of this country, in several historical milestones, the Iranian cultural testimony has been wiped out, looted and burnt by the Alexander

conquests, the Islamic hegemony, and the Mongols attacks. In this stormy chaotic context, Iranian poets and writers have sought to redefine to preserve part of the pieces of history in their narration literature. Hence the **historiographical essence** is the keynoted aim in Iranian epic literature that depicted in the chronological narration of story/history. "In ancient and medieval Iran, the interactions between epic and historiographical practices were varied and intricate. "Historical records" could be generated in conformity with the ideals of epic, or composed by being cast into the mold of the oral epic tradition, thereby ceding their individual "historical" tenor in order to conform to the normative frame of the epic.⁴⁰²"

Iran has been at the pivot of contradictory ideologies, that caused to absoluteness by authentic beliefs and unpalatable the cultural values in historical/ideological conflicts. The narrative of the history/story has been a weighty responsibility on the Iranian poet's shoulder, and they seized any opportunity to narrate the unavailable part of history for the succeeding generations. In Darius inscription, in Bisotun, all chronological narrative of history occurred between 521-522 BC has been declared, and surprisingly, this is not just in the content of the inscription, but also in bas-relief s visualizing the figures of rebellion we witness this chronological approach, "these nine so-called "Liar-Kings" are pictured in chronological order according to the date of their overthrow.⁴⁰³"

Concludingly, the historiographical essence is the primary priority in Iranian epic literature.

Epic stories visualizing features:

Heroes (Pahlavan) extraordinary abilities: Ace of the epic features, according to scholars such as Nagy Gregory is the "superhuman powers," the heroes of the epic medium can be defined as mortals of the distant past, who is endowed with superhuman powers because they are descended from the immortal gods themselves.

In Darius's inscription, he emphasized that his extraordinary power is in hand with an immortal god of wisdom (Ahuramazda/Hormazd). He reached the pinnacle of intelligent governing and genius administrative of the empire and "set the style for uniting nations⁴⁰⁴" which are the signs of astonishing human facts .

He states in the 5th line of the first column(C.1, L.5):

By the grace of Ahuramazda, I am king; Ahuramazda has granted me the kingdom...

and in the 8th line, he alleges:...

By the grace of Ahuramazda, these (twenty-three) lands(provinces), called "satrapies) have respected my adjudicates.

In (C.4, L.12),

Ahuramazda assisted me and also the other God and goodness⁴⁰⁵ .

Furthermore, all his multilateral missions ⁴⁰⁶that Darius the great has done cause to shine his character as a superman hero. He emphasized this all (above mentioned) is what I did in a period of **one year**, (19 different battles with the hostile army, C.4, L.2), he says:

I had done many other actions [that] were not written in this inscription because when the future generations read this record, henceforth, what was done unto me seems exaggerated on his mind and might not accept the truthfulness (of this proclamation) (C:4, L:8).

Heroes (Pahlavan) extraordinary scale: Furthermore, the evident proof of this interpretation (Darius the great with superhuman powers) has been highlighted visually in pictorial representation in the figures in the rock carvings as well, in the size of his effigies compared to 9 engravings rebellions. He is about 180 cm that can be thought of as an average altitude of an ordinary human, two Parsi men behind him are about 150 cm, and the nine pretenders to the throne are about 120 cm.it means the main hero visualized 50% larger than enemies.

Hence, in this bas-relief, we encounter the reasonable size of the exceptional hero and read a substantial page of human history at the dawn of the conception of Iranian written epic literature.

As Mircea Eliade stated: "The actors in myths are Supernatural Beings. They are known primarily by what they did in the transcendent times of the "beginnings." Hence myths disclose their creative activity and reveal the sacredness (or simply the "supernaturalness") of their works. In short, myths describe the various and sometimes dramatic breakthroughs of the sacred (or the "supernatural") into the World. It is this sudden breakthrough of the sacred that really establishes the World and makes it what it is today⁴⁰⁷." According to these descriptions, considerable attention must be

exercised in reading the Darius bas-relief in Bisotun not only as a historical written document but also as a core of epic narrations in Iranian literature.

Epic (Pahlavani) rituals and traditional customs: “Primarily Zorastor philosophical and codes in an ethical system dominated by altruism, magnanimity, liberality, and unquestioning loyalty keep alive a spirit of solidarity and patriotism. Traditional Iranian wrestling (Koshti) dated back to ancient Persia and was said to have been practiced by Rostam, mythological Iranian hero of the Shahnameh epic. The original purpose of these institutions was to train men as warriors and instill them with a sense of national pride in anticipation of the coming battles.⁴⁰⁸”

Today the symbols of Pahlavani rituals keeping alive and practice in traditional Iranian wrestling (Koshti) and also callisthenic movements of Pahlavans in Zoorkhane traditions Inscribed in 2010 on the Representative List of the Intangible Cultural Heritage of Humanity.

Results and Discussion

The historical occurrences gradually have been metamorphosed into epic canons, and the personality of leaders in world history determines the epic archetypes criteria and, in various times, rebirths in the epic stories.

The discourses around the most influential vision of Darius the great, not only because he rose to prominence during the first Persian empire, but also in creating the concept of Pahlavani heroic mythological archetypes in Iranian epic literature, should be open in separated research.

Also afterward, “we should ask what part these myths play in building and sustaining nations⁴⁰⁹”, which is deserved to disclosed in the other research in this field.

“*Aspects of History and Epic in Ancient Iran* focuses on the content of one of the most important inscriptions of the Ancient Near East: the Bisotun inscription of the Achaemenid king Darius the Great, which in essence reports on a suspicious fratricide and subsequent coup d'état. Moreover, the study shows how the inscription's narrative would decisively influence the Iranian epic, epigraphic, and historiographical traditions well into the Sasanian and early Islamic periods.⁴¹⁰”

Through a diachronic approach, the principles of epic (Pahlavani) genre of Iranian literature lay in Bisotun NCL denoted in diagram 19.

According to the above-mentioned studies, in chapter 5, the creative ideas in recovery, the intangible values of Pahlavani rituals in the Bisotun NCL revitalizing action plan, will be proposed.

4.3.3 Iranian Romantic (Asheghane) narrations characteristics, focusing on Khosrow II heritages in Bisotun NCL

Khosrow and Shirin, as a focused romantic story in this research, have several tangible traces in Bisotun NCL, interlocked with story context. "References to the Sasanian remains in the literature of the early Islamic period, stirred people's imaginations, and inspired poetic compositions in later times,⁴¹¹" that can be shaped the imagination of Nezami about Bisotun site.

"The romantic epic comes to full fruition in the works of Nezami Ganjavi from the last quarter of the 12th century. *Khosrow o Shirin*, deal with the romantic and military adventures of the Sasanian kings Khosrow II and Bahram V(Choobin), respectively, and thus overlaps to a certain extent with the *Shahnama*⁴¹². Whereas the two well-known versions of this story/history composed by Ferdowsi (940–1020) and Nezami (1141–1209), but the expression of the story in these two versions are not similar. Ferdowsi endeavors to narrate this legend from a historiographical repertoire, but Nezami wanted to revitalize the romantic structure of the story. The reason Nezami pursued this genre is possibly due to the enormous popularity of romantic legends⁴¹³" in his era. Khosrow and Shirin's story belongs more to the genre of romance. There are no highlighted characteristics of the epic genre in the love story of Khosrow and Shirin and every structure and detail of the story/history strand on the romantic ambiance.

4.3.4 Shirin &Khosrow Story/History:

The following review provided after reading several different versions of this story. The story/history was derived from the real-life of the Persian prince Khosrow and the Armenian princess Shirin, who lived in the 6th century AD.

Khosrow hears from the royal painter Shapour, who is his intimate friend, that there is a beautiful and dignity prince in Armenia, who her name is Shirin. (In Persian language Shirin means sweet) Khosrow, before the meeting, falls in her love and dispatches Shapour to Armenia to declare Khosrow's love to Shirin.

In Armenia, Shapur portrays Khosrow's figure and puts the painting on the way of Shirin's passage. Meanwhile, Bahram Chobin revolts against Khosrow and takes over the government. Khosrow fled to Armenia and accidentally met Shirin in the hunting ground. He is asking her name, and when they find themselves the lost lovers, it makes them so exhilarated and eager to be with each other.

Mahin Banoo (Shirin's aunt and Armenia queen) advises her: to be careful because Khosrow is the king of Iran, and he is so good-natured and handsome, and many women wish to be with him, you must not be deceived and lose your inside treasure. Shirin promises her wise aunt to do, not allow Khosrow to touch her before official marriage. Shirin tells Khosrow that you should return the throne and defeat Bahram Choobin before our marriage. Khosrow rides on his horse, departing to the Roman empire to convince the qeysar (emperor Maurice⁴¹⁴) to supply him military support and assist him in the battle against Bahram Chobin. Emperor Maurice accepted and also arranged a marriage between her daughter, Maryam, and Khosrow. In Ctesiphon, he defeated Bahram and recovered the empire. Maryam prevents Khosrow and Shirin from meeting each other.

Shirin lives in a town today called Ghasr Shirin (Shirin Palace) near Kermanshah and is looking for a skilled architect to carry out several construction projects. Shapour introduced Farhad, who is his old classmate, a skillful stone artisan, and an architect. The first time Farhad meets Shirin when she is swimming in Bisotun pond and falls in her love. Farhad's love story reaches Khosrow palace,

decides to lure him with gold coins, and takes him out of Shirin's love, but Farhad refuses, saying that I love Shirin more than my sweet life. Khosrow, when he realizes that he cannot purchase Farhad's love, forces him to do an oppressive impossible task. Tells him that "there is a mountain (Bistoun Mountain) in our route that makes challenging to access territories across it, if you build a tunnel wide enough for passing twenty horses, I will allow you to marry Shirin. Farhad agrees and takes action immediately. (BCL17)

Shirin announced about these stories and decided to meet Farhad in Bisotun when he is working on these extensive construction plans. She offers a bowl of milk to him. When she wants to return to her palace, her horse has an accident, Farhad decides to assist her and holds up Shirin and her horse and arrives them to the palace without the slightest damage.

Khosrow's spies deliver the news of these events, Khosrow gets angry and sends a beldam to Farhad's workshop on Bisotun slope. The beldam starts crying and tells Farhad: "why you try to finish these enormous tasks for joining Shirin? It is a huge misfortune that Shirin has died. Farhad disheartened to hear this news and falls from Bisotun Mountain and perished on Bisotun foothill.

In some versions of this story, it has been mentioned that: "Farhad threw his ax down the hill, kissed the ground and died. The ax was made from pomegranate wood, and at the spot where the ax where fell, a pomegranate tree grew with fruit that would cure all illnesses. Shirin on hearing the news went into deep mourning⁴¹⁵"(it means in ancient beliefs the medicine of all diseases was love). Shirin is saddened by the news of Farhad's death; meanwhile, Khosrow's wife, Maryam, gets sick and dies. (In some versions it has been mentioned that Shirin poisoned Maryam). After forty days of mourning, Khosrow writes a letter to Shirin asking her to move to Khosrow's palace (BCL18). But Shirin insists on her prospects for the official marriage and meritorious ritual. After a series of events. Khosrow commands a magnificent, glorious marriage celebration in his palace, and eventually, two lovers marry.

Khosrow has a son, Shiroie, from his ex-wife, who has a wicked mind and wrongful attitudes. Shiroie, intends to kill his father when he is sleeping, embracing Shirin. After a series of events, Shiroie finally kills Khosrow and all of his brothers. He writes a letter to Shirin, assuring her that I

seized the throne, and you should be my spouse after that. Shirin is truly heartbreaking after Khosrow's murder, and this shameless lustful demand made her depressed and furious. Meanwhile, Khosrow's burial ceremony, she asked all mobeds (Zoroastrian cleric)to leave her alone with Khosrow's corpse. Shirin kisses him and then Inserts a dagger to her heart. They are buried in the same grave.

The story/history was derived from the real-life of the Persian prince Khosrow and the Armenian princess Shirin, who lived in the 6th century AD.

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old classmate, a skillful stone artisan, and an architect. At the first meeting, Farhad falls in her love. Farhad's love story reaches Khosrow palace, decides to lure him with gold coins, and takes him out of Shirin's love, but Farhad refuses, saying that I love Shirin more than my sweet life. Khosrow, when he realizes that he cannot purchase Farhad's love, forces him to do an elaborate impossible task. Tells him that "there is a mountain (Bistoun Mountain) in our route that makes challenging to access territories across it, if you build a tunnel wide enough for passing twenty horsemen, I will allow you to marry Shirin. Farhad agrees and takes action immediately.

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Meanwhile, Khosrow's wife, Maryam, gets sick and dies. (In some versions it has been mentioned that Shirin poisoned Maryam). After forty days of mourning, Khosrow writes a letter to Shirin asking her to move to Khosrow's palace (BCL18). However, Shirin insists on her prospects for the official marriage and meritorious ritual. After a series of events. Khosrow commands a magnificent, glorious marriage celebration in his palace, and eventually, two lovers marry.

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alone with Khosrow's corpse. Shirin kisses him and then Inserts a dagger to her heart. They are buried in the same grave.

Miniature, paintings, and the other artistic material inspired by Shirin Farhad story:

This story is a favorite theme for miniatures, stucco work, and paintings on tiles and under glass from the 9th / 15th to the 14th / 20th century. One of the most revealing works of art in this connection is a miniature of ca. 973 / 1575 (at Oxford), which depicts a meeting of Farhâd with Shirin in front of the pool at Mount Bisotun; a slab carved with effigies of two lovers, is set into the hillside, which is clearly identifiable as the great rock face. Taken together, the poetry, the miniatures, and the data from examination of the site suggest that Farhâd was the architect of the Sassanids works at Bisotun. The chiseled rock face must be the wall of his “passage through the mountain for twenty horsemen.”

There are several artistic works about this story in a variety of art fields: classic and modern Iranian literature, miniature paintings, music⁴¹⁸ , and theater.

Miniature paintings are particularly helpful in clarifying matters at Bisotun. The story of Farhad and Shirin was a favorite theme for miniatures, stucco work, and paintings on tiles and under glass from the 9th/15th to the 14th/20th century which depicts a meeting of Farhad with Shirin in front of the pool at Mount Bisotun; a slab carved with effigies of two lovers is set into the hillside, which is clearly identifiable as the great rock face⁴¹⁹ .

4.3.5 The distinction between epic and romantic genres in Persian literature

Plucking out the limit between the epic and romance genre in Iranian literature is not conceivable apparent, whereas the fusion of both can be hashed out in various cases. The great prolific examples of this intertwined in genres would be in the Bijan and Manijeh⁴²⁰, Zall and Rudabeh⁴²¹, Siavash and Farangis⁴²², Rostam, and Tahmine⁴²³, recommended story/history in Ferdowsi's Shahnameh. Sorting out these epic stories/histories as a romantic love story concurrently would be neither feasible nor desirable. Hence, it is not likely to clearly distinguish the exact mold of several stories in Iranian literature. Although the main context is in the epic genre, the romantic theme eclipsed the content, and a mesh of epic – romantic medium (pahlavani-asheghane) has been weaved.

“Early development of the romantic epic. The distinction between the heroic and the romantic epic is not clear-cut. There are several amatory episodes in the Shahnāma, while the “romantic” epics almost always deal with legendary royal (or at least noble) characters and usually contain extended battle scenes. The earliest romantic epics are not only in the same style and narrative technique.⁴²⁴” Zolfaghari, the author of a valuable four-voluminous book “Pahlavani (epic) legends⁴²⁵” in 2019, has a substantial point of view about the hybrid of epic and romantic genres in Iranian literature. He stated⁴²⁶ that the heroes must survive in order to have a heroic son if the hero dies, the epic dies as well. Hereupon, it is necessary to continue the existence of heroes by the union of lovers and reinforcement of hero by the next successor. Zal and Roodabeh are married, and Rustam born. Tahmineh and Rustam are married to give birth to Sohrab. Siavash and Farangis get married to give birth to Keikhosrow. These ancient story/histories later resurrected in the form of heroic legends in more than in over a hundred works and prose narrating romances in the context of an epic story⁴²⁷. In other words, the concept of the hero's existence is not ephemeral materiality, and the intimate bond of the lovers causes to preserve the continuity in epic narration.

Nevertheless, two genres in the great stories of Iranian literature have been reconciled, and its leap from epic heroic episodes to the romantic and vice versa is evident; both express the same roots

in beliefs, perception of the world, and cultural values. Joseph Santa-Croce, who was a lecturer at the Teheran University in the sixties, rightly points out that: Ferdowsi does not limit himself to descriptions of battles; he also touches upon the great moral truths which he expresses with the same studied perfection as the epic or romantic episodes. (It is a) treasury of wisdom and moral guidance, as considerably as a fund of political principles. Intelligence, courage, strength, and justice are not seen by Ferdowsi as being in opposition to each other.⁴²⁸

The companionship of wisdom and love that leads to the birth of the hero to ensure the continuity of epic stories is the basic feature of romantic legends as well.

Each romantic story which was not aligned with Farhang(culture- see 2-1-5) values, (which are wisdom and truthfulness,) fail to reach unification between two lovers(for instance Siavash and Sudabe story); or result in depredating of the greatest hero (for example birth of Shaghad, brother and killer of Rustam from Zale and his bondwoman relation) or in some cases perish both of paramours(such as Khosrow and Shirin legend).

It means that the cultural area controls and authorizes the destiny of two lovers.

4.3.6 Hybrid literature dialectics in Bisotun Epic-Romantic Narrative Cultural Landscape

Reading and recovery the stories recorded in the landscape can build the bridge between tangible and intangible values and make the absent historical layers, conceivable, and imaginable.

In-depth studies of the typology of literature mixed with the cultural landscape provide the background for identifying the characteristics that shape the collective memory of the landscape.

Palimpsest coexistence of epic and romantic genres in Bisotun NCL collective memories is conceivable, and studies about these themes cause to emerge a definition for epic-romantic CL.

The Bisotun cultural landscape is a fusion of elements from these two different mediums and can provide new paradigms in the revitalization scenario.

The significant evidence in Bisotun cultural landscape that testifies it outstand from the other cultural landscape in this category in Iran is the **narrative** values of this site and its impression in the nation's memories beyond today's political borders. There are many unique and authentic

heritage sites and cultural landscapes in Persian civilization territories, but Bisotun continues alive in national remembrances that appear in contemporary arts, poems, and music. The most influential aspect that causes to this intangible value above material in Bisotun refers to the glories part of the Persian literature in both classic and folklore categories knotted with this context. The narrative characteristic of CL property impact in its revitalization policies. "More or less everything in the property could continue to evolve over time in the future⁴²⁹", and in this case, the evolving and continuing of Bisotun CL values can be realized by recovering its narrative layers.

According to a variety of traces in Bisotun heritage sites from different sectors of Persian history, we witness of **hybrid historical layers**. Considering Iranian history is most narrated and preserved in epic literature more than been written in scholarly history books, the position of the narrative legends and stories is more particular for perceiving the tangible aspects of the Bisotun site.

Hybrid historical layers created a **hybrid narrative and literature** in Bisotun site cause to enrich and imprinted it in collective memories.

From this point of view, the Bisotun heritage site is far from a physical zone in the map since it is recognized continuously as an epic-romantic cultural landscape.

The spotlight principle in categorizing the cultural landscape labeling as a narrative cultural landscape is coexisting the tangible traces in relevance to the story. According to the definition of narrative CL in this research, historical depiction of the epic or romantic literary narratives should bond to the tangible traces in CL.(see diagram 9, Chapter 2)

The diversity of hybrid narrative layers in Epic and Romance categories with renowned references in the literature mentioned in the following diagram. Finally, epic (Pahlavani)-romantic(Asheghane) narrative landscape based on Persian literature defined precisely.

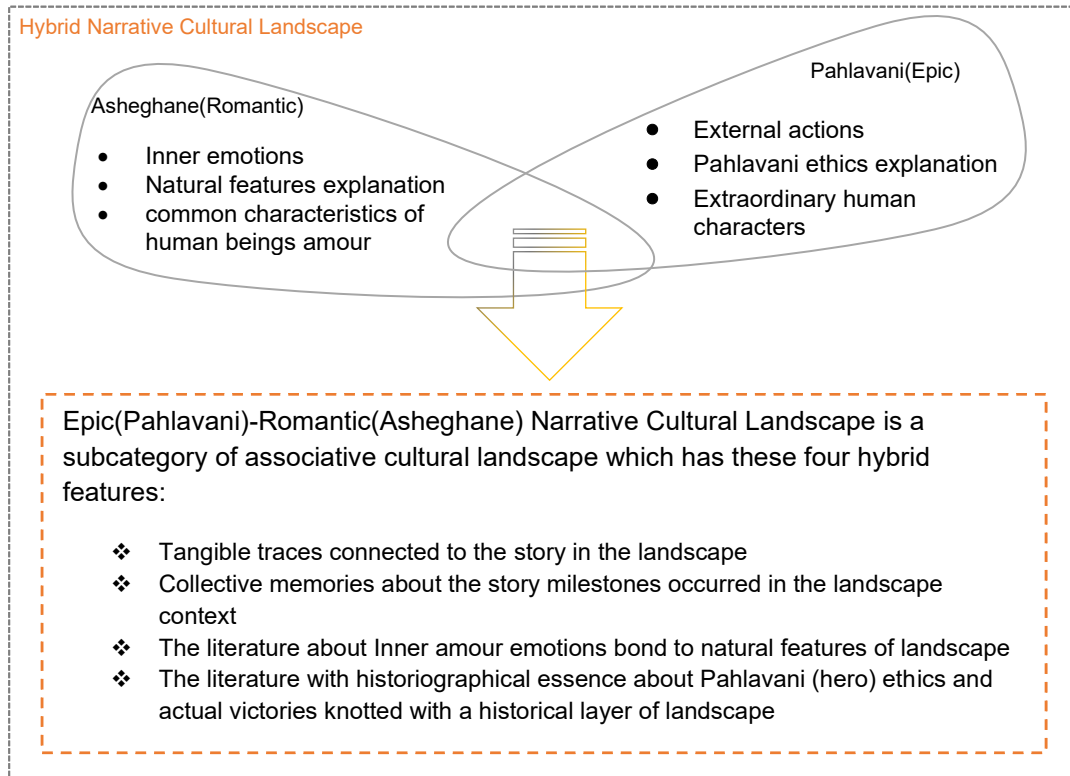


Diagram 19: Narrative Cultural Landscape, Epic-Romance Cultural Landscape .Source :Author,2020

Results and Discussion

The romantic narration of Farhad's righteous love and his tragic destiny immortalized him in Persian literature. It is a well-known belief that even today, the voice of Farhad's ax blows can be heard in Bisotun NCL. Farhad is the architect and a stone artisan of the Khosrow II period, and architectural -monumental traces of Bisotun heritage site have been created by his love for Shirin. (figure 11)

Based on the main episodes, characters, and place-names in this story, the natural-historical points related to the Bisotun NCL can be extracted:

The core concept of Bistoon's love story is an epochal historical event. Conforming to the tangible features of the landscape, natural features of the story have been elaborated metaphorically from the poet's imagination. The natural features such as the Bistoon mountain, spring, Gamasiab river, old trees and the tangible historical traces such as chiseled rock Sassanid slab carved into the

hillside, Khosrow palace and bridge as the features in creating the language of landscape in this site. They have been explained in chapter 5. Straightforwardly, the historical core of the story explained in the elaborated romantic web. Although some scholars such as Soucek⁴³⁰, believes that "Nezami never left his hometown, Ganja, and thus never saw Bisotun, he had access to information recorded by geographers in the 4th/10th century and passed on as part of the literary tradition." The memories of his visits to Bisotun CL in reality or through reading about it underline the deep interrelation and several cross-cutting elements across the story and the natural/historical landscape.

Nevertheless, today, all tangible vestiges of Khosrow II era have been called by the names associated with the Nezamis romantic, creating illusions. Even since in the natural features of Bisotun NCL, we envisage the derived name from this story, which can be proved the interlocked of romantic story features lies in the sedimentations of Iranian collective memory.

This story is intertwined with the tangible historical remains of the landscape, which influenced the chronology of the Sassanid works in Bisotun NCL. Khosrow II and Shirin's stories⁴³¹ have a distinguished position in Persian literature. Despite high narrative values in this heritage landscape, there are not any cultural events, activities, or festivals considering this intangible characteristic by the valorizing abstract presentation of past romantic stories laid on Bisotun NCL. According to acupuncture point of natural and historical layers interlocked with this story these six points have been determined:

BCL22: Bisotun Spring (Sarab-e-Bisotun)- BCL15: Khosrow II Bridge,-BCL16: Hydraulic Structures and retaining wall, -BCL17: Sassanid Terrace (Farhad Tarash),-BCL18: Khosrow II Palace,-BCL20: Takht-e Shirin

In the next chapter, I attempted to revitalize these acupuncture points to recover the Bisotun romantic story.

To sum up, the Bisotun NCL evolves, the combination of the two literary styles, but this fusion does not occur in the frame of *one* story. The extraordinary paradox creates the two independent

narratives Epic narration of Darius the great inscription in Bistoun and Khosrow II and Shirin
Romantic story /history bond to Bistun historical and natural features.

In two different times and two different genres, each runs its cultural path. These two distinctive
narratives, cultural paths highlighted in the implementation of the practical idea in the revitalization
of intangible values of Bistun NCL, discussed in chapter 5.

BZ-3

Miniature and Painting Contemporary Art



2: A poetry of lovers, by #vahshibafghi depicted in this carpet



3: Manuscript of the Khamsah by Nizami-between



1: Khusraw discovers Shirin bathing in a pool from a Khamsa (Quintet)



4: Khusraw and Shirin playing polo

Source

1: Freer Gallery of Art Smithsonian Institution Washington, D.C.

2:

3: Brooklyn Museum, 36.273.1_IMLS_PS3.jpg

4: from an abridged version of Khusrau O Shirin (completed, 1176-86) British Library Shelfmark: Or.2933

http://www.bl.uk/manuscripts/Viewer.aspx?ref=or_2933_f030r

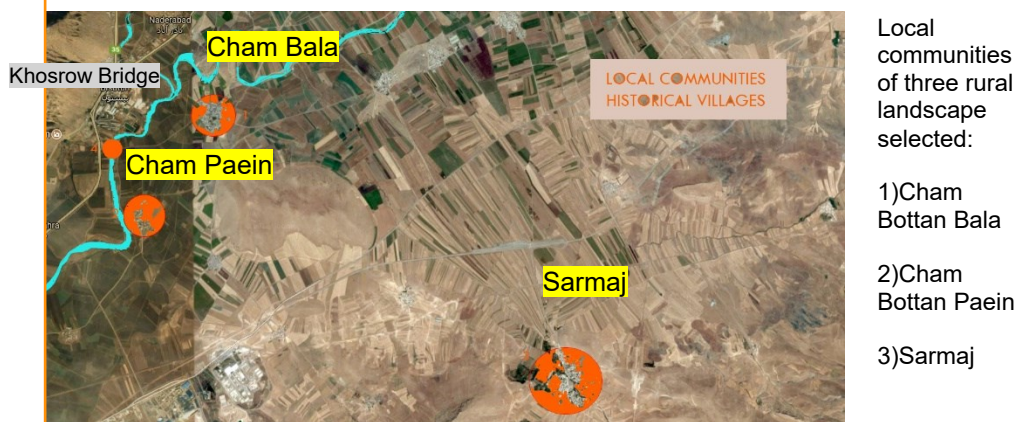
5: <https://www.sothebys.com/en/buy/auction/2019/arts-of-the-islamic-world/abdullah-hatifi-d-1454-ad-two-works-bound-in-one>

4.4 The Questionnaire and Semi-Structured Interviews

“Without the understanding and support of the public at large, without the respect and daily care of the local communities, which are the true custodians of World heritage, no amount of funds or army of experts will suffice in protecting the sites.⁴³²” According to interviews conducted with residents of rural communities nearby the Bisotun heritage site, a pilot study about the three zones of this research carried out. The questionnaire used to assess the importance of natural, historical, and narrative values of the Bisotun site. For the inhabitants of three rural landscapes (Cham Bala, Cham Pain, and Sarmaj), the following questionnaire designed to assess the interests people obtain from their environment and the interaction between them and this site. Two communities (Cham Bala, Cham Pain) are close to the Gamasiab river and Khosrow bridge and sugar factory. The main access to this rural community passes through the Sassanid bridge. The third community is in Sarmaj that is well-known for its ancient castle and historical remains.



Figure 27: Local communities in Sarmaj -Filling the questionnaires-Source: Author, October 2019.



Map 13: Three selected rural landscapes: Cham Botta Bala-Cham Botta Paein-Sarmaj. Map source: Google earth, 2018

4.4.2 Evaluating Sustainable Development Characteristics Based on Local Communities Viewpoints

Fostering democratize practicing in society and drawing the new directions in collective memories

In October 2019, a total of 70 people from three villages asked to engage in a face-to-face interview. The multiple and descriptive questionnaires filled by their answers. People were randomly approached, and each interview took about 10 minutes. People were asked to rate the importance of environmental features (water, soil, air, vegetation, and fauna) in rural life in zone 1 and how inhabitants appreciated or involved in policy makings about ongoing changes (like establishing the industrial factories close to their village). The question in zone 2, assess the awareness of people about tangible historical and architectural remains. The answerers evaluate from 1 to 5 (minimum to maximum) scores. The third component of questions discussed the collective memories, meanings, and stories of Bisotun structure along the zone 3 evaluation. The items in semi-structured interviews revolve around the active interconnection with the cultural landscape, environmental pollutions in the region, economic situation, and educational programs about the heritage values.

The questioner content adjusted to the research objectives in fieldwork studies. The Questionnaire's main goals encompass the following issues.

- 1) How the localities relate to the intertwined layers of Bisotun's cultural landscape in ongoing changes in the region
- 2) The degree of sustainable connection between inhabitants and landscape (review of socioeconomic characteristics)
- 3) Identify the aspects of the Bisotun CL layers, which the local people life is most dependent

Location: Cham Bala- Population:483		Total Number: 19	
Age	18-30	5	26.3%
	30-50	7	36.8%
	50 and above	7	36.8%
Gender	Female	8	42.1%
	Male	11	57.9%
Education Level	Elementary	5	26.3%
	High school Diploma	12	63.1%
	Bachelor and above	2	10.6%
Occupation	Retired or Unemployment	5	26.3%
	Agriculture	3	15.7%
	Gardening	6	31.6%
	Livestock Breeder	3	15.7%
	Tourism-Related Job	0	
	Shopkeeper	2	10.7%

Results

Cham Bala Community	Mean (min=1 to max= 5)	Std
The role of environmental features of the natural landscape in rural life (water, soil, air)	4.4	0.59
The role of people in decision-making in environmental policies	1.3	0.80
Interaction with flora and fauna of Bisotun region	1.3	0.65
Interaction with Gamasiab river	2.6	0.74
Interaction with Bisotun mountain	1.4	0.75
The awareness about their rights and responsibility about Bisotun natural landscape	1.9	0.60
The educational programs about sustainable use of ecological values, protect and rehabilitation plans	1.1	0.64
The master plan in the sustainable horizon for future development in the region	1	0.56
The knowledge and awareness about the historical remains of Bisotun Heritage site (name, history, location, function, and meaning)	3.5	0.88
The knowledge and awareness about the archaeological hills of Bisotun Heritage site (name, history)	3.8	0.59
The knowledge and awareness about the romantic story/history (Shirin and Khosrow)	4.2	0.52
The knowledge and awareness about the epic story/history of Darius I inscription	1.4	0.59
The knowledge and awareness about the rituals and traditional customs in the region	2.3	0.46
The role and position of tourism in the rural economy	1.2	0.77

Location: Cham Paein - Population:439		Total Number: 27	
Age			
18-30	6	22.2%	
30-50	9	33.3%	
50 and above	10	37%	
Gender			
Female	17	63%	
Male	10	37%	
Education Level			
Elementary	3	11.1%	
Highschool Diploma	19	70.3%	
Bachelor and above	5	18.51%	
Occupation			
Retired or Unemployment	4	14.81%	
Agriculture	18	66.6%	
Gardening	2	7.4%	
Livestock Breeder	2	7.4%	
Tourism-Related Job	0		
Shopkeeper	1	3.7%	

Results

Cham Paein Community	Mean (min=1 to max= 5)	Std
The role of environmental features of the natural landscape in rural life (water, soil, air)	4.3	0.60
The role of people in decision-making in environmental policies	1.7	0.53
Interaction with flora and fauna of Bisotun region	2.3	0.66
Interaction with Gamasiab river	1.6	0.48
Interaction with Bisotun mountain	1.4	0.49
The awareness about their rights and responsibility about Bisotun natural landscape	1.5	0.55
The educational programs about sustainable use of ecological values, protect and rehabilitation plans	1.2	0.50
The master plan in the sustainable horizon for future development in the region	1	0.57
The knowledge and awareness about the historical remains of Bisotun Heritage site (name, history, location, function, and meaning)	3.2	0.74
The knowledge and awareness about the archaeological hills of Bisotun Heritage site (name, history)	2.8	0.55
The knowledge and awareness about the romantic story/history (Shirin and Khosrow)	4.5	0.69
The knowledge and awareness about the epic story/history of Darius I inscription	2.6	0.62
The knowledge and awareness about the rituals and traditional customs in the region	3.7	0.53
The role and position of tourism in the rural economy	1.5	0.63

Location: Sarmaj- Population:1289	Total Number: 24		
Age	18-30	12	50%
	30-50	5	20/83%
	50 and above	7	29.16%
Gender	Female	15	62.5%
	Male	9	37.5%
Education Level	Elementary	9	37.5%
	High school Diploma	14	58.33%
	Bachelor and above	1	4.16%
Occupation	Retired or Unemployment	4	16.66%
	Agriculture	15	62.5%
	Gardening	3	12.5%
	Livestock Breeder	1	4.16%
	Tourism-Related Job	0	0
	Shopkeeper	1	4.16%

Results

Sarmaj Community	Mean (min=1 to max= 5)	Std
The role of environmental features of the natural landscape in rural life (water, soil, air)	4.1	0.75
The role of people in decision-making in environmental policies	1.3	0.47
Interaction with flora and fauna of Bisotun region	3.3	0.55
Interaction with Gamasiab river	2.6	0.48
Interaction with Bisotun mountain	1.1	0.73
The awareness about their rights and responsibility about Bisotun natural landscape	2.5	0.65
The educational programs about sustainable use of ecological values, protect and rehabilitation plans	1.4	0.70
The master plan in the sustainable horizon for future development in the region	1	0.45
The knowledge and awareness about the historical remains of Bisotun Heritage site (name, history, location, function, and meaning)	3.6	0.56
The knowledge and awareness about the archaeological hills of Bisotun Heritage site (name, history)	3.8	0.55
The knowledge and awareness about the romantic story/history (Shirin and Khosrow)	4.6	0.48
The knowledge and awareness about the epic story/history of Darius I inscription	3.4	0.49
The knowledge and awareness about the rituals and traditional customs in the region	4.2	0.43
The role and position of tourism in the rural economy	1.1	0.6

4.4.3 The results of analyzing questionnaires data

According to the results, local people have not any productive role in the process of decision makings in the Bisotun region. One of the respondents in the Sarmaj village told us that we are surrounded by industrial activities and some summer days, we cannot breathe normally. People are not aware of their responsibilities and their role in preventing the progress of industries in the Bisotun region. Lack of trust in any development plan is the consequence of individual policy-making and up-down management systems. The sugar factory, which is the oldest industry in the region (found in 1962 in 6-hectare area), has a crucial role in Cham villages' economy, and the main agricultural product of their lands is sugar beet. Several workers in the sugar factory live in these two villages. It means the sugar factory, despite the widespread environmental pollution and cultural obstacles, has a primary role in the rural economy.



Figure 28: Bisotun Sugar factory, Source: <http://www.bisotunsugar.com/gallery>. 2020

People in Saramaj stated that: we know we are living in one of the most valuable historical sites of Iran; however, we have not any social and economic benefits from tourism. The highway caused to separate these communities from access to the Bisotun mountain. Their knowledge about the intangible values of the heritage sites is not contented. Moreover, they have not any readiness to invite and attract tourists in their villages. The romantic legends of Bisotun are part of their bright collective memory, but about the epic content of Darius inscription, they had not sufficient knowledge. Except for this inscription, they had not remarkable awareness about the other

historical points of this site. Despite the presence of archeological hills in their villages, the consciousness about the historical period and values was not satisfactory. These communities are living on precious archeological and historical layers, and in several cases, they showed us the historical traces inside their yards or lands. They try to preserve all pieces of this vast ancient puzzle in the Bisotun region, but they do not know how they can do it. The lack of education and initiative collaboration with governmental and non-governmental organizations in the comprehensive plan in this region caused the elimination of the local people from the role-playing in the Bisotun cultural landscape.



Figure 29:Sarmaj, Historical remnants, Rural landscape, Source,2019



Figure 30:Cham Bala, Rural landscape, Source,2019

Questionnaire Sample

Number :



- *A Economic and social evaluation questions*
- **B Collective memory questions**

Cham Bala

Semi-Structure Interview

A

Do you have a permanent job?	
Is your monthly income affording your living costs?	
Is it living in the vicinity of Bisotun WHC, affecting your economic conditions?	
Do you have access to high-speed Internet?	
Are there any educational programs to enhance your knowledge about the natural and historical values of the Bisotun site?	
What is your responsibility for protecting and valorising the Bisotun CL?	
Do you have any role in policymaking and future decisions in your region?	

B

Today to what extent do you see the mental image of the site in the past? (How the landscape changed during recent years?)	
What is your anticipation for the future of this heritage?!	
To what extent do you agree with the industrial development of the Bisotun district?	
What do you think about the major problems and insufficiencies of this region?	

The method of valuing items is from number 1, the lowest value to number 5, the highest value.

ZONE 1

1	2	3	4	5	Item	no
					Dependence on Water sources in the natural landscape of the Bisotun region	1
					Authorized well	2
					Unauthorized wells	3
					Springs and Qanats	4
					Gamasiab River	5
					Water pollution problems	6

water

1	2	3	4	5	Item	no
					Dependence on Soil sources in the natural landscape of Bisotun plain	1
					Sustainable agriculture methods (farmers' soil-related new knowledge)	2
					Using soil in the other purposes	3

soil

1	2	3	4	5	Item	no
					Air Pollution problems	1
					Air pollution by Cement manufactures	2
					Air pollution by petrochemical industries	3
					Air pollution by the thermal power industry	4

air

1	2	3	4	5	Item	no
					Dependence on native Vegetations in the natural landscape of Bisotun plain	1
					Using in livestock breeding	2
					Using as fuel	5
					Using for medical purpose	6

vegetation

1	2	3	4	5	Item	no
					Dependence on native wild animals in the natural landscape of the Bisotun region	1
					Fisheries in Gamasiab river	2
					Hunting mammals like wild goats	3
					Hunting birds	4
					Hunting a variety of rare species of native reptiles	5

wildlife

Zone 1 Natural Landscape

ZONE 2

1	2	3	4	5	Item	no
					The knowledge about the world heritage historical values	1
					Knowledge about archaeological hills in Bisotun historical landscape	2
					Knowledge about Parthian inscription and bas-reliefs in Bisotun heritage site	3
					Knowledge about Sassanid architectural remains in Bisotun heritage site	4
					Knowledge about the Safavid historical architecture in Bisotun heritage site	5
					How much do you know about your role in preserving tangible historical remains in the Biston area?	8
					The effect of the historical values of the Bistoun heritage site on tourism flow to the rural landscapes?	9

Historical Landscape

ZONE 3

1	2	3	4	5	Item	no
					Bisotun's role in shaping the collective memories of Iranians	1
					The level of knowledge and position of romantic narratives mixed with Bisotun	2
					The level of knowledge of epic narratives of Darius I inscription	3
					Knowledge about the rituals and traditional customs bound to the Bisotun intangible aspects	5

Intangible Values

Cham Bala Community Question		Mean	Std	5	4	4	5	4	4	5	3	5	5	4	4	4	4	4	5	4	5	4	5
The role of environmental features of natural landscape in rural life (water, soil, air)		4.42	0.59																				
The role of people in decision-making in environmental policies		1.32	0.80	2	1	2	1	2	0	0	1	2	2	2	1	1	1	1	3	2	1		
Interaction with flora and fauna of Bisotun region		1.32	0.65	2	1	2	2	1	0	0	1	2	2	1	1	1	1	1	1	2	2	1	
Interaction with Gamasayab river		2.63	0.74	3	3	3	3	5	2	2	2	2	2	3	3	2	3	2	2	3	2	2	2
Interaction with Bisotun mountain		1.42	0.75	2	1	2	2	1	0	0	1	2	2	2	1	1	1	1	3	2	1		
The awareness about their rights and responsibility about Bisotun natural landscape		1.95	0.60	2	2	2	2	1	2	2	2	2	2	0	2	3	2	2	3	2	2	2	2
The educational programs about sustainable use of ecological values, protect and rehabilitation plans		1.11	0.64	1	1	0	1	2	0	2	0	1	1	2	2	1	1	1	1	1	2	1	1
The master plan in sustainable horizon for future development in region		1.00	0.56	1	1	0	1	2	0	2	0	1	1	1	1	1	1	1	1	1	1	2	1
The knowledge and awareness about the historical remains of Bisotun Heritage site (name, history, location, function and meaning)		3.53	0.88	3	3	4	4	4	5	4	3	4	5	4	4	3	2	2	4	4	2		
The knowledge and awareness about the archeological hills of Bisotun Heritage site (name, history)		3.84	0.59	3	3	4	4	4	5	4	4	4	5	4	4	3	3	4	4	4	4	4	4
The knowledge and awareness about the romantic story/history (Shirin and Khosrow)		4.21	0.52	4	5	5	5	4	3	4	5	4	4	4	4	4	4	4	4	4	4	4	4
The knowledge and awareness about the epic story/history of Darius I inscription		1.42	0.59	1	1	2	1	2	3	1	1	2	1	1	1	2	1	1	1	1	1	1	1
The knowledge and awareness about the rituals and traditional customs in region		2.32	0.46	3	2	3	2	3	2	3	2	2	3	2	2	2	2	2	2	2	2	2	2
The role and position of tourism in rural economy		1.21	0.77	2	2	1	1	2	1	0	0	1	2	0	1	2	1	2	2	0	2	1	1

Table 4-4-4-Cham Bala rural community answer sheet data analysis, Source: Author, 2019

Cham Paain Community Question	No of People																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
The role of environmental features of natural landscape in rural life (water, soil, air)	Mean	4.30	4	3	3	4	4	5	4	5	4	5	4	4	5	5	4	5	4	5	4	4	4	5	4	4	4
	Std	0.60																									
The role of people in decision-making in environmental policies	Mean	1.70	2	1	1	3	2	2	1	2	2	2	2	2	1	1	2	1	2	2	1	2	2	1	2	1	2
	Std	0.53																									
Interaction with flora and fauna of Bisotun region	Mean	2.30	2	3	2	3	3	2	2	1	2	3	3	3	3	1	2	2	3	1	2	3	2	2	2	2	2
	Std	0.66																									
Interaction with Gamasyab river	Mean	1.63	2	2	1	1	2	2	2	1	1	2	1	2	2	1	1	2	2	2	1	1	2	1	2	1	2
	Std	0.48																									
Interaction with Bisotun mountain	Mean	1.41	1	1	1	2	1	2	1	1	2	2	2	1	2	1	1	1	2	1	1	2	1	1	2	1	1
	Std	0.49																									
The awareness about their rights and responsibility about Bisotun natural landscape	Mean	1.63	2	1	1	1	1	2	1	1	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	1
	Std	0.55																									
The educational programs about sustainable use of ecological values, protect and rehabilitation plans	Mean	1.22	2	1	2	1	1	1	0	1	2	1	2	1	2	1	1	1	1	1	1	2	2	1	1	1	1
	Std	0.50																									
The master plan in sustainable horizon for future development in region	Mean	1.11	0	1	2	1	1	2	1	1	2	1	0	1	1	1	1	1	2	1	1	2	1	1	0	1	1
	Std	0.57																									
The knowledge and awareness about the historical remains of Bisotun Heritage site (name, history, location, function and meaning)	Mean	3.22	2	3	2	4	3	2	4	3	3	2	4	4	3	3	4	3	5	4	3	3	3	4	3	4	3
	Std	0.74																									
The knowledge and awareness about the archeological hills of Bisotun Heritage site (name, history)	Mean	2.81	3	3	4	3	3	2	3	3	3	2	3	3	2	3	2	3	3	3	2	2	2	3	3	4	3
	Std	0.55																									
The knowledge and awareness about the romantic story/history (Shirin and Khosrow)	Mean	4.52	5	5	4	4	5	4	5	4	5	4	5	5	5	5	5	5	4	2	4	4	5	4	5	5	4
	Std	0.69																									
The knowledge and awareness about the epic story/history of Darius I inscription	Mean	2.63	3	3	1	2	3	2	3	2	4	3	2	2	3	3	3	3	2	3	2	2	3	2	3	3	2
	Std	0.62																									
The knowledge and awareness about the rituals and traditional customs in region	Mean	3.70	4	4	4	4	2	4	4	3	4	4	3	4	4	4	4	4	4	4	3	4	3	4	3	4	4
	Std	0.53																									
The role and position of tourism in rural economy	Mean	1.52	2	3	2	2	1	0	2	1	1	2	1	1	2	2	2	2	1	1	2	1	2	1	2	1	1
	Std	0.63																									

Table 4-4-5-Cham Paain rural community, answer sheet data analysis, Source: Author, 2019

Sarmaj Community Question	No of People																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
The role of environmental features of natural landscape in rural life (water, soil, air)	mean	4.17	3	3	3	4	3	4	5	4	5	4	5	4	4	4	5	5	5	5	4	4	5	4	5
	Std	0.75																							
The role of people in decision-making in environmental policies	mean	1.33	2	1	1	2	1	2	2	1	1	1	1	2	1	1	2	2	1	1	1	1	1	1	
	Std	0.47																							
Interaction with flora and fauna of Bisotun region	mean	3.33	3	3	3	4	3	4	4	2	3	3	4	3	3	3	4	4	3	4	3	4	4	3	
	Std	0.55																							
Interaction with Gamsyab river	mean	2.63	2	3	2	3	3	2	3	2	2	3	3	3	2	3	2	3	3	3	3	3	2	3	
	Std	0.48																							
Interaction with Bisotun mountain	mean	1.13	1	1	2	0	1	2	1	1	1	0	1	2	1	2	0	2	1	2	0	2	1	0	
	Std	0.73																							
The awareness about their rights and responsibility about Bisotun natural landscape	mean	2.50	2	2	1	2	3	2	3	2	3	4	2	3	3	2	3	3	2	3	2	3	3	2	
	Std	0.65																							
The educational programs about sustainable use of ecological values, protect and rehabilitation plans	mean	1.42	2	2	2	1	2	1	2	2	1	0	2	2	2	1	1	0	1	1	2	2	2	2	
	Std	0.70																							
The master plan in sustainable horizon for future development in region	mean	1.04	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	2	1	1	2	1	1	
	Std	0.45																							
The knowledge and awareness about the historical remains of Bisotun Heritage site (name, history, location, function and meaning)	mean	3.63	3	3	3	4	4	3	4	4	3	4	3	4	4	4	3	5	4	3	4	4	4	3	
	Std	0.56																							
The knowledge and awareness about the archeological hills of Bisotun Heritage site (name, history)	mean	3.83	4	4	3	4	4	3	5	3	4	3	4	4	3	4	4	5	4	4	4	4	4	3	
	Std	0.55																							
The knowledge and awareness about the romantic story/history (Shirin and Khosrow)	mean	4.63	5	5	4	5	5	5	4	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	
	Std	0.48																							
The knowledge and awareness about the epic story/history of Darius I inscription	mean	3.42	3	3	4	3	4	3	4	4	3	4	4	3	3	3	3	3	4	3	4	3	4	3	
	Std	0.49																							
The knowledge and awareness about the rituals and traditional customs in region	mean	4.25	4	4	4	4	5	4	5	4	5	4	5	4	4	4	4	4	4	5	4	4	4	4	
	Std	0.43																							
The role and position of tourism in rural economy	mean	1.13	2	2	1	2	1	0	2	1	1	2	1	1	1	1	0	1	1	0	1	1	2	1	
	Std	0.60																							

Table 4-4-6 -Sarmaj Rural community, answer sheet data analysis, Source: Author, 2019

Conclusion

Due to achieving the comprehensive multi-criteria studies revolve around the Natural (zone 1), Historical (Zone 2), and intangible layers (Zone 3) of this site, this chapter depicts the result of the scrutinizing in three stated zones. The role of these integrated studies has become consistently more dominant in proposing acupuncture revitalization strategies in this research. To assess the critical acupunctural points in these three layers and diagnosing the obstacles across the flow (socio-cultural and ecological streams), the descriptive-analytic literature studies carried out. The library survey based on databases in archival sources, photographs, aerial photographs, reports, and maps followed. The detailed description of observation, including the content of opportunities and threats performed in insightful field experiments. Since most of the reports were ill-equipped to analyze the Bisotun sites' values and shortages coherently, the quantitative research applied in the survey the data via questionnaires and interviews with experts in the Bisotun research center and people in local communities.

According to the results discoursed in this chapter, the Bisotun cultural landscape faces the long-held tensions and consequences of unsustainable policies. The "Domino effect" of constructing the first industry in Bisotun plain conducted to the dramatic challenges that today Bisotun natural landscape wracked with them. Unfortunately, the plain awash with private and governmental manufactures, and the heritage of today's generation in the Bisotun NCL is nothing except natural contamination, destruction, and cultural neglect.

In this chapter, the acupunctural points and obstacles in natural and historical zones of the case study analyzed. The principles of epic-romantic narrative cultural landscape defined and the valuable intangible characteristics of Bisotun NCL discussed. The local community observations about the past, today, and the future of this case study collected and analyzed. Regarding synthesizing these multi-criteria study results, the context-based revitalization strategies and design solutions will be figured out in the next chapter.

**Chapter 5: Future Acupunctural Strategies in Bisotun NCL
revitalization (BAMFAR Bisotun project)**

Introduction

Mismanagement and unsustainable development of the Bisotun region result in diverging and detaching cultural- natural layers of the landscape. The imperceptible decisions such as the construction of factories, highways, military camps, cemeteries, and mausoleum inward of the boundaries of heritage sites as a contagious disease threaten the Bisotun cultural landscape's integrity. According to the synthesized results of the previous chapter: conducting studies in analyzing Bisotun natural features including Gamasiab river, Bistoun plain and mountain and native flora and fauna on the one hand, and recognition of historical, architectural and cultural narrative values of the region on the other side; the integrated master action plan for revitalizing and valorizing the Bisotun NCL manifested in this chapter. Although the action plan and context-based design solutions in this chapter extracted from the obstacles and values of Bisotun NCL, the sharing experience and knowledge in designing the solutions and implementation methods can be applied in other cultural landscapes with related challenges.

Considering the definition and research approach of narrative cultural landscape analyzed in the theoretical part of this research and revitalization strategies and innovative technological tools discoursed in chapter 3, the acupunctural revitalization strategies (according to Diagram 11) applied in this chapter. Straightforwardly this chapter is the connection ring between two wings of this research and fulfills the theoretical achievements in the context of the case study.



Diagram 20: The relation between Theoretical and Practical parts of research, Source: Author, 2020

In this revitalization action plan, according to ICCROM guidelines, the People-Centered Approach aims at contributing towards the new paradigm shift "from the care of heritage to that of pursuing the wellbeing of both heritages (natural and cultural) and society as a whole" is considered. Its endeavors to draw planners' attention to ensuring the communities' dynamic and mutually beneficial role⁴³³ in CL management. The core research questions which this chapter will respond to them are:

Methodological and Strategical Questions

- How can two pivotal turning points of this research (theoretical-analytical phase and practical fieldwork studies) be merged cohesively?

Theoretical and Practical Questions about Case study

- How can acupunctural strategies be applied in revitalizing the Bisotun NCL structures?
- How can new technologies involve in reviving the narrative layers of Bisotun NCL?

The proposed project in this chapter "Works on multiple value layers⁴³⁴" evolves, not only ensuring the survival of physical components of Bisotun NCL but also enhancing the intangible values of landscape and improving the presentation of the integrated cultural landscape to visitors.

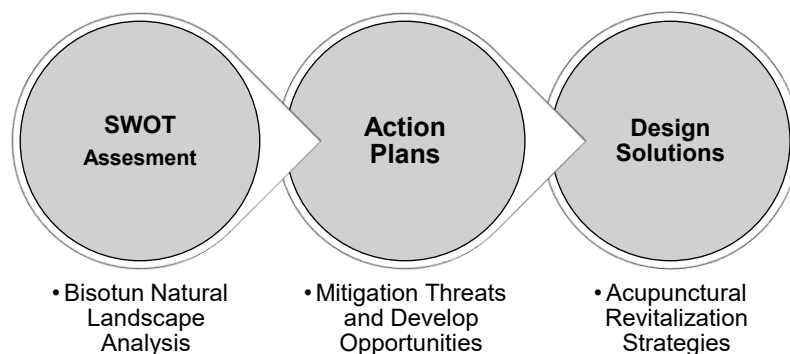
The multi-lateral goal in this proposal action plan is to design the future management strategy, which measures the immense natural - historical protection, architectural reconstruction and, visitor narrative paths. This proposal project aptly named BAMFAR Bisotun,(in the Persian language: بامفاریبیستون – is the abbreviation of باززنده سازی منظر فرهنگی, which means Bisotun Cultural landscape revitalization).By synthesizing the theoretical and strategical discussions in this research, the practical recommendations policies on revitalizing the three study zones of Bisotun NCL have been developed in the BAMFAR project. Following principles explained in action plans in this project:

- **Zone 1:** Rehabilitations the Bisotun Natural Landscape
- **Zone 2:** Protecting and Refurbishing the Bisotun Historical landscape and architectural monuments
- **Zone 3:** Reviving the Narrative Layers and Intangible Values of Bisotun NCL

5.1 Zone 1: BAMFAR Action Plan: Rehabilitation the Bisotun Natural Landscape

“Land and the systems that govern the land, resources, and property rights are central to pressing development issues.⁴³⁵” In this section, based on SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis on Bisotun Natural Landscape, the Action Plans in five principles figured out. These principles are tailored measures and practices which pointed at mitigation threats and developed opportunities in Zone 1 of the case study. Addressing the Acupunctural Revitalization Strategies and action plans framework, the Design Solutions in recovery, the flow among critical points of the landscape depicted. Lastly, in Snapshot of this context-sensitive design solution, a feasible-descriptive image has been illustrated. The policies are aimed to reflect the spirit of the various studied WHC, IUCN and EPA guidelines⁴³⁶ and the past environmental conservation concepts⁴³⁷. The several good practices, read meticulously, such as Gros Morne National Park World Heritage Site, which invigorated the Framework of this sector. A model in heritage protection and presentation thanks to the collaborative actions of stakeholders and park management, UNESCO, 2012. Further information and project photos illustrated in **GP-18**. The content of action plan policies in zone 1 include:

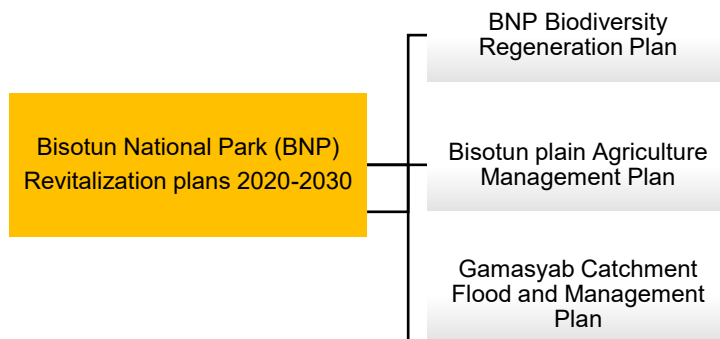
- 1) Legal Framework for Rehabilitation Regulations
- 2) Defining the Buffer Zones and Boundaries
- 3) Eco-Tourism, Socioeconomic Impact management plan
- 4) Community Awareness Programs: Education and Learning
- 5) Stakeholders Collaboration plan

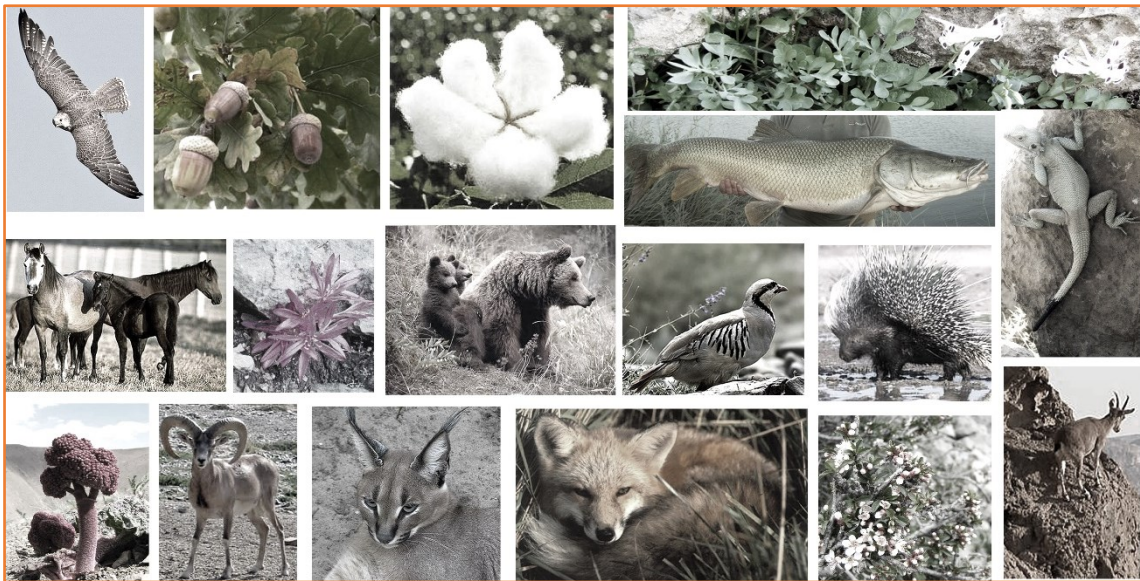
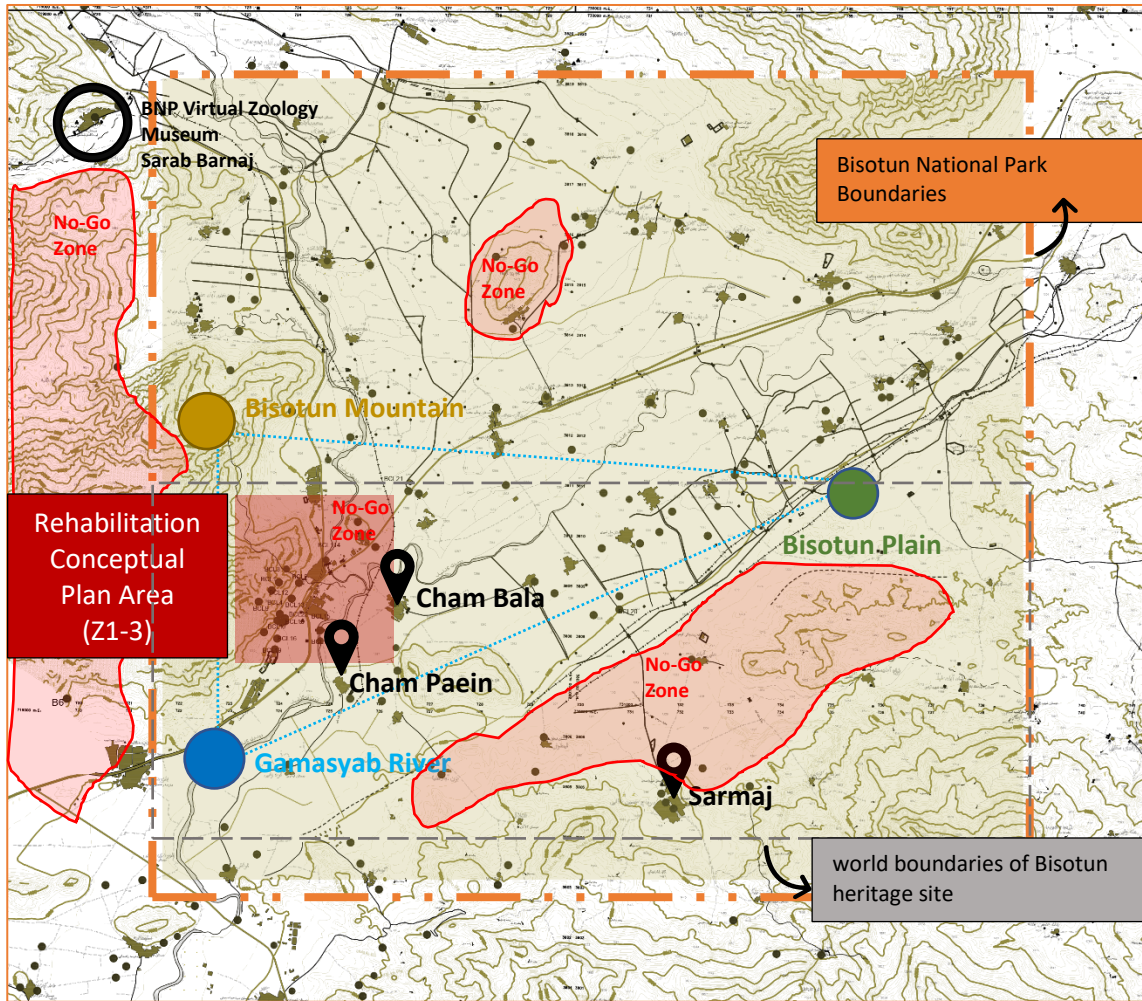


Plan Component	Action Steps
Legal Framework For Rehabilitation regulations	<p>Legal Framework for rehabilitation regulations Action Steps:</p> <p>Deficiencies in legislation are the basis of obstacles in the study area.</p> <p>The combination of the exceptional natural beauty of mountain, plain and river and geographical characteristics ensure the acceptance of this area as a National Park. By this policy, the higher level of protection of endangered wildlife, vegetation and terrain, better resource management, and long-lasting benefits for the socio-economic structure of Bisotun National Park communities are gaining. About 50,000 hectares of the Bisotun region define as BNP with clear specific legislations.</p> <ul style="list-style-type: none"> ➤ Bisotun National Park(BNP): Designate the Bisotun landscape buffer zone as Bisotun national park to pave the way for more concrete steps in order to better safeguard in preserving the values of the natural feature prevent drastic developments and regeneration flora and fauna, rehabilitation the natural landscape structures. ➤ The whole policy authorizes in Bisotun national park commission should be aligned and implement the "the 5Cs" Strategic objectives⁴³⁸ of the World Heritage site: strengthening the Credibility of World Heritage; ensuring effective Conservation; promoting effective Capacity-building; increasing awareness and support through Communication; and the critical role of the Community. ➤ The Bisotun national park commission member is evolving from all stockholder's representatives.

- Entire decisions about developments or changes in this landscape should be under the legislative process adopted to Bisotun National Park governmental administration. The comprehensive environmental assessment should be set up for any new constructions to point out threats to ecological structures. Local communities' representatives should involve in the providing of regulations governing environmental resources extraction activities such as agriculture, horticulture, livestock grazing, and fishing.
- The stakeholders' representatives who are involved in defining the legal frameworks of Bisotun National Park (BNP), will associate in support and improve the laws (including regional and national laws) because they understand the shared values, common goals, and respective strengths of these legislations.
- Due to reconnect the acupuncture points of Bisotun zone 1, three revitalization plans for recovery the habitats and ecological flow proposed:
 1. BNP Biodiversity Regeneration Plan
 2. Bisotun plain Agriculture Management Plan
 3. Gamasiab Catchment Flood and Management Plan.

(See map14 for the geographical boundaries of Bisotun National Park)





Map 14: The boundaries of Bisotun National Park, BNP flora & Fauna, the list of Bisotun flora and fauna are pointed out in chapter 4-zone 1, Source, Author, 2020, Map Source: Bisotun Research Center,

BNP Biodiversity Regeneration Plan Action Steps:

“Arguably “Conservation” and “preservation” concepts are quite distinct: while preserving wants that you leave nature undisturbed, conservation considers the natural products as resources to be exploited according to the principle of sustainability and then to be used wisely so that they can regenerate and still be available for the future generations. ⁴³⁹” The action steps of the BNP Biodiversity Regeneration Plan embrace both conservation and preservation policies in a different part of the park. The following issues should be considered in this plan:

- a. Preventing the uncontrolled exploitation of vegetation by local consumers or the other groups which today without any control, have access to the vulnerable plant species in the region and exploit them for medical and nutritional purposes.
- b. Fencing and enclosing the executive areas of the conservation plan in No-go zones.
- c. Planting seedlings of the compatible species in rocky mountain surface, Aerial seeding technique in Bisotun mountain by dispensing them through platforms such as a drone or helicopter.
- d. Constructing a protection belt or fencing line on the border between farms and natural resource areas.
- e. Changing the Fuel Consumption Pattern in rural communities (Construction of kerosene and gas distribution stations to prevent tree felling as a fuel source).
- f. Promoting traditional forestry in forested areas.
- g. Sustainable pasture usage conditions provided along with rehabilitation actions. This movement includes the adjusting of the number of livestock per hectare based on the capacity of pastures to sowing.
- h. Creating protective green walls, keeping moisture around the vulnerable regenerated area.

Bisotun plain Agriculture Management Plan Action Steps:

1) Legislating balance between agricultural lands and public multi-functional open spaces covering by native flora meadows. The multilateral benefits of this policy include:

- a. Protecting the plain vulnerable plant and animal species.
- b. The possibility of destruction of the archaeological lands by the agricultural industry declines. (See Bisotun National Park conceptual master plan)
- c. Defining routes for walking, cycling, and horseback riding, revitalize the people flow in the landscape.
- d. Farmlands have a long history in Bisotun of cultural landscape preserved by applying sustainable agriculture guidelines.
- e. Soil retaining from wind and water erosion by covering the ground with native plants
- f. Preventing the destruction of the Geo forms of the plain land and topography in plain for preparing the properties for agriculture
- g. Up to 2030, any exploitation of native vegetations in the region will be prevented.
- h. Transfer of military camps to other areas outside the national park and disarmament residents living in and around the study area to prevent any hunting activities. Mammal populations in the region are unstable and highly fragile and are affected by environmental factors, so the elimination of any of the influential pressing factors can have a significant positive impact on protecting and fauna population growth.
- i. Strengthen the environmental safeguarding staff, increase the number of ecological checkpoints in and around the area, Employing the IoT safeguarding systems to monitor and control the National park

2) Regeneration residential zone in rural communities:

Refurbishing the vernacular architecture of two rural districts (Cham Bala, Cham pain, Sarmaj) near the site due to creating new capacity for recreational and service facilities like restaurants, café, and accommodation in the region. As a non-destructive structure responding to the various socio-cultural impacts on reviving the local economy.

Gamasiab Catchment Flood and Management Plan Action Steps:

The ecologists and environmental science experts should provide the practical guidelines of the BNP river management plan according to morphology, hydrology, and watershed management studies aim to prevent the erosion of riverbanks and rehabilitate the river life. The plan includes the following steps:

- a. Elimination of Pollution from Rivers to sustain river life, prevent discharging the industrial and rural sewage into the river, prevent uncontrolled fishing, regeneration of fish species, artificial breeding, release in the ecological bed.
- b. Planting native trees along the river margin.
- c. Preserving agricultural water sources by artificial recharging the underground water sources and distributing the runoff water.
- d. Preventing the construction of the Garin dam on the spring of the Gamasiab river with the support of the local community and Bisotun National park organization legal petition.

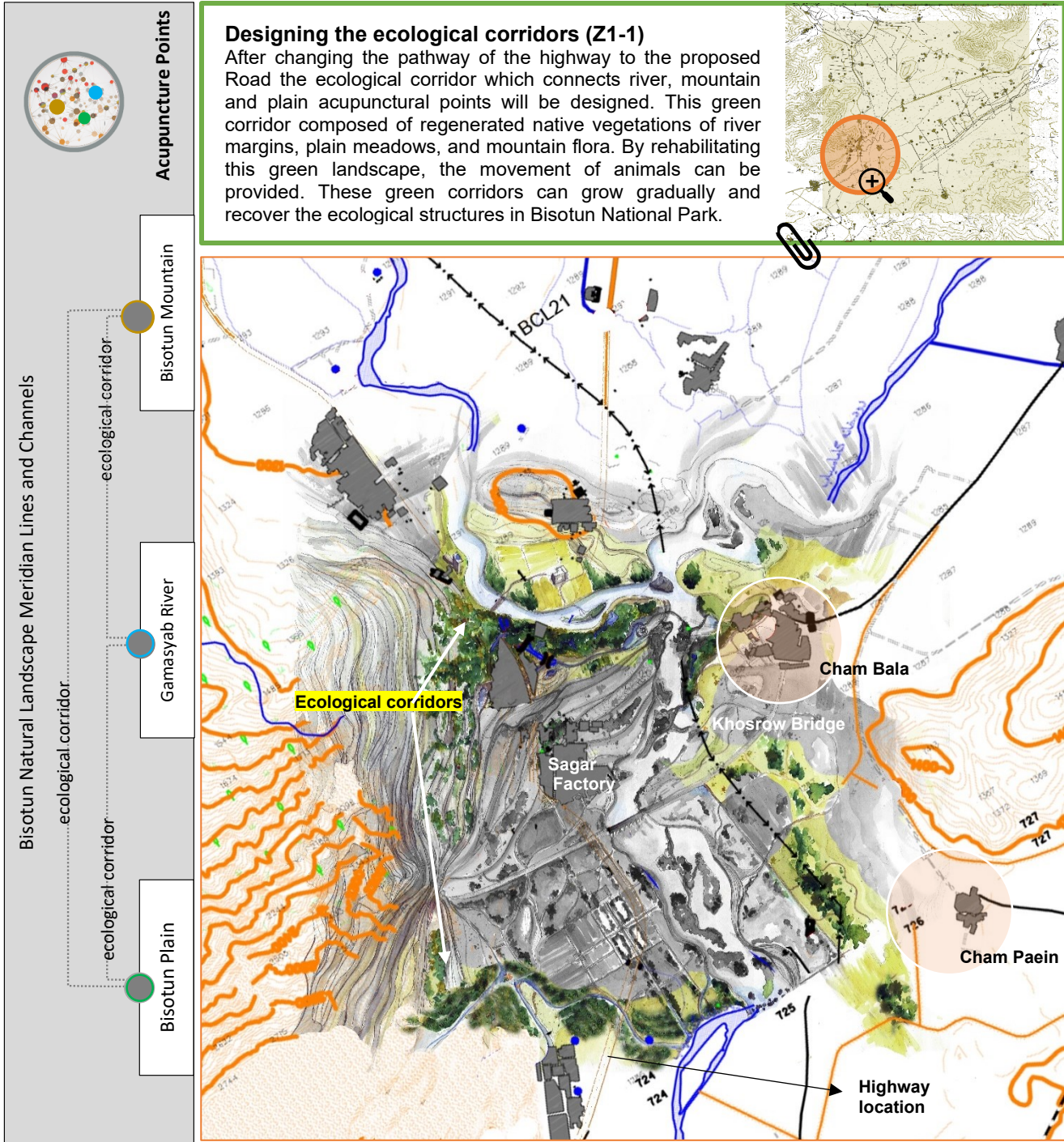
Design Solutions

In parallel with recommended principles, following Design Solutions suggested to employ in the natural rehabilitation of Bisotun National Park:

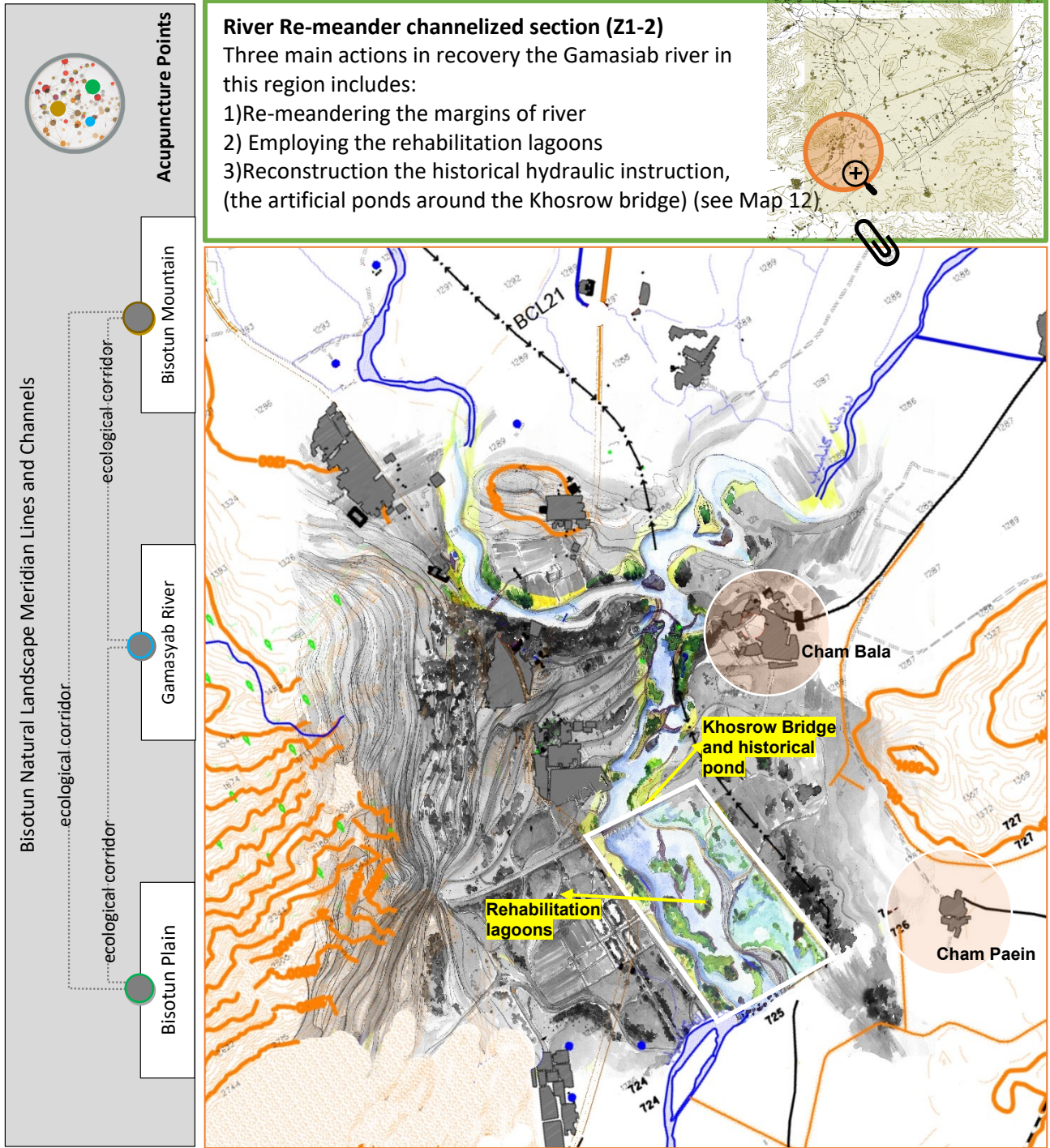
Designing the ecological corridors (see Z1-1)

River Re-meander channelized section and rehabilitation lagoons (see Z1-2)

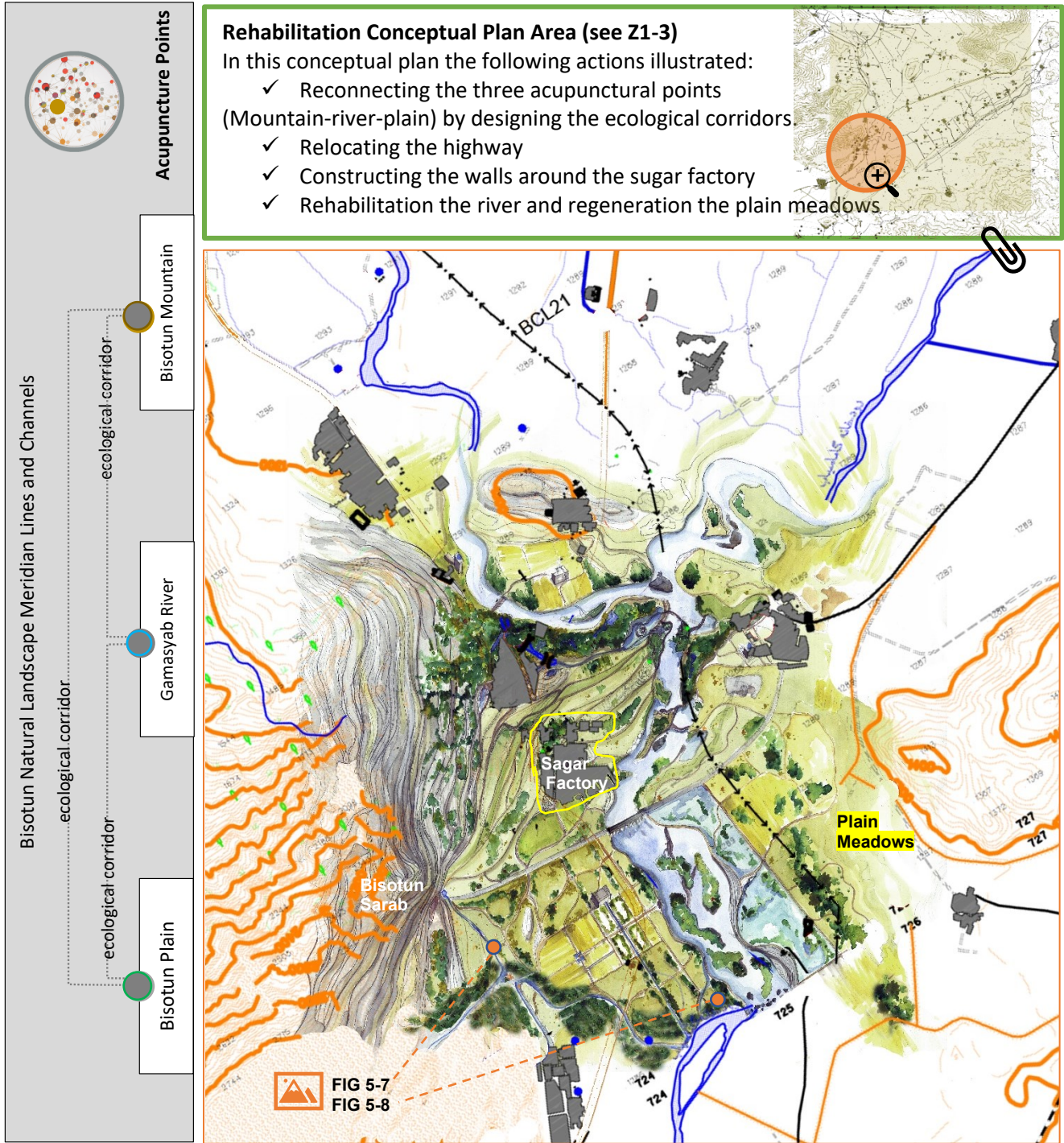
Rehabilitation Conceptual Plan Area (see Z1-3)



Map 15: Designing the ecological corridors (Z1-1), Source: Author, 2020



Map 16: Designing the River Re-meander channelized section (Z1-2), Source: Author, 2020



Map 17: Rehabilitation Conceptual Plan Area, Source: Author, 2020

Eco-Restore lagoons designed pointing at reviving the river life and creating aesthetical values.

- ✓ Construction retained woody brush structures
- ✓ Applying LWD (tree trunk) for narrowing the channels and forming the margins
- ✓ Designing the access ramps for livestock movement between plain and mountain meadows.

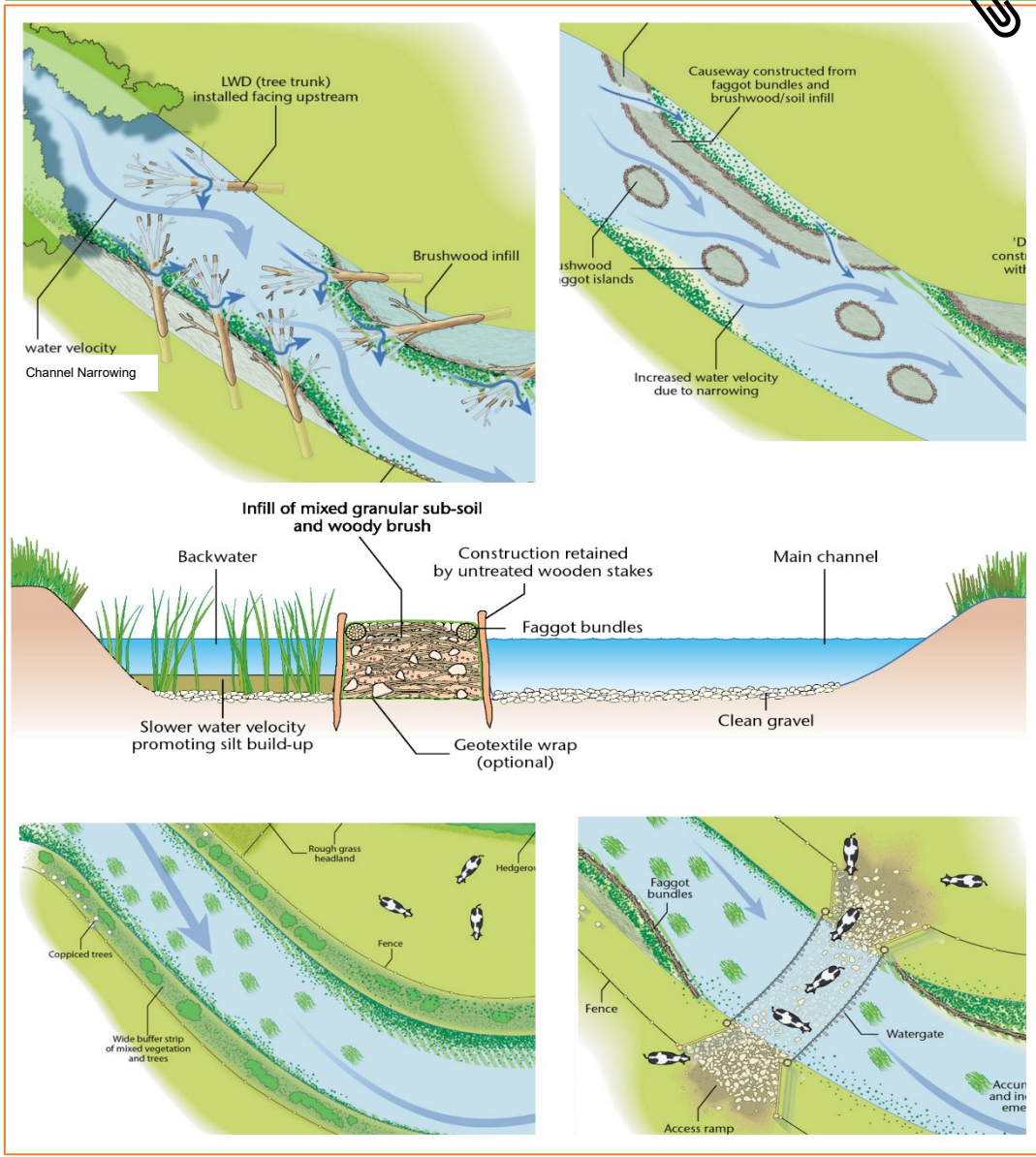
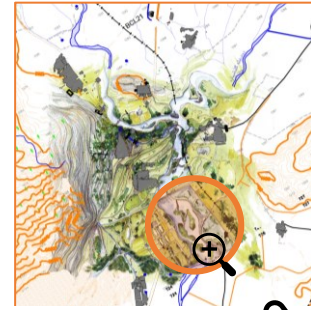


Figure 31: Detail design of river margins, Source: © 2018 by DRAWING ATTENTION



Figure 32:the Macquet model of Bisotun conceptual revitalization design, Source: Author, 2020

Buffer Zones and Boundaries Action Steps:

No-go zones: Adopting the "No-go zones" mechanism for industrial, mining, agricultural, or any unsustainable extractive activity which has an impact on the site rehabilitation plan. (See Map 14.)

- With this policy matter, the possibility of growing large-scale industries in No-go zones will decline, and the presence industries in these zones should change their products manufacturing process or change their location to out of these boundaries.
- Due to protect the continued capacity of resources for future generations. The agricultural activities and livestock beddings in these close zones should be prevented.
- According to the IUCN guidelines ⁴⁴⁰, about the industries which are former concessions in "No-go zones," "companies are refusing products sourced in the site, and banks are refusing to fund projects" to mitigation the risks and preserve the ecological integrity in BNP.

Seasonal, temporal zoning: Besides determining the "No-go zones" for harmful activities, the "Seasonal, temporal zoning" plan legislation should carry out as well. This temporal zoning ensures that BNP closing in distinct sensitive areas and dates during the seedings or birds nesting period, or any other ecological restrictions, which is a priority for wildlife or vegetation recovery process. Therefore, there are restrict operations for the number of mountain climbers who will be permitted to enter the temporal zoning in Bisotun mountain as well.

Tourism and Economic Impact Management Plan Action Steps

Tourism and Cross-Sectoral Economic Impact:

The synergic values of outdoor recreation include the economic, social connection, learning ecological knowledge, and physical and mental health benefits, which sets out "Reconomics Plus⁴⁴¹" values of Eco-tourism⁴⁴². The "Reconomics Plus" values are seeking new values of tourism beyond the economic impacts. Action plan demonstrates the activities that have a strand on involving visitor's propensity with the natural landscape.

- The "Natural Landscape Tourism Plan of Bisotun National park" is categorized into **three tourism types** (Geo-Tourism, River Tourism, Agricultural Tourism) **three visiting routes and six annual festivals**.
- Local businesses that are based on eco-tourism support the natural beauty and ecological integrity to maintain their profits as front-line staff. Eco-tourism in BNP can enable a 'Cycle of Success⁴⁴³' in supporting the preservation and economic opportunities.
- The Ecotourism plans of Bisotun National Park categorized into three objective groups:

(1) Bisotun mountain natural route: (Geo-Tourism)

The first natural route of BNP is visiting the trail between cave and spring.

The recreation and sportive activities include:

Mountaineering, Hillwalking, Rock climbing, and Underground Caving

- The annual international festival of Bisotun rock climbing held in April
(see route details in BNP Geo-Tourism page)

(2) Gamasiab river natural route: (River Tourism)

The second natural route of BNP is visiting the trail between the swamp and the Gamasiab riverside. The recreation and sportive activities include:

Adventure boat tour and Riverside walking tour

- The annual water sports festival⁴⁴⁴ (canoeing, kayaking, rowing, stand up paddling and windsurfing) held in August

(3) Bisotun Plain natural route: (Agricultural Tourism, Rural life Tourism)

The third natural route of BNP is visiting Bisotun Plain, the trail between meadow and rural life.

Along the way, tourists gain knowledge (or actively participate in events) by visiting (recreationally or scientifically) farmland, gardens, and livestock farms and, from all stages of production to product processing, conceive the essence of the rural life.

- Interacting with locals and Supporting rural products: The agricultural/gastronomic type and small artisans /crafts introduced as Sarmaj “brand⁴⁴⁵” for visitors, create new jobs thriving community to live and remain in the region.

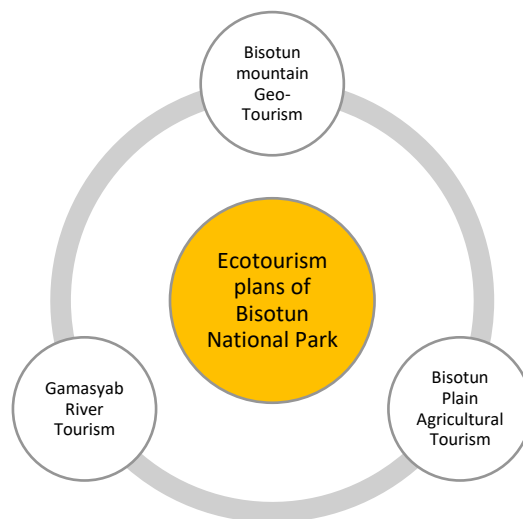


Diagram 21:: Ecotourism plans of Bisotun National Park, Source: Author, 2020

BISOTUN MOUNTAIN

SNAPSHOT

BISOTUN MOUNTAIN CONTEXT-SENSITIVE DESIGN SOLUTION

DESCRIPTION

Due to reconnect the acupuncture points of Bisotun zone 1, three revitalization plans for recovery the habitats and ecological flow proposed:

1. BNP Biodiversity Regeneration Plan
2. Bisotun plain Agriculture Management Plan
3. Gamasyab Catchment Flood and Management Plan.

The conceptual design of reconnection the ecological flow between natural landscape acupuncture points and designing the ecological corridors, Source: Author, 2020.



Before



Figure 33: The Bisotun mountain context-sensitive design solutions, Source: Author, 2020



BISOTUN PLAIN

SNAPSHOT

BISOTUN PLAIN CONTEXT-SENSITIVE DESIGN SOLUTION

DESCRIPTION

Due to reconnect the acupuncture points of Bisotun zone 1, three revitalization plans for recovery the habitats and ecological flow proposed:

- 1. BNP Biodiversity Regeneration Plan
- 2. Bisotun plain Agriculture Management Plan
- 3. Gamasyab Catchment Flood and Management Plan.

The conceptual design of Gamasyab River Re-meander channelized section and rehabilitation lagons, Source: Author, 2020.



Before



Figure 34: The Bisotun Plain context- sensitive design solutions, Source: Author, 2020

BNP Virtual Zoology Museum of the Past and Future:

The natural museum of Bisotun close to the Sarab Barnaj (see Map 14) can provide an exciting knowledge about the wildlife and ecological layers of BNP.

- With virtual reality glasses, visitors immerse interactively through the layers of the Gamasiab river, and the river ecosystem. By wearing the hand-controlled controller, visitors can touch the wild goat and boars and other animals in the Bisotun region virtually. By applying augmented reality, the past geological features in the region can be conceivable, and visitors or researchers can expand their knowledge about the natural values and evolution of this site.
- It will simulate the condition of the region after 2030, and finalizing the rehabilitation programs for the visitor and the future image of the site can be conceivable for both visitors and policy-makers. This raising awareness can be the stepping stone in future protection and preserving the natural sources of Bisotun national park.
- Finger tracking technology enables the visitor to feel the vibration at his/her fingertips and touching AR animal species, in the Bisotun National Park virtual world.

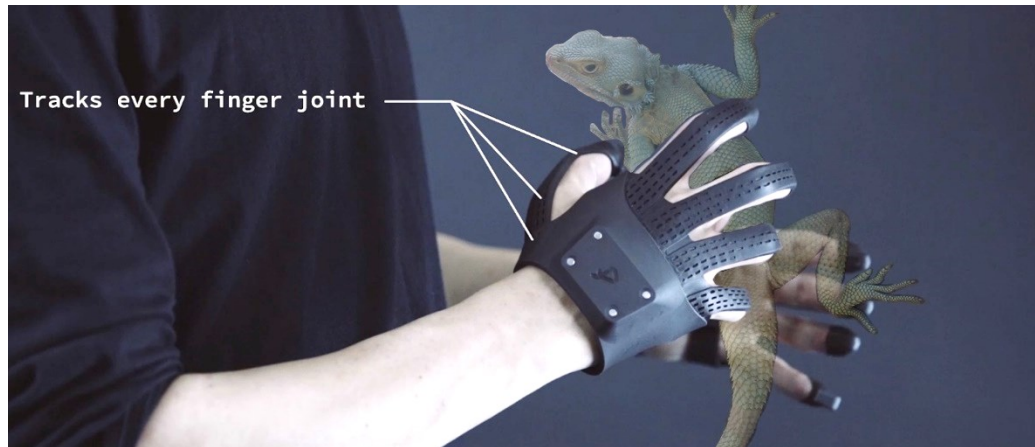


Figure 35: Touching the "kermanshahensis Asaccus" in virtual simulations in BNP Virtual Zoology Museum, Amphibians gallery, Source: Author, 2020. Source of gloves image: Plexus Immersive

Community Awareness Programs: Education and Learning: Action Steps

According to questionnaires' results, the awareness of local people about the natural habitat where their life was partial. When Bisotun local people have not sufficient awareness about their natural heritage, the expectation of environmental conservation and sustainable activities on terrain is making no sense. They do not have adequate consciousness around their legal, environmental rights, and responsibilities.

- Since eco-tourism creates new jobs in the region, the local community needs new skills to be qualified for new occupations in the tourism sector. Due to making the sustained and memorable stay for visitors in two rural destinations in the BNP, the vast majority of people around the study area can perform a role.
- Local communities' whole vision on their surrounded natural environment can be altered via the education programs.
- Adequate information about legal rights, responsibilities, and seize opportunity necessitates general educational programs.
- People should be aware of the BNP revitalization plan (BAMFAR). The short time free courses and workshops should be available by volunteer workforce trainers from research centers and NGOs in promoting local awareness.
- It is urged to utilize both indigenous and scientific knowledge to provide learning/ education for noticing local people concerned about environmental conservation and sustainability.
- **"Bisotun Rural Community Environmental Knowledge Improvement"**, the program is an educational wide-ranging that provides a chance for everyone to learn more about the Bisotun National Park. This program has three target groups:

1) **School students** (from 8 to 18 years old): Educational program for local youth, Outdoor learning environmental lessons about farmlands, wildlife, native vegetation, and water resources in the Bisotun region. Children can transmit knowledge to their families.

2) **Women:** enhancing women's role in BNP revitalization plans, learning programs in knowing the natural features of their surrounding area, and active role in BAMFAR projects. Women in these communities have a critical role in the economy. They are participating in horticulture/agriculture activities and, on the other hand, in creating original handmade products (Kilims). By gathering the prior knowledge and their experience about regional cuisines and indigenous merchandise, the way of protecting these heritages, which based on natural organic materials from the surrounding nature, should be provided. Enhancing their skills in offering hand made products and original food and bread causes create new jobs as well.

3) **Farmers and horticulturists:** General education programs, focusing on farmers and gardeners to provide the visiting route and facilities in their garden.

➤ Establishing the BNP Virtual Learning Centre for sharing the practical, simplified guidelines via the Bisotun National Park website. Several references about the Bisotun mountain- river -plain geological and ecological data, ecotourism's social and economic importance, and the people's role should be online access to people.

Stakeholders Collaboration Plan Action Steps

- In the Bisotun Natural landscape in research, revitalization, and sustainable development projects, a wide range of stakeholders can be engaged.
- Stakeholders are in public groups, governmental organizations, macroeconomic decision-makers, non-governmental organizations (NGOs), research centers, policymakers, practitioners, private sector partners, as well as all local people who are potentially impacted by development plans in the region.
- By sharing prior knowledge and experiences, and accepting new research results, the holistic approaches emerge and pursue mutual opportunities.
- All Stakeholders, especially local people as a cornerstone, have a representative on the BNP management board. “Joint-management activity⁴⁴⁶” and gather all suggestions of members' help to the management board for coping with existing environmental pressures.
- Revenue sharing and cooperative efforts of all the stakeholders are fundamental pillars.
- The management board is responsible for the legislative process for all future policies.
- The governmental organizations are responsible for monitoring the process of executing any legislated code from the management board.
- Research centers are accountable for holding provincial, national, and international conferences about various topics around environmental issues. (Local and universal)
- By the effective collaboration among stakeholders and mutual respect of local communities, tourism industry investors, and research centers, the co-evolve synergy of all stakeholders can be gained.

- Finding the “public-private partnerships at the local level ⁴⁴⁷”: enhancing partnerships between cultural institutions and the private sector in order to create new ways of funding.
 - **Dealing with insufficient governmental budgets:** Due to several mismanagement experiences and ineffective policy makings during the last four decades in the Bisotun region, it is a well-established fact that convincing the governmental organization to invest in sustainable revitalization projects in this site is nearly impossible. The role of NGOs and independent investors should be more striking in BAMFAR projects. Identification of entrepreneurial stakeholders and creating a chamber of investors and entrepreneurs will result in generating co-interests.
- suggestions for new stakeholders’ collaborations are:**
- Bridging between (I)governmental, cultural organizations, and the (II)private sector entrepreneurial, initiative create new collaboration ways and on the other hand, result in the long-term preservation of the natural values.
- The constant advice of EPA to stakeholders especially in the private sector is “not to appear competitive, but to challenge with the originality of their ideas, and to work hard on justifying these ideas and plans for proactively pursue the general benefit rather than simply business entrepreneurial success and short-lived profit⁴⁴⁸.”
- A joint program between farmers in Chambotan villages with the Agriculture department of Razi university to improve the quality of product sustainability.
 - A triangular collaboration program between (I) residents of Sarmaj village with (II) private investors in reconstructing the vernacular architecture of the Sarmaj for visitors stays and (III) Architecture and rural development research group of Kermanshah Azad university for providing the refurbishing design and

construction plans in Sarmaj village.

The main stakeholders in BNP included four groups:

1. Government organizations

- Ministry of Cultural Heritage, Tourism and Handicraft Organization in Kermanshah province
- Department of Environment in Kermanshah province

2. Local communities

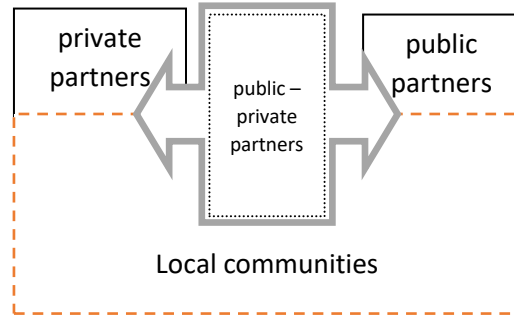
- Cham Botan Rural community
- Sarmaj Rural community

3. Research centers

- Razi University ⁴⁴⁹(Architecture and urban planning, Environment and Agriculture Dep.)
- Bisotun world heritage site foundation research center

4. Private sector:

- Research projects partners
- Revitalization projects *Investors* (entrepreneurs)
- Sustainable Development NGOs



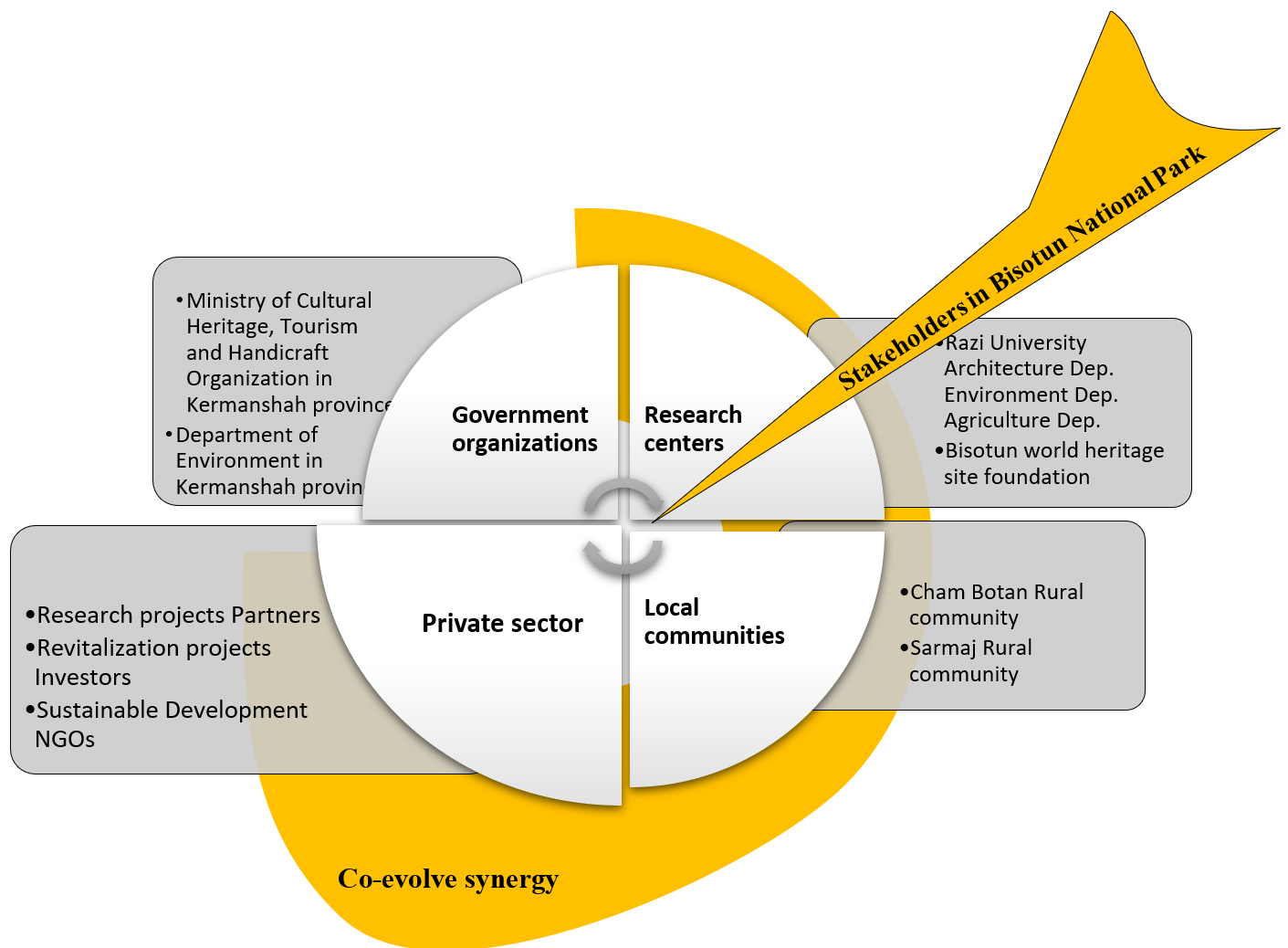


Diagram 22: Stakeholders collaboration in Bisotun National Park, Source: Author, 2020

5.2 Zone 2: BAMFAR Action Plan: Protecting and Refurbishing the Bisotun Historical Landscape

According to the NARA document, a more dynamic understanding of authenticity is based on multiple aspects such as ‘form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling.’”

Due to protect the authenticity of historical heritages of Bisotun site, the comprehensive cultural enhancement action plan proposed. The practical action steps in preserving the tangible aspects of Bisotun's historical values discoursed in this sector. A holistic study of 23 acupunctural points in Bisotun historical layers, and rediscover the ancient knowledge behind the architecture methods studied in Zone 2 of the previous chapter. A new interpretation of the profound philosophy behind these historical points will become a driver of so-called innovation providers and policymakers in the future action plan in this sector.

According to the acupunctural strategy in this research, three stages of intervention are determined in diagram 11.chapter 3. Considering the intensity of damages, and the impact of obstacles, the solutions in reconnecting the historical points proposed. The proper strategy of protecting and reconstructing the historical points implemented based on the analysis in chapter 4, zone 2. The spirit of acupunctural strategies is avoiding any idealistic plan and recovery of the flow in channels by minor interventions respected in adjusting the action plan in zone 2:

It is a remarkable note that any reconstruction structures or routes should be reversible, neutral and design by portable structures in heritage sites, to be accepted as revitalization action unless it will be against international conventions like Venice Charter, Nara Document of Authenticity and Operational Guidelines for the Implementation of the World Heritage Convention.

Indeed different innovative solutions employed for each monument to ensure historical values and tackle the issues threaten their integrity. Due to filling legislation gaps in this field, the detailed description of the legal framework as a priority in executing and monitoring the action plans

proposed. Creating the policies provides entry points for learning from the previous unsuccessful experiences and sets the rules against those misconceptions to foster sustainable action steps in zone 2.

Several good practices, reviewed meticulously, for instance, the Alta Murgia National Park in Italy⁴⁵⁰, The case of conservation efforts crowned with success at Comoé National Park⁴⁵¹, and MEMOLA project Mediterranean Mountainous Landscapes, which inspired the method of designing cultural routes in this action plan in zone 2. Further information about the MEMOLA project illustrated in **GP-19**. Another influential practice is the church of Corbera d'Ebreas revitalization project, in looking for the best solution for designing the protecting structure above the Khosrow palace, the transparent cover of ETFE technology suggested, which applied in the recovery of the public use of the old church of Corbera d'Ebreas as good practice studied in this research process. The explanation and photos of this project illustrated in **GP-20**.

The content of action plan policies in zone 2 include:

- 1) Extending Historical Heritage Core Zone
- 2) Raising awareness about the global significance and values of Bisotun heritage.
- 3) Determining the Thematic Cultural Routes
- 4) BAMFAR Digital Heritage Preservation Research Center
- 5) Acupunctural Intervention in Reconstruction of Khosrow II Bridge: BCL16
- 6) Bisotun Cultural Landscape Museum
- 7) Acupunctural Intervention in Semi-Reconstruction of Khosrow II Palace: BCL18

Extending Historical Heritage Core Zone

The priority step in protection, restoration, and revitalization of the heritage sites is ratifying the core zones and buffer zones. Today the Bisotun world heritage historical core zone is encompassing the pint-sized of this vast historical landscape. Currently, it is restricted to the Darius I inscription and the other close historical remnants on Bisotun cliff. Several archeological traces around this zone are not considered, which causes more neglect and damage in historical lands around the Outstanding Universal Value point. For instance, the architectural traces such as the Khosrow II bridge are out of this core zone. It is recommended to extend the world heritage and national core zone of this site to achieve the following overarching benefits:

1. Stretching boundaries in safeguarding measures and monitoring mechanisms.
2. The Outstanding Universal Value and significant properties that embody the core zone magnetite international financial support and funding.
3. Significant properties belonging to the core zone seize the opportunities for restoration in the world-class framework.
4. The integrity and authenticity of all historical components in the core zone can be protected.
5. Raising the public awareness of the site and its extremely outstanding values and growing the cultural tourist's quantity.
6. The removal of low commercial value buildings and factories inner the boundaries, and relocating the highway, are achievements that will be attained by this policy.
7. Increasing the legal authorities on precious archeological lands around the core zone. Whereas any core zones have adjusted boundaries surrounded by extending the core zone, the borders of the boundary zone will expand as well, which results in protection measures to stretched areas.

(The suggested world boundaries of Bisotun heritage site illustrated in Map 14.)

Raising awareness about the global significance and values of Bisotun heritage

Holding Conferences-Seminars and Workshops

Bisotun WH research center, with the collaboration of Kermanshah Razi University, should hold annual meetings and conferences to cover the theme of cutting-edge studies about the historical heritages in the Bisotun site.

- Holding the international seminars/ workshops will turn on the light on this unique site, and on the other hand, create the bridges among experts to update the know-how and methods of protection and valorization of this heritage.
- Organizing annual International Forum of Studies around the Darius I inscription: There are several individual researchers and enthusiasts around the world who investigating about Darius I life, actions, and influences which is broadly construed during history, but most of them have not a dynamic interaction with each other and cannot share and gather their results in a specific database. Meantime of the event researchers has an opportunity to present their work and convey their knowledge to develop the idea of preservation and applying innovative technology in valorizing the historical bas-reliefs.
- For the other historical values of this site the following themes suggested for conferences and international forums:
 - ❖ Evolution in prehistoric and protohistoric periods in Bisotun region
 - ❖ Archaeology and Anthropology studies in Bisotun region
 - ❖ Median Empire, the ancient Iranian dynasty, Culture, and Beliefs
 - ❖ Achaemenid Empire -Society, Culture, and Architecture
 - ❖ Parthian Empire – Beliefs, Culture and Art in Bisotun heritage site
 - ❖ Sassanid Empire - Culture and Architecture

Historical monuments of Bisotun

Determining the Thematic Cultural Routes Action Steps

Regarding the ICOMOS convention about cultural routes (2008)⁴⁵² “Cultural Route must necessarily be based on a sufficiently representative set of both tangible and intangible evidence and elements that witness to the features and importance of the historical processes which generated the Cultural Route.”

- For proposing a genuine cultural experience, a variety of thematic descriptions like: **"On the footsteps of Iranian Great Emperors"** can evoke aspiration to visit, hear and feel the centuries of civilization in the Bisotun site.
- Considering the location of acupunctural points of zone 2 (Map 8) the different levels of the cultural route connecting the macro structures of Bisotun heritage are assumed in two distinct Thematic Cultural Routes.
- Establishing a cultural museum has been suggested as well.

❖ **Bisotun Cultural landscape Prehistoric-Archeologic route (see Fig. 34)**

(Prehistoric - Archeologic Tourism) BCL1-8

The first cultural route of Bisotun CL is visiting trail between Prehistoric Caves and Archeological Mounds. Recreation and cultural activities include:

- a. Attending in hands-on activities and archeology workshops for children**
- b. Walking tour**
- c. Touring early human dwellings in Bisotun mountain and plain**

(Via AR technonology the animal species and early human dwelling⁴⁵³ in BCL1-8 imaginable inside the Virtual Zoology Museum in Sarab Barnaj (see Map 14)

BCL 1-8

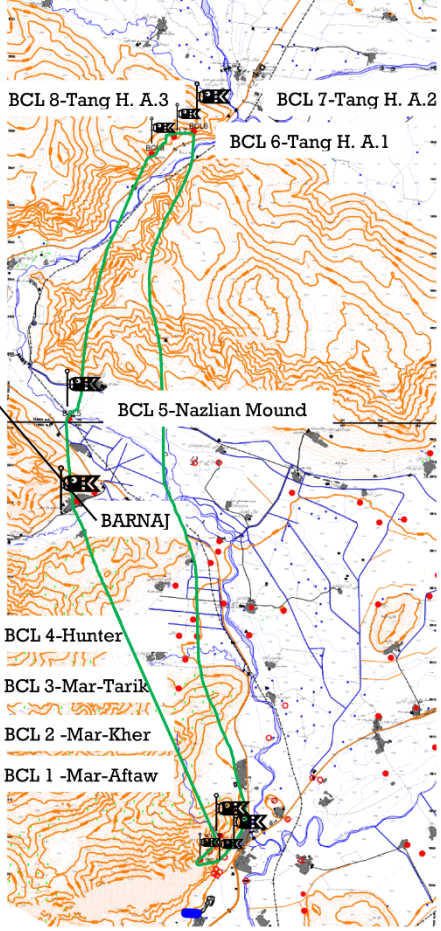
BISOTUN CULTURAL LANDSCAPE PREHISTORIC-ARCHEOLOGIC ROUTE

DESCRIPTION

- ACUPUNCTURAL POINT**
 BCL 1 -Mar-Aftaw cave
 BCL 2 -Mar-Kher cave
 BCL 3-Mar-Tarik cave
 BCL 4-Hunter cave
 BCL 5-Nazlian Mound
 BCL 6-7-8-Tang Hussain Abad
 Shelters(I, II, III)

Bisotun National Park Archeology Museum Various topics will be addressed during the museum visit, such as excavation traces galleries, paleontology galleries (prehistoric bones), cultural galleries through the attested presence of several cultures: Paleolithic /Late Neolithic/Late Copper/New Paleolithic (applying VR technology in recreating the life of early human in Bisotun region). The educative workshops for children take place around the archeological artifacts such as artwork, tools, and bones that have been excavated from prehistoric sites.

ZONE 2, CULTURAL ROUTE 1, Source: Author, 2020.



TECHNICAL DETAILS

- Walking tourism
- Horse riding (excl. racing)
- UNDERGROUND Caving, Potholin
- HIGH UP Mountain climbir High ropes

4-5 HOURS

Infographics borrowed from: RECONOMICS PLUS, Manchester Metropolitan University

Figure 36:ZONE 2, CULTURAL ROUTE 1, Source: Author, 2020.

❖ **Bisotun Cultural landscape Historical Monuments route:**

(Historical Heritage Tourism) BCL9-22

“On the footsteps of Iranian Great Emperors.”

Heretofore footprints of the greatest Iranian kings (Darius I the Great, Mehrdad I, Mehrdad II, Gotarzes, Balash, Khosrow II) endured in Bisotun. This criterion is the thematic essence of the historical route in Bisotun CL.

The second cultural route of Bisotun CL is visiting trail among historical landmarks, inscriptions, and architecture from 700BC to 1600 AD.

The cultural and educational activities include:

Walking tour, interpretation heritage through the material or immaterial footsteps, dynamic storytelling pathways for a deeper recognition of immaterial aspects of heritage supporting via AR technology)

Visiting the Khosrow palace Museum (An immersive virtual environment by employing VR technology in the reconstruction of Sassanid architectural projects in Bisotun plain)

Attending in Sassanid Architecture technology workshops for children (Learning about Mazedar and Tizedar arches and Parti methods in Iranian architecture, they learn about the construction stages of Sassanid bridge and can try out being a stone-artisan)

BAMFAR Digital Heritage Preservation Research Center Action Steps

Sharing knowledge and digital preservation

launching an open-access website about historical studies of Bisotun CL.

- **Creating a network for cross-border interactions between similar cultural heritage research centers:** Studies related to each historical period will be saved in distinct subgroups. For example, in the Subgroup of Achaemenid Inscription Research, all the multidisciplinary studies and practical methods content for restoration and preservation Achaemenid heritages are accumulated, Or in the hierarchical groups of Sassanid Architectural Works: identifying the style and characteristics of Sassanid architecture and know-how of reconstructing these works classified. By this digital sharing knowledge database, the Bisotun CL research center can overcome geographical constraints beyond connecting with the other heritage sites.

Acupunctural Intervention in Reconstruction of Khosrow Bridge Action Steps:

BCL16

By in-depth looking into nowadays situation of Khosrow bridge and diagnosing the defects and its integrity threats, the prognosis process of applying acupuncture strategies in its remediation process can be set out. The acupuncture strategies in sustainable revitalization of Khosrow bridge has three main purposes:

- 1) Reconnecting the bridge and surrounding the historical site with the core zone.
- 2) Reconstruction of the prognosis design of Khosrow bridge
- 3) Recalling the intangible narrative attributes of Khosrow bridge via virtual revitalization tools (the design solution discourse in Z2-3)

By reconnecting the bridge, the obstacles in Meridian lines of people flow to the Khosrow Bridge as an acupuncture point on this site can be removed and, consequently, the past linkage between Bisotun CL core zone acupuncture points and Khosrow bridge will take hold recovery which also might affect the intangible aspects irreversibly. The process of this underpinning intervention can be classified into three different actions with three levels and scale of intensity in interventions. Three main strategies in this reconnection can be set out in the following table:



Map 18: Relocating the Highway out of the heart of historical zone, Source: Author, 2019.

purposes	Acupuncture strategy	Action	Threats and adverse impact	Opportunities and positive impact	scale of
1	Reconnecting the bridge and surrounded historical site with the core zone of BCH	1.1 Overpass bridge: Design and construction of Overpass bridge across the existed highway	Impressing the landscape by adding a new structure to the site	This bridge can be the Standing out prominent gateway for BCH site to be seen noticeably for people who passing through the site/ providing Panoramic to heritage site /Possibility of launching the local market inside the bridge space for economic reinvigorating local communities	High intensity
		1.2 Underpass (underground tunnel passageway)	damage to archaeological vulncrable layers / visual disconnection with historical site	Possibility to launch an underground gallery or local markets / Crossing over the highway without changing today situation	High intensity
		1.3 Diversion highway Change the direction of highway: Coordinating a new road out of BCH buffer zone Changing the road path before entering the Bisotun cultural and natural zone with the passage of the road through the close villages in plain	4.5 km extra distance will be added to the existent highway / need to co-operate with different government agencies and local communities to cope with modified road direction	Reconnecting the natural, cultural and historical layers of BCH according the authentic original situation of this site in past with multidimensional effects. The new road will boost the accesses to remote villages around BCH with socio-economic benefits.	Low intensity
2	Reconstruction the prognosis design of Khosrow bridge	Considering the primery concept of bridge construction the innovative technology in reconstruction the uncompleted bridge with modern portable structure		Reconstructed bridge plays a key role in connecting local communities on both sides, tourists flow and new standing out image of KB /Restoration the ancient route passed across KB to BCH core zone and Shahi road along the Bisotun mountain foot.	Low intensity
3	Recalling the intangible narrative attributes of KB via virtual revitalization tools	Valorizing and virtual imagining the stories involved and cultural attributes of KB		Recovery the interesting intangible aspects of KB,Attracting more people flow for visiting the site	Low intensity

Table 11: The acupuncture strategies in sustainable revitalization of Khosrow bridge Source: Author, 2020

These comparative analyses clear the way for the best design solution on Reconstruction of Khosrow Bridge illustrated in figure 17.

“Within the discourse on heritage protection, reconstruction has long been considered in the context of restoration. At the heart of debate and practice has been the concern to prevent loss while avoiding damage and deceit.” (ICOMOS, 2017) Identification of “Options for recovery of attributes” (ICOMOS, 2017) acupuncture strategy in a wide spectrum of possibilities in reconstruction strategies can be about revitalizing the tangible and intangible flows among cultural heritage acupuncture points, reinvigorating local communities and removing obstacles through meridians lines. Investigating the isolated acupuncture points, defining the proper cultural-spatial structure for the revitalization plan results in conveying cultural heritage specific attributes to the future generation. The discoursed case study in this research was the Khosrow bridge in Bisotun cultural heritage, which is today getting hammered by unsustainable development pressures and remote location. According to the theoretical background and multidisciplinary analyzing this bridge the action plan provided and prognosis form of Khosrow bridge design illustrates in 3d models. In conclusion, the theoretical results and practical recommendations in this research according to Diagram no.15 define the acupuncture approach suggestions in Khosrow bridge revitalization.

stages	strategy	Action plan in Khosrow Bridge
i	preservation	Concrete preventive measures in preserving the present piers structures
ii	Semi-reconstruction	Extract the burial piers KB and preventing the human destruction and natural erosion around the foundations of the bridge, cut stone material and traditional hydro mortar “Saroj” for attaching smaller rocks together inside the piles and piers that should be applied in semi-reconstruction process in damaged points.
iii	reconstruction	The prognosis structure of bridge openings should be aligned with “Parti” order principles by applying “Mazedar” arches for linking the bridge spans
iiii	Virtual reconstruction	Recovery the Khosrow and Shirin romance narrative poem by employing innovative technology devices: Wearable technologies, 3D simulation, mobile augmented reality app, cinematic VR

Table 12: Analyzing the proper strategy for revitalizing the Khosrow Bridge, Source: Author, 2019

➤ **Design solutions for revitalizing the Khosrow Bridge and surrounded area:**

1) Reconstruction of the bridge according to background studies(4-2-7)

2) Restoration of the historical hydro structures around the "Khosrow" bridge according to its trace. (4-2-8)

3) According to preventing the idealistic changes in acupunctural revitalization strategy, relocating the sugar factory as an idealistic modification in this landscape is impracticable today. Building the 4 meters high walls around the old sugar factory, which has been built close to the Khosrow bridge, can be a minor intervention in packing this factory with surrounded walls and diminish the destructive effect of this industrial structure on landscape integrity and beauty.

4) Rebuilding the ancient route trail passing through the bridge toward the Bisotun inscription zone.

The conceptual design of reconstruction of Khosrow bridge and rehabilitation of Gamasyab river ecological life, Source :Author 2020

DESCRIPTION

Khosrow Bridge that is today isolated and neglected point and recovery and resume of this bridge can have the multilateral role in the sustainable revitalization of this architectural remnants.

The three-dimensional bridge models have been designed to create a non-destructive structure responding the various socio- economic purposes by reviving local communities' and people flow and reconstructing the historical role of Khosrow Bridge on Bisotun site. It is modelled without any load on the old bridge remains.

The rehabilitated natural landscape around Gamasyab river and its margins illustrated in this conceptual design.

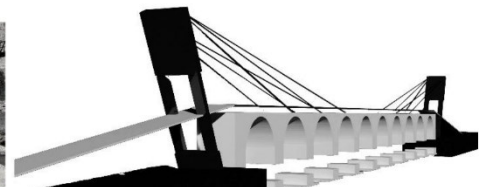


Figure 37: The conceptual design of reconstruction of Khosrow bridge and rehabilitation of Gamasiab river ecological life, Source :Author 2020

Bisotun Cultural Landscape Museum Action Steps

Regrettably, despite the historical potentials and several cultural values in the Bisotun CL, there is not any museum for collecting and valorizing them.

Founding the Bisotun museum is the priority necessary action to preserve a sort of archeological findings in this site. Regarding the definition of museums of the future as driving dynamism of several cultural activities, establishing a museum can provide multilateral benefits. Cultural activities in Bisotun museum:

- **Darius I heritage gallery:** a gallery dedicates to Darius I bas-relief and inscription. Via the innovative AR technologies and cinematic techniques, the unseen able part of this scene for visitors and researchers can be recovered and shown in this museum. The stories about the international attempts in translating and introducing this inscription can be an impressive sector in this gallery. The chronological biography and research evidence of all scholars and archaeologists who attempt to reveal the secrets of Darius I heritage in Bisotun can be visualized in this gallery.

- **Mehrdad I, Mehrdad II, Gotarzes, Balash, and Khosrow II separated gallery:** In each gallery, the information and different interpretations of historical records of mentioned kings in Bisotun CL, render and illuminate for the public and researchers in the museum.

- **Performances and installations:** The 500 portable seat Theater and a multi-functional hall for various cultural activities and gatherings should be planned around the museum.

- **Bisotun virtual reconstruction gallery:** The conceptual reconstruction of architectural heritage in Bisotun plain can be imaginable for visitors, by applying virtual technological tools and 3d reconstructed images of the past condition of the site. The vanished layers of the past will be conceivable for researchers and visitors. The 3d graphic multimedia contents via mobile are accessible.

Acupunctural Intervention in Semi-Reconstruction of Khosrow Palace: BCL18

“As everybody knows, there is no actual remedy to the mutilations and damage suffered by a monument as a result of negligence or misuse; it may be repaired or even copied from life, but the uniqueness of what has gone lost will never be recovered. ⁴⁵⁴”

The ruins of the Sassanid palace as a critical acupuncture point in Bisotun CL threaten by high weathering and acidic raining erosion in the region. This cultural spot is abandoned and neglected without any visiting pathway and connection with the current channel flow in Bisotun CL. For tackling the obstacles in people flow in cultural Meridian line of this landscape and revitalizing this acupuncture point, the followed practical intervention has been measured:

➤ **Refurbishing the Khosrow II Palace as Bisotun Cultural Landscape**

Museum:

Khosrow Palace can be revived as the Bisotun CL Museum. The regenerated dilapidated structures of the ruined palace seem to delve back visitors into the hidden layers of historical palace, which lay bare as the central point of the museum. Although we encounter the ruined 1400 years old structures, the authenticity and originality of this trace have turned the light on the sculptural aesthetic of this landmark.

➤ **How Khosrow II Palace can be revitalized as a museum?**

- a. Celebrating the original structure of the palace, the protective construction over the ruined building can create a new life and function for these archaic remains. Preserving its ragged edges against more deterioration and adding a new scenario for drawing the flow, make this spotlight intending to shine.

❖ Three essential principles for construction structure of this protective roof which are three well-established pillars of planning any structures in the core zone of world heritage sites include:

b. (I)Reversibility, (II) neutrality, and (III) portability,

furthermore, in this project, inside out connection is considered. The visual contact with the surrounded landscape (Bisotun mountain and historical landmark) is a cornerstone in designing this protective roof as well.

❖ Technological innovations in creating proper material for this purpose result in creating ETFE (Ethylene Tetra Fluoro Ethylene) polymers. The protective inflatable roof has been suggested for Khosrowll Palace refurbishment this forward-looking material has remarkable characteristics⁴⁵⁵:

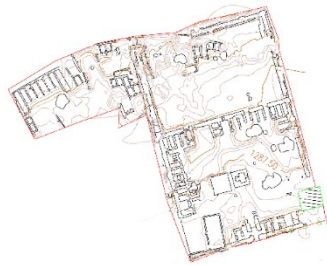
➤ **Structure, Function, Material**

- ✓ low weight (Weighing approximately 1% of glass which imposes a less dead load on the supporting structure)-Durability- Recyclability
- High translucency-Non-adhesive surface- Self-cleaning effect- Flexible skin during natural disasters is the remarkable characteristic of this material.
- ✓ “ETFE cushions can be lit internally with LED lighting to make them glow or projected onto externally like a giant cinema screen, creating dramatic results.”
- ✓ “The perimeter of the ETFE is fixed to the steelwork using aluminum and silicon rubber extrusions attached with stainless steel fixings.”

All of these qualities in ETFE polymers cause applying it as stunning and luminous material in the Khosrow Palace refurbishment project.

(See Fig.36)

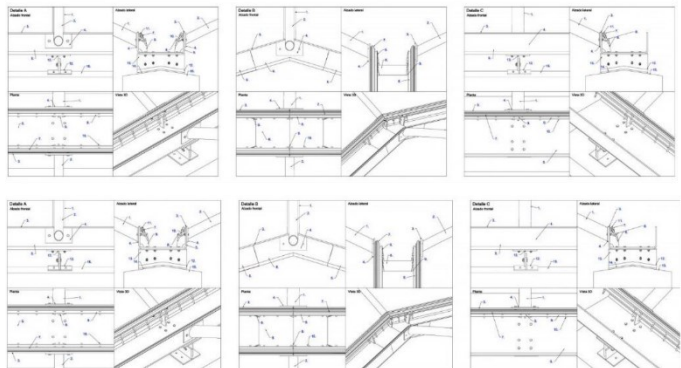
DESCRIPTION



Refurbishment the historical palace as a public art center for showcasing traditional performances and local productive and agricultural traditions.

The ETFE foil material is a plastic polymer by taking the polymer resin and projecting it into a thin film, used as a substitution for glazing. Transparent windows are designed either by inflating two or more layers of foil to form cushions.

Khosrow Ruin Palace, Protective Structure, Source: Author, 2020.



Structure detail of [TERRA ALTA - TARRAGONA] SPAIN, Source: METALOCUS, DANIEL MADERA, <https://www.metalocus.es/en/news/restoration-old-church-corbiera-debre-ferran-vizoso-architecture20/06/2017>.

Figure 38:Khosrow Ruin Palace, Protective Structure, Source: Author, 2020.

5.3 Zone 3: BAMFAR ACTION PLAN: Reviving The Narrative Layers Of Bisotun Cultural Landscape

Referring to the NARA document, the essential contribution made by the consideration of authenticity in conservation practice is to clarify and illuminate the collective memory of humanity. The focused effort in this subchapter is drawing the new framework for collective memories diffused on tangible traces.

On the other hand, ICOMOS in QUÉBEC Declaration strongly recommends using digital technologies opportunities to better preserve, disseminate, and promote heritage places and their spirit. These technologies facilitate the diversity and constant renewal of the documentation on the spirit of place. In chapter 3, the role of innovative technologies in recalling and protecting the immaterial memorial values studied profoundly, and the opportunities and challenges of this tool pointed out. Know how the implementation of a variety of virtual/augmented reality in several good practices in chapter 3-2 surveyed to illuminate the way of this research in determining the proper tool for revitalizing the narrative values of Bisotun NCL. The intangible layers revitalization in this action plan encompasses the three spectra of values:

- 1) Ancient festivals and rituals bond to historical beliefs which are the hidden communal values in this site**
- 2) Narrative stories entwined with Bisotun memory** (Based on the research results in chapter 4 -zone 3, the intangible narrative layers of Shirin & Khosrow story in Bisotun NCL is its outstanding value in people's memory.)
- 3) Rituals and traditional customs which is highlighted between the line of epic and romantic stories of Bisotun.**

In this sector, the practical suggestions in the recovery of the intangible aspects of Bisotun NCL proposed as the last part of BAMFAR project action steps. The main trend of the zone 3 action plan revolves around the following principles:

- 1) Raising awareness about the Bisotun intangible communal values**
- 2) The narrative paths in hidden literature laneways**
- 3) Revitalizing Rituals Correlated with Literary Narratives**
- 4) BAMFAR Bisotun Cultural Landscape Mobile Application**

Plan Component	Action Steps
Raising awareness about the Bisotun intangible communal values	<p>Raising awareness about the Bisotun intangible communal values</p> <p>Cultural Festivals:</p> <p>The dominant ancient celebrations of Iranians dating back to the deep-rooted civilization endured before the inception of Iran's classical history. Several scholars believe that they have been established by Zoroastrians, whereas <i>happiness, social unity, and admiring nature</i> were the essences of the concept of these festivals.</p> <p>Three fundamental elements strand on these celebrations include:</p> <p>(I) gathering people in the specified spot, (II) exhibiting the edible growing symbols of nature (III) the presence of fire.</p> <p>People are gathering around the fire as the pivot point and providing the special symbols of nature on tables, playing music, dancing, and singing Yashts (praising nature elements). There was not any sign of brutal, ominous rituals in these ancient festivals, like sacrificing (which was a reproach deed in Zarathustra tutoring). People with different gender and social class characteristics status in society, beyond any discrimination, participating in ceremonies, bring a piece of dry wood for burning in the fire.</p> <p>In Zoroastrian philosophy, there are numerous seasonal festivals celebrated, all of which are bound to the ancient Persian calendar.</p> <p>Six irregularly-spaced seasonal festivals, called Gahanbars (meaning "proper season"), are celebrated during the year. The six festivals are additionally associated with the six "primordial creations" of Ahura Mazda, and through them</p>

with aspects of creation (the sky, the waters, the earth, plant life, animal life, humankind).

Today, several traditional festivals have been simplified, and under the shadow of Islamic traditions, some of them are only held by Zorastorian minority communities in remote small towns, and the government has banned the presence of any Muslims in these ceremonies.

- Bisotun WH research center, with the collaboration of Kermanshah Razi University, and private entrepreneurs can hold annual cultural festivals to recovery and valorize the intangible values of historical monuments in this site. These festivals, with multilateral influences in implementing the BAMFAR project goals, categorized into two groups: traditional and novel festivals.

❖ **Organizing the ancient festivals and celebrations:**

The three most well-known Persian festivals are:

1) Festival of Nowruz: (March 20, Farvardin 1)

Nowrouz is the only significant, glorious tradition held in Iranian homes (and other neighboring countries that appreciate it across the political borders and as part of Iranian cultural territories such as Afghanistan, Azerbaijan, and Tajikistan , Kurdistan territory in Iraq.

Nowrouz is the day of the vernal equinox, and chronicles the beginning of spring, the first day of the first month (Farvardin) of the Iranian nowadays calendars.

With deep doctrinal significance, many researchers believe that Nowruz was founded by Zoroaster. Nowruz as a "secular feast⁴⁵⁶" is more based on the wisdom behind the nature recovery in the spring, rather than a religious practice.

This festival can hold for 14 days, which is new year holidays in Iran, and a variety of relevance ceremonies can be held during this period.

Especially the 6th day of Farvardin (approximately 26th of March), which is the birthday of Zoroaster, should be valorized and evoke people's consciousness about his role in founding the Nowruz anniversary ritual.

2) Festival of Sadeh: (January 29th-Bahman 10th) In the Persian language, Sadeh means one hundred, the festival held when one hundred days and nights remain until the beginning of spring. It was a festivity to praise fire, which is the symbol of conquering the dreading the darkness and cold winters, a representation of purity and righteousness and symbol of the beneficial human who burns from inside and illuminates the society.

3) Festival of Mehregan: (October 2nd - Mehr 11th) it was initially a feast honoring the Mithra (see Chapter 4-2- Identification of Seleucid -Parthian statue of Bisotun). Mihr was the goddess of justice before Zoroastrianism. The length of days and nights will be equal in the Mehregan festival, which conceived as the metaphorical day of equity and justice. Also, October is the end of the harvest season. Therefore, farmers who were the majority of ancient society, celebrate it by displaying their products.

Believing in Mithra (Mehr, Bagh) goddess is one of the ancient creeds in Iran. Despite the widespread and time-lasting influences of Mithraism worldwide and several architectural, sculptural, and literature evidence about it, there is not any public cultural event around this topic. Whereas the Bisotun mountain was the spiritual place of Mithra (Bagh) can be the relative suggestion to hold a Mithra festival) Mehrgan at the foot of this mountain.

Establishing new festivals and celebrations:

The profound research about each historical point in Bisotun CL can open a window through the new ideas for future festivals and cultural events.

The new concepts and ideas for organizing the identified festivals can drag more public awareness about the Bisotun's Outstanding Universal Value.

The following innovative cultural events suggested to lay the foundations for more studies and detail planning about the potential festivals in the future:

➤ Great Darius festival:

The annual festival on October 2nd (the date of Darius I inscription) can evoke the public awareness and collaboration about this heritage values and protection, valorization measures.

➤ Royal (Shahi) Road (Silk Road⁴⁵⁷) Carnival:

For more than twenty-five centuries, people transfer through this road for exchanging merchandise and cultures; It has been a continuous passage for people, caravans, military soldiers, Persian couriers, and the greatest kings of Iran. Humans traversed via this road and gathered at the Bisotun mountain foot with multiple intentions in trade, war, worship, historical triumph inscription, recreation, or even meeting the beloved one. Along with the Shahi road memory, all these moments recorded, and it can be a metaphor of Iranian collective memory in Bisotun. The Shahi road can create an endless source of creative ideas for the annual festival themes. By revitalizing and wearing the ancient customs and rebirthing traditions, several untold stories about people passing Shahi road can be narrated during the festival. This road, which has connected the numerous nations and civilizations, can be the core concept of an international festival.

The Revitalization of the Narrative Paths in Hidden Laneways Action Steps

“To tell a story means to formulate a hypothesis which implies the creation of a possible “reconstruction,” related to both the physical aspect of the cultural heritage and its contexts, the human activities, behaviors, thoughts, values. A story is a bridge between reality and imagination⁴⁵⁸”

Designing the narrative paths according to the hidden epic – romantic stories laneway in Bisotun NCL follows the reconstructive goals of this research. In these narrative paths, fragmented tangible historical spots, relevance with story content, integrated to reconstruct the episode of memories in Bisotun NCL.

According to two predominant literature genres, two separate narrative paths designed to revitalize the intangible values of Bisotun NCL.

➤ **Where and How?**

The visitors, by applying the AR devices, both wearable and in the IoT environment, can involve two various literature scenario cinematographic paths. The narrative content has tangible sensor points spread on the site.

1) Epic (Pahlavani) Narrative Route:

The constant dialogue among literature, technology, and cultural landscape

The first Narrative Route of Bisotun NCL is visiting-imagining trail among tangible

Epic story/history sensor acupunctural points include:

Bisotun Spring (Sarab-e-Bisotun) **BCL 23**

Darius I bas-relief and inscription **BCL10**

Mitra/Hercules Statue **BCL13**

Relief of Mithridate II (Mehrdad II) and Relief of Gotarzes **BCL11**

Vologaeses Bas-relief (Sang-e Belash) **BCL12**

Sassanid Terrace (Farhad Tarash) **BCL17**

Shahi road **BCL24**

❖ The twisted tale of the events by different narrators who added to the real point via Augmented Reality technology is plausible.

❖ The six different epic stories associated with the six kings who have a landmark in Bisotun NCL (Darius I, Mithridate I, Mithridate II, Gotarzes, Vologaeses, Khosrow II) can be seen and heard.

For example in the epic narration lane, the history of the Kundro war in Bisotun plain dramatizes virtually by three different narrators:

{ Darius I the Great, King of Persia
Immortal Guard commander
Immortal Guard Soldier

In figure 37 the snapshot of employing this technology in Bisotun NCL has been rendered.

➤ **Darius epic story game:** This AR multimedia content can merge with off-site games. It means by starting the Darius epic story game, the end-user will be familiar with this inscription content and pass several stages off-site, but for the wrapping up, the game should visit the Bisotun CL site in reality to reach the final stage of the game. The mixture of offsite and onsite games can be merged in the AR environment real open space where the actual story happened on the heritage site.

BCL 8

SNAPSHOT

SARAB BISOTUN INTANGIBLE LAYERS CONTEXT-SENSITIVE DESIGN SOLUTION

DESCRIPTION

three different narrators:
 Darius I the Great, King of Persia
 Immortal Guard, commander
 Immortal Guard Soldier

The visitors can choose and follow the favorite narrators to hear and see him and know the historical event of the Kundro war from his point of view.

Revitalization Project in Zone 3/ Recalling the narrative layers -Epic Narration path-(4th pinpoint) Sarab Bisotun. Figure Source and Design:Author 2020

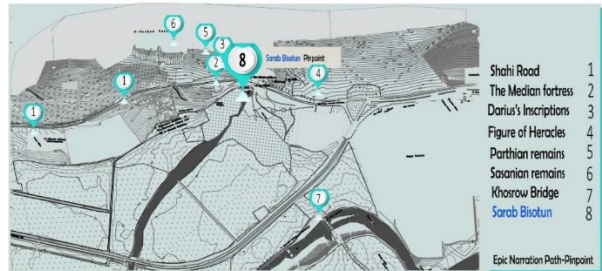
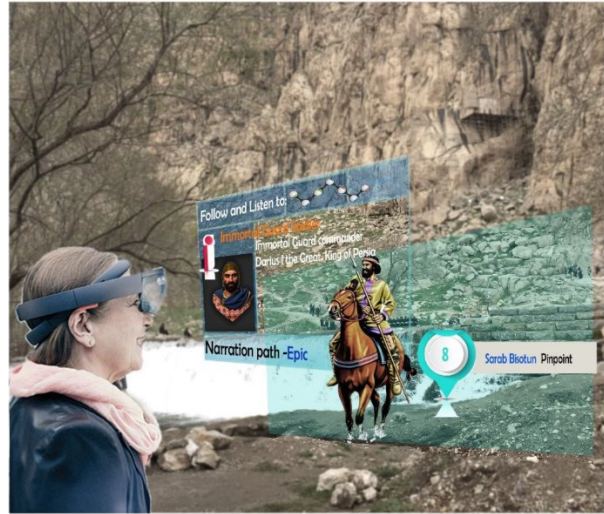


Figure 39: Sarab Bisotun intangible layers context-sensitive design solution, Author, 2020

2) Romantic (Asheghane) Narrative Route:

The second Narrative Route of Bisotun NCL is visiting-imagining trail among tangible Romantic story/history sensor acupunctural points include:

Bisotun Spring (Sarab-e-Bisotun) **BCL23**

Khosrow II Bridge **BCL15**

Hydraulic Structures and retaining wall **BCL16**

Sassanid Terrace (Farhad Tarash) **BCL17**

Khosrow II Palace **BCL18**

Takht-e Shirin **BCL20**

- ❖ The Romantic narrative contents are depicted in a cinematographic way relevant to the milestone of Shirin& Farhad and Shirin &Khosrow stories on Bisotun NCL.
- ❖ The route begins on the Khosrow Bridge, and the visitor follows the path Shirin has set for her/him. That makes the audience feel that he/she is at the center of an emotionally immersive experience.
- ❖ The story can be heard and followed by three different narrators: (Variety of interpretation around one story)
 - Khosrow II Sassanid king
 - Farhad the architect of Sassanid construction project in Bisotun site
 - Shirin the prince of Armenia
- ❖ The determined acupuncture sensor points are connected to a cloud-based system that gathers and analyses all data from database and end-user selections. Required technologies include:

QR code generator, Cloud-based system, Augmented Reality content, mobile device, wearable device: glasses and gloves.

BCL 4

SNAPSHOT

FARHAD TARASH INTANGIBLE LAYERS REVITALIZATION CONTEXT-SENSITIVE DESIGN SOLUTION

Revitalization Project in Zone 3/ Recalling the narrative layers -Epic Narration path-(4th pinpoint) Sarab Bisotun.
Figure Source and Design:Author 2020

DESCRIPTION

The story can be heard and followed by three different narrators: (Variety of interpretation around one story)

- ✓ Khosrow II Sassanid king
- ✓ Farhad the architect of Sassanid construction project in Bisotun site
- ✓ Shirin the prince of Armenia

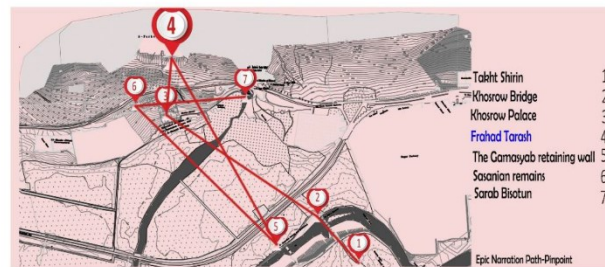
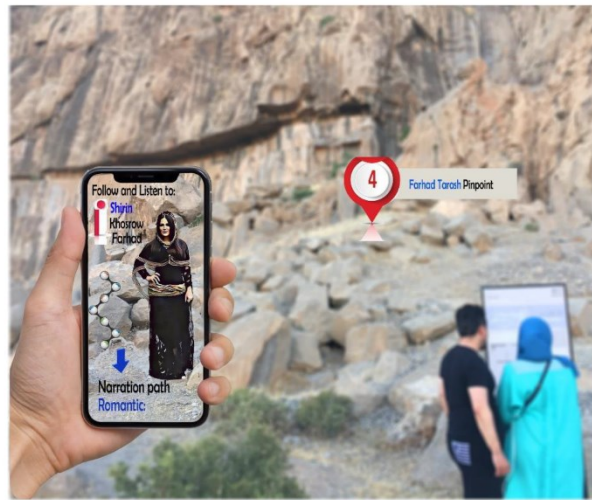


Figure 40:Farhad Tarash intangible layers revitalization context-sensitive design solution, Author,2020

Revitalizing Rituals Correlated with Literary Narratives Action Steps

In delving further back in Bistoun's literary narratives, the remarkable ancient rituals, sports, and games have come down to us, which can bring new ideas for planners in revitalizing intangible values in this site. Each of these ancient rituals has retained a portion of the history and unwritten narratives of the Bisotun NCL.

- By holding the ancient Iranian sports annual festivals in the Bisotun NCL, the new generations will be conversant with them. Furthermore, the awareness in preserving these sports which are in danger of being forgotten will be heightened. The two historical sports: (I) *Zurkhanehi* and (II) *Chogan* have been selected in the BAMFAR project to be held in Bisotun NCL ritual festivals. They are considered as an indispensable activity associated with epic (Pahlavani) ethics, which reflect the people's beliefs and communal values.

1) Pahlavani and Zoorkhanei rituals accompanied by music

"It describes a ritual collection of gymnastic and callisthenic movements performed by ten to twenty men, each wielding instrument symbolizing ancient weapons⁴⁵⁹". It can be perceived as a military team training which is held in the traditional Iranian Gym (Zoorkhaneh). This tradition has specific music and instrument (Zarb) which the master play it and sing particular rhymes about the heroes and their ethics. After the Arabs invasion of Iran, this ritual practice was banned. Pahlavans imposed to replace the ancient Persian heroes by the Islamic- Arabic idols in the content of rhymes to preserve this ancient ritual. Pahlavans(athletes) "not only work on their physical fitness but they practice to improve their spirituality and to be more modest, submissive and generous⁴⁶⁰". This ritual, as one of the antiquities bodybuilding practices in the world, attracts visitors because the integrity between pure music, body movement, and ancient

sports & fitness tools is an authentic performance. Mainly when this rite occurs in the epic landscape where it stands on Pahlavani, values create a unique experience. (In chapter 4-3 the characteristics of Pahlavani ethics considering the Darius I inscription analyzed)

- The annual festival of Zoorkhanei rituals can be held concurrent to the Nowruz⁴⁶¹ festival in Bisotun NCL

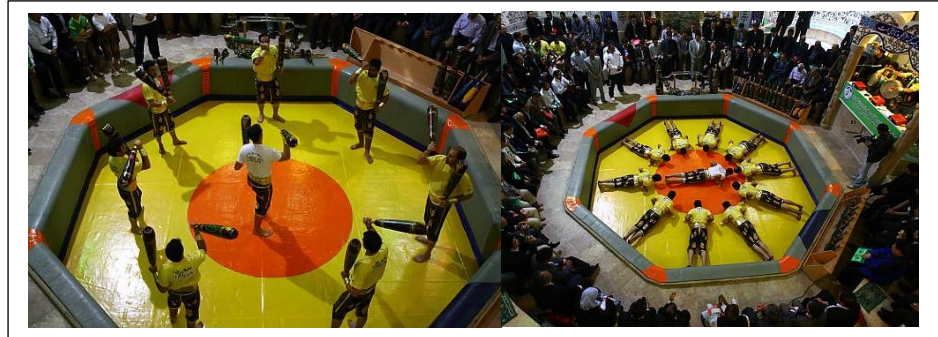


Figure 41: Zoorkhanei Rituals. Source: © 2009 Iranian Cultural Heritage, Handicrafts and Tourism Organization

2) Chogan (Polo) a horse-riding game accompanied by music and storytelling

Chogan (Polo) is one of the oldest team sport in Iran, which was a royal game with at least 25 centuries of history. Nezami, in his poet's canon, Shrafname⁴⁶² (1202 AD), points out, this game during the Achaemenid era. In Persian literature and miniature paintings, there are numerous testimonies about this game. "That is quite impressive considering that various reports indicate that the sport is currently played in over 77 countries, it is commonly referred to as the "Sport of Kings." While not readily recognized as a major sport, the economics surrounding polo is quite fascinating.⁴⁶³"

- Nezami in Khosrow and Shirin's story has also addressed the Chogan playing of Khosrow II with his beloved Shirin⁴⁶⁴. (see figure 4 in BZ3) Chogan was a

favorite game for Khosrow & Shirin. Nezami describes the seventy women (Shirin's maid of honors) playing this game with Khosrow & Shirin.

The idea of recalling this memory and holding Chogan women's competition again can be the relevance concept strand on the literature layers of this site.

Regarding today, scanty horse breeding that does survive in Bisotun plain, this action can support the horse-breeding culture in this region.

- The annual women Chogan (Polo) tournament can be held concurrent to the Nourouz festival in Bisotun NCL.

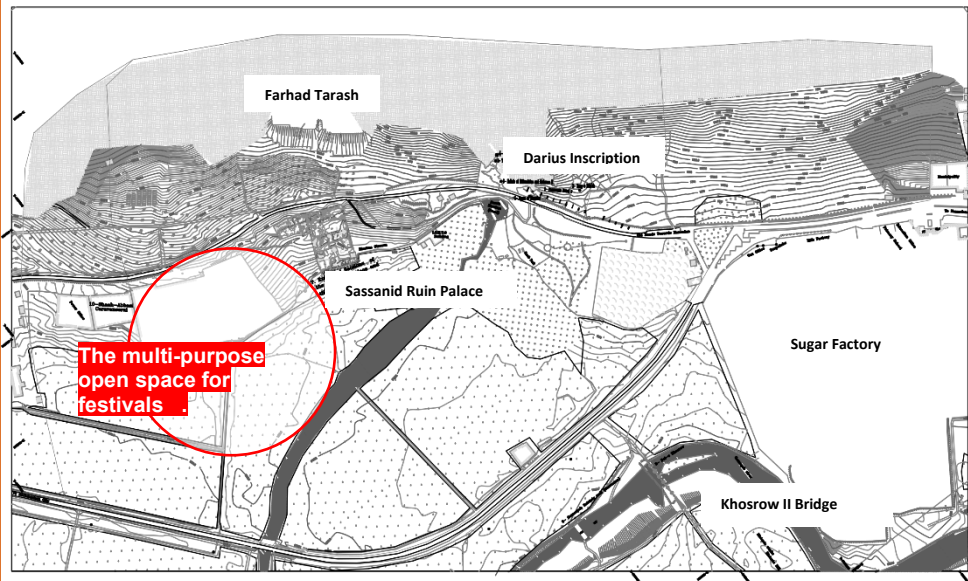


Figure 43: Polo game: an illustration from the poem Guy u Chawgan (the Ball and the Polo-mallet), Source: The Freer Gallery of Art and Arthur M. Sackler Gallery of the Smithsonian Institution, 1546



Figure 42: Polo (Chogan) playing in Shah plaza in Isfahan, Source: chtn.ir, and visitiran.ir/attraction/chogan-polo





Map 19: historical zone of Bisotun, Source: Bisotun research center, 2018



Figure 45:: traditional customs in Bisotun region, Farzad Menati

Figure 44: The Nowruz Festival in the village of Tengisar, Kurdistan province, Iran-2018
<http://www.dana.ir/news/1334259.html>

3) Estandegan: Love, Friendship, and Earth Carnival

Sepandarmazgan or Espandegan (اسپندگان), is an ancient Iranian day of love with Zoroastrian roots dating back to the Achaemenid Empire⁴⁶⁵. The date of the festival as observed in the Sassanid era was on the 5th day of the month Spandarmad (approximately February 24th). The feast of the Sepandar celebrated every year from the distant past in Iranian culture. since "Woman" and the "Earth" have similarities in nurturing, fertility, and inventiveness and both are life-giving and praiseworthy in this day simultaneously were praised. This ancient ritual has completely abandoned nowadays.

- Women wear colorful new costumes, and men ride them on horseback and thanked them, providing gifts to give and celebrating their love. Biruni⁴⁶⁶ mentioned that on this day, women were ruling and commanding somehow, and men should obey them.
- Bistoun is a land of eternal love, and in Iranian memory, the footsteps of Khosrow in its plains are still palpable, and Shirin is still bathing in Bisotun's immortal fountain, and the sound of Farhad's thunder is heard from the rocks of its mountains. Such a venue is the best host of the Espandegan Festival, which celebrates love, women, and the earth.
- The Espandegan festival is completely abandoned nowadays, and the only love day in Iran, which is celebrated informally, is Valentin's day, which has not any roots in Iranian culture. By recovery, this festival, the overlooked intangible values in Bisotun romantic landscape spirit can be rebirth and valorized in new ways.
- The carnival of Espandegan held on February 24th annually in Bisotun NCL. Alongside this ceremony, the Kurdish dance and music performance can be held.

4) Farhad Tarash International Projection-Mapping Competitions

The most frequent question that comes up meanwhile visiting Farhad Tarash hand-carved chiseled rock is, what was the purpose of polishing and preparing this magnificent surface? What was the concept plan of the Sassanid stone artisans under the direction of Farhad for engraving this huge 6000 m² (200*30) facade?

This puzzle can create the basis for the creation of new innovative visual artwork on this scene, and build a linking bridge between today's artists' conceptions and fourteen centuries ago imagination, in two different cultural paradigms.

- Farhad Tarash international Projection-Mapping competitions can be a representation place of self-expression about Farhad's life and story.
- This cultural event aims to read the never-written lines of Bistoun's narrative landscape and setting the scene for the new generation to recite Bistoun's romantic literature heritage with the astounding potential of Projection Mapping technologies.

“The varied and unique uses of Projection Mapping are merely beginning, and the art form as a whole is very young. Artists have been utilizing technology to push the boundaries of their art for millennia, and it is certainly no different in contemporary times. Projection-Mapping is one of many burgeoning art forms and will continue to make impressions around the world, astounding and entertaining entire crowds at a time⁴⁶⁷”

- A mixture of various technologies and styles can be utilized in this competition, including video-projection, performative art, light and sound installations, mixed and augmented reality, mapping, and computer-generated imagery.

- Artists by utilizing the mixed-media presentation will delight audiences by projection elements that break the logic and provide an immersive three-dimensional experience on the long screen of Farhad Tarash and Bisotun mountain.
- By inviting Video Mapping and Spatial Augmented Reality, artists, worldwide the Media hybridization of the sound, light, and space will showcase to the public.
 - Farhad Tarash international Projection-Mapping competitions held on for one weeks during May.

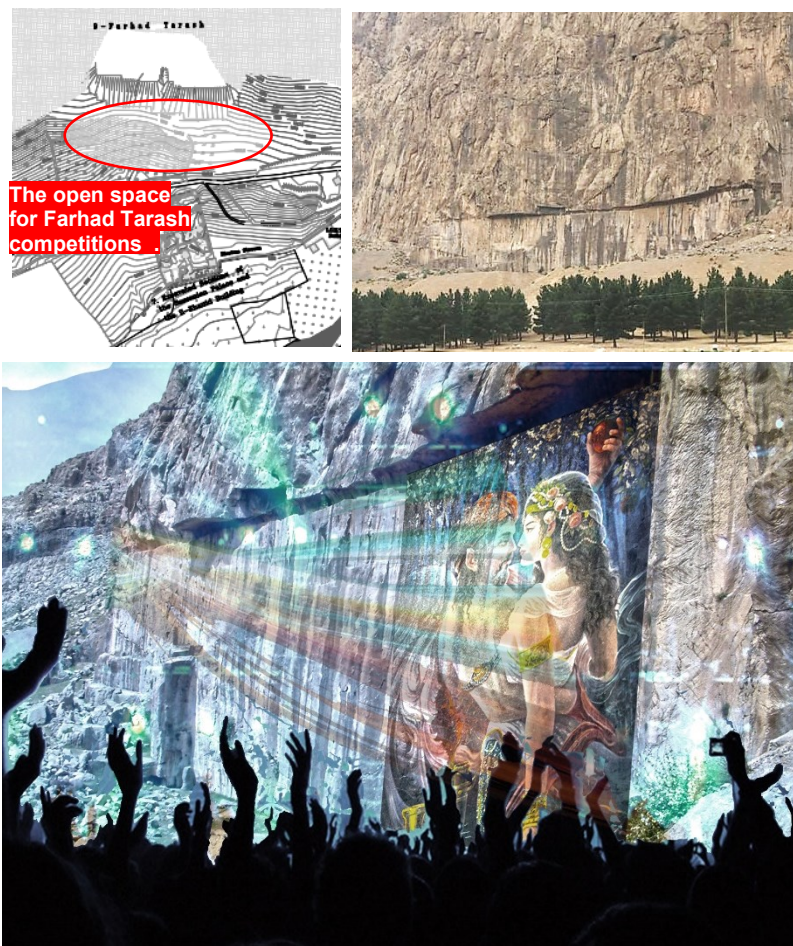


Figure 46: Conceptual Snapshot of Farhad Tarash international Projection-Mapping competitions, Source: Author, 2020, Source of painting: Hojjat Shakiba

BAMFAR Bisotun Cultural Landscape Mobile Application

Due to engage and guide the visitor through a smart cultural experience, the BAMFAR mobile application should be designed.

The application has On-site and Off-site service options that are turning data into visitor demands. Off-site services aim to provoke the potential visitor coming to the Bisotun heritage site. Considering this aim, the majority of information about landmarks and natural features is only accessible in On-site sectors of application.

- **On-site services:** By designing a spectrum of multimedia contents that involves: images, videos, texts, and audios, the multi-disciplinary knowledge about Bisotun NCL can be available to the end-users.
- The App and the mobile device will be sensitive to the smart node (acupuncture points), by scanning the scan the QR code, the surrounding area via Bluetooth Low Energy capabilities is made. These Smart points spread up in the landscape as physical items, transmitting the multimedia content. For example, image contents displaying the previous images of Khosrow II bridge before reconstruction, or an audio content that presents the original part of the Darius I inscription in a Babylonian language to reawaken visitor's curiosity towards the original inscription.
- **Off-site services:**
- The annual timetable of festivals and rituals in Bisotun. Displaying the cultural events list and a summary about the program of events is available, and the user can book them online.

- Educational contents: Ancient language courses: Old Persian language courses and, research resources about Bisotun multidisciplinary studies are accessible in the text formats.
- The Image gallery of the archeological findings, (cultural materials) from the Bisotun site excavations presented in world museums, is open access in this app.
- **Designing the BAMFAR Card for interactive visiting the Bisotun CL:**

BAMFAR Card is a pass card that makes the chance for visitors pass through the entire cultural and natural landscape heritage of the Bisotun National Park. Nature, Art, Archeology, and History in Bisotun National Park is accessible with BAMFAR Card. The visitor should register with the required personal information. More safeguarding and monitoring measurements and static surveying the feedbacks for future modification in policies and services is possible based on data collecting from these cards.

Via the personal ID number of Card, visitors can upload photos and send the feedback about the park different sectors, the list of accommodations, cultural events, and local market products will be available for booking and ordering.

Getting more feedback cause to make effective revisions in managing the site in the future.

BAMFAR APP.

BAMFAR BISOTUN CULTURAL LANDSCAPE MOBILE APPLICATION

DESCRIPTION

The application has On-site and Off-site service options that are turning data into visitor demands. Off-site services aim to provoke the potential visitor coming to the Bisotun heritage site. Considering this aim, the majority of information about landmarks and natural features is only accessible in On-site sectors of application

The BAMFAR App offsite and onsite services, Source :Author 2020



Figure 47: BAMFAR BISOTUN CULTURAL LANDSCAPE MOBILE APPLICATION, Source: Author, 2020

Festival Type	Period Date
The annual international festival of Bisotun rock climbing	April 14 th to 28 th
The annual water sports festival (canoeing, kayaking, rowing, stand up paddling and windsurfing)	August
Festival of Nowruz	March 20 th to April 3 rd
Festival of Sadeh	January 29 th
Great Darius festival	October 2 nd
Royal Road (Silk Road) Carnival	May 3 rd
Festival of Mehregan	October 2 nd
The annual festival of Zoorkhanei rituals	March 20 th to April 3 rd
The annual women Chogan (Polo) tournament	March 20 th to April 3 rd
Espandegan (Love, Friendship, and Earth) Carnival	February 24 th
Farhad Tarash International Projection-Mapping Competitions	May 7 th to 14 th

Table 14: The proposed Festival annual schedule, Source: Author, 2020

Conclusion

The meaning of "Innovation is more than technology. Innovation policy based on a definition of innovation that acknowledges and values all forms of new knowledge – technological, but also business model, financing, governance, regulatory and social – which help generate value for the economy and society and drive systemic transformation⁴⁶⁸." In this chapter, the critical effort was determining the innovative policies in the multi-criteria revitalization plan of Bisotun NCL.

The verification of assessment of threats that damage the authenticity and integrity of cultural heritage is the priority step for demonstrating the most effective strategy for protection, rediscovery, and valorization of the features of Bisotun NCL. The research process which depicted in two last chapters (4 and 5) was based on these steps: "Anamnesis, diagnosis, therapy, and controls, corresponding respectively to the searches for significant data and information, the individuation of the causes of damage and decay, choice of the remedial measures⁴⁶⁹".

In chapter 4, by defining the acupunctural points determined as mountain-plain-river in the natural landscape and BCL1-18 in the cultural landscape, the obstacles and barriers in socio-economic people flow and ecological moving in landscape channels analyzed. Based on these results, in chapter 5, the minor interventions planned as therapy techniques to enhance synergy between focal points. The legislative framework and finding relevant stakeholders in consultation with governmental organizations for implementation measures defined and respectively stakeholders' role in making this recommendation to occur in reality proposed. The design solutions developed in the future conceptual design of the site.

Based on the background studies, the authentic design solution in Bisotun NCL, including the protection and reconstruction of tangible properties according to its original design proposed association with revitalizing and recalling the intangible origins like legends, memories, and traditional rituals.

Finally, the bridge between two axes of this research built in this chapter, and the mutual interconnection between theoretical strategies and fieldwork case study clarified. Twelve practical revitalization principles revealed in 17 action plans in this chapter. In the next chapter, the remarkable conclusion and synthesizing the results and values of this thesis will be discussed

6 CHAPTER 6: CONCLUSION

6.1 The research developing process

Each chapter in this research postulated as a piece of the puzzle. An explicit portrait of this thesis is conceivable after slotting all pieces together. In the following description, I tried to concisely discuss how the content of this research merging and carving out a gap in the literature and meeting the findings. This chapter concentrates on recapping the aims, results, and research methods. The following diagram shows the road map of research and relation among the chapter contents in the simplified model. The research developing process passed the following episodes:

- 1 The overall reading about the case study.
- 2 Broadly studying around cultural landscape meaning, concepts, and ongoing interpretations.
- 3 Defining the particular category for the case study among the variety of branches in CL.
- 4 Turning back to the case study analyzing and determining three different zones for better classification, the study results.
- 5 Research about proper strategy and tool for recovery the case study
- 6 Turning back to the case study and implementing the strategy and applying tools to revitalize three studied zones.

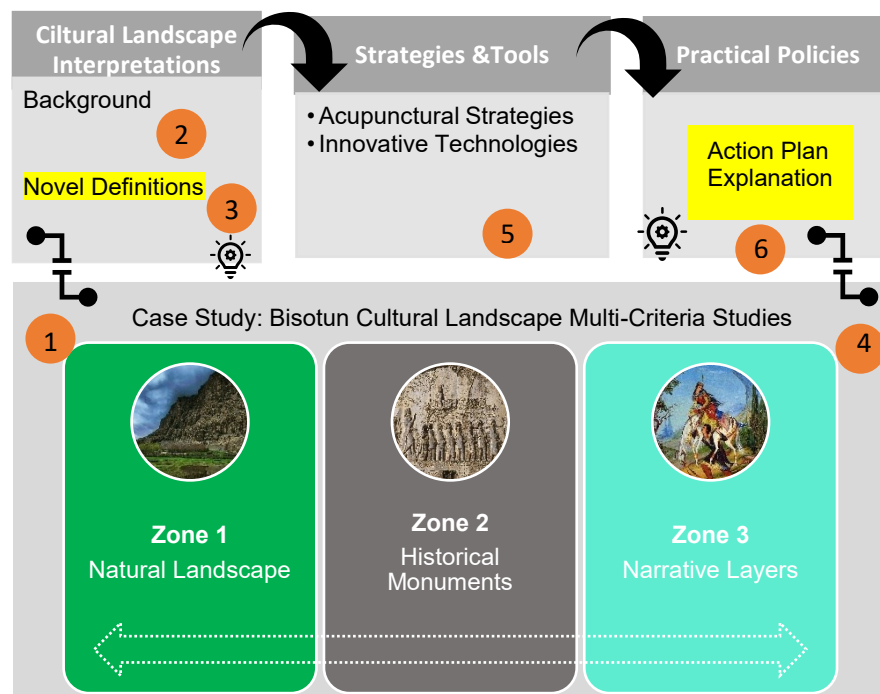






Diagram 23: the road map of research and relation among the chapter contents in the simplified model, Source: Author, 2020

The finding remarks classified into two groups:

 1) The theoretical findings: a new definition of the narrative cultural landscape and defining the Persian cultural interpretation about the epic and romantic cultural landscape.

 2) The practical outcomes: the comprehensive explanation about the concrete actions needed in the recovery of the multi-criteria aspects of the case study.

 Surveying, observing, reading, and continues thinking about the case study in this research was like a river stream that flowed from initiation to the ultimate step; and conducted the new concepts, new approaches, and new therapies for mitigation its threats and revitalized its tangible and intangible values.

 This methodology and research experience can be applied in the comparative other case studies, and due to the different characteristics and language of each landscape, the results will be unique as well.

The synthesized conclusion of the analytical-theoretical and practical phases of this research has been illustrated in the following drawing. The drawing shows why the definition of the Farhang term was the first step in the theoretical part and how this concept grows and defines the Bisotun NCL. The connection between case study analyzing and applying the proper strategies for revitalization has been depicted graphically as well.

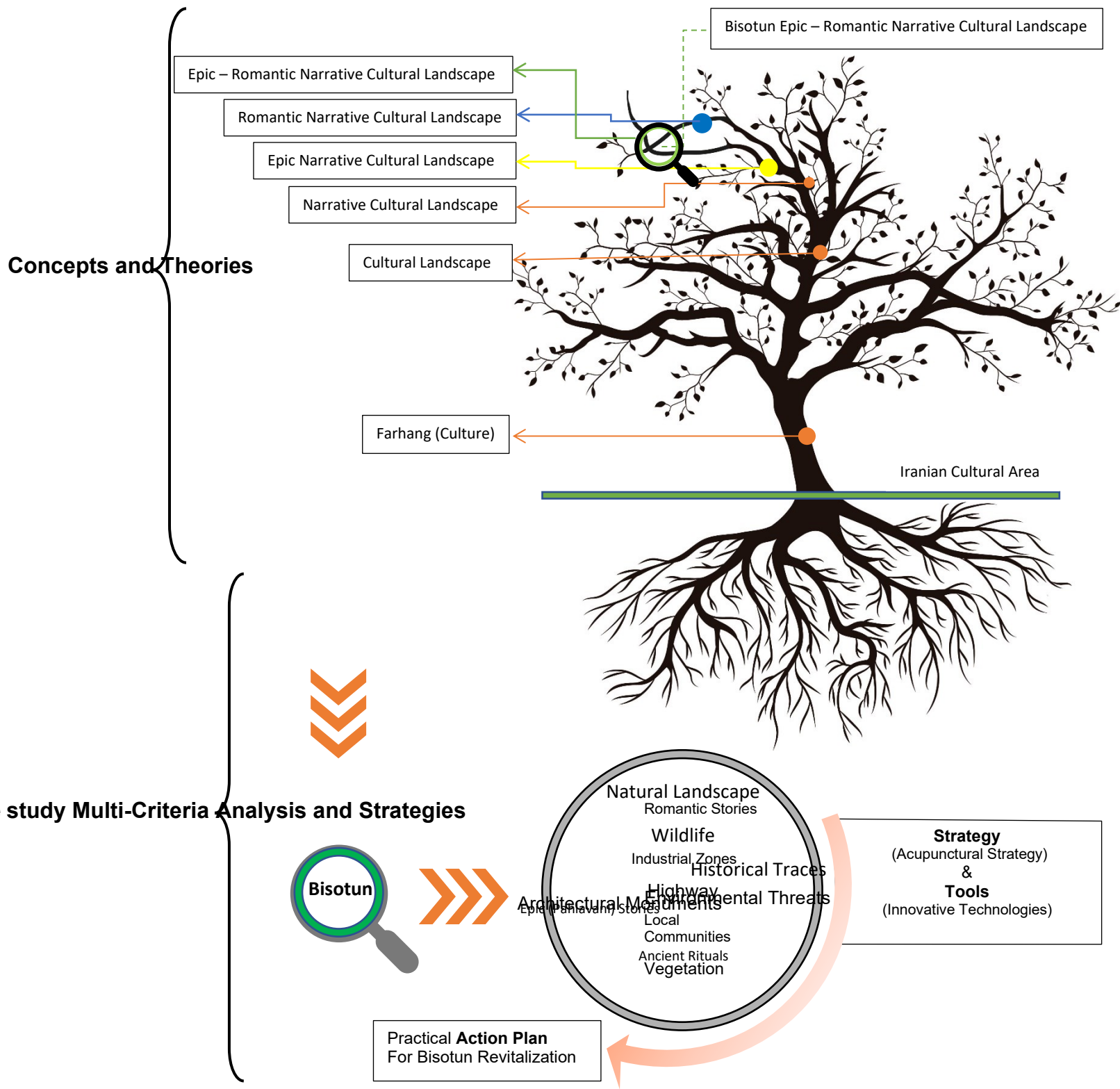


Diagram 24: The conceptual structure of development, discussions, and results of in this research, Author, 2020

6.2 Research Values

1. Extracting the core concepts of 'culture' meaning crossing Iranian civilization studies due to creating a new approach in cultural landscapes, operative in dealing with present and future challenges. This level is touched upon from the resultant of viewpoints presented in background studies about the concept of cultural landscape term. Diversifying ways of looking at the 'culture' term have been proffered. This variation in meaning provides a scope of the definitions for culture-relevant terms, which is, the less substantive case for the word Cultural Landscape. All discussions around the definition of the 'culture' are derived from western dialectics. After translating 'culture' to the other languages without similar Latin roots, the meaning of this term is, to some extent, will be modified since the case study of this research is the Bisotun CL in the cultural domain of Iranian civilization. I have explored the culture term from the prelude of this refinement because it contains the keywords for defining the CL, which derive from its original setting.

2. Integrated revitalization approaches, both locally and internationally. Given the complexity in CL studies' multidisciplinary context, any discipline and layer of CL can be a separate topic in the variety of research dissertations. However, in this thesis, the stepping stone is merging a diversity of disciplines under one umbrella. The integrated revitalization approach was the central concept from the first step that this research endeavored to preserve this holistic, interconnected approach in the theme and paradigm of this research structure up to the end.

3. Meanwhile, many of the threats to cultural landscapes worldwide cannot solve in regional territories because of their cross-border impact: Climate change, natural disasters, deliberate destruction by extremist groups, looting and trafficking⁴⁷⁰ of tangible heritage, ideological radicalism view to intangible heritage, false implementation and manipulation of the narratives and historical memories, political rifts and religious ignorance, ambitious developments, and industrial projects. In that respect are part of global issues that affect cultural landscape studies. These Profound challenges need worldwide plans and unity by sharing experiences and mutual backup.

3. Literature is examined in this research as a concept that links the tangible and intangible layers of the CL. Literature considered as a "gold thread" connecting the hybrid layers and continuing CL dynamic values to the future; can provide the solution clues in the integrated revitalization of NCL. As respects, the authentic intangible features of the Bisotun heritage site, the "gold thread" is narrative literature hidden in this site, which by creative reading the interlined and overwritten of this literature, the new subcategory as Epic-Romantic narrative CL manifested in this research.

4. Applying an Acupunctural strategy in the CL cybernetic system as a particular diffusion of this ancient therapy concept in the CL revitalization strategy field. Among the variety of strategies applied in CL revitalization, the acupunctural strategy has been aligned to this network approach because of the concept of minor intervention and maximum efficiency. This strategy has been scrutinized, extended, and implicated practically in the case study of this research.

5. The mutual correlation of theoretical and practical spheres in CL studies. The remarkable point of this study is that the theoretical structure of this thesis extracted from in-depth studies in the landscape layers of the case study. Squarely, the Bisotun NCL revitalization theory has not been thrown in from the outside. However, it flourished from inside the fieldwork studies and evolved to limit the particular theoretical-analytical framework for this dissertation.

6.3 Phases of Research

The research structure formed along four theoretical-analytical axes and miscellany of good practices and a local case study. Analytical axes include:

1) A novel approach to the concept of CL: Discussing the ambiguity point in generalized interpretation and configuration of Culture.

2) Taxonomy of Narrative Cultural landscape: (Epic and Romance narratives).

Two highlighted genres coexist in this site extracted from (i) Iranian Epic (Pahlavani) narrations characteristics, focusing on the Darius the Great inscription (520 B.C.) in Bisotun NCL, and (ii)

Iranian Romantic (Asheghane) narrations characteristics, focusing on Khosrow II heritages (600 A.D.) in Bisotun NCL. The in-depth study about the envisages of these two genres in Bisotun cause to defining Epic-Romantic Narrative Cultural Landscape principles.

3) Acupunctural revitalization principles in the CL cybernetic system: Due to obtaining the proper strategy in the CL revitalization scenario, the Cybernetic system theory extended its knowledge base in cultural landscape system analysis and acupunctural strategy has been sized up to define the principles of CL revitalization.

4) Cultural landscape and innovative technology: Inchoates with a wide-ranging discussion in the subject background and go forward in introducing four techs: 1) Augmented Reality (A.R.), 2) Virtual Reality (V.R.), 3) Internet of Things (IoT) and 4) Serious Games. These four technologies highlighted because of applicability to the recovery of the narrative layers in Bisotun NCL.

6.4 Final Notes

- According to several UNESCO, ICOMOS, and WHC conventions, values of cultural heritage should be protected and valorized. For instance, in ICOMOS 2017 convention asserted that:

"The primary factors in the recovery process is the identification of impacts on the inheritance, expressed through the attributes of Outstanding Universal Value', both tangible and intangible, the implementation of measures to protect and stabilize surviving attributes, and the development of recovery and reconstruction programs directed towards the preservation and transmission of attributes to the future."⁴⁷¹

Notwithstanding, most of these guidelines and international legislations disregarded in several cultural heritage worldwide. We witness deliberately destroying both aspects of heritages in numerous cases around the world permanently.⁴⁷² The recommended solution by this research was raising local communities' awareness to protect the cultural heritage firstly in mind and secondly in practical concrete steps.

- In this dissertation, the cultural landscape was not merely multiple architectural and historical works in a natural context, but also the social and cultural paradigms and communal values that have led to the formation of this mutual interaction are considered. Efforts to preserve this integrity between interconnected values in analysis and in writing the thesis was one of the complexities of this research.
- The identification challenges that Bisotun and numerous other Iranian cultural landscapes encounter today in rereading and reviving their cultural values are the first obstacle to studying and refreshing them. What Mahmoud Kavar⁴⁷³ said in his recent interview after publishing his book " Cultural Regeneration in Iran " was a thought-provoking point about today situation, he stated that Iran today is facing a difficult historical dilemma, in one-way which built by young researchers working and hoping for a cultural Renaissance and recovery the cultural roots and on the other way, the regression of the darkness of wisdom in radicalism and its irreparable destruction.

It is hoped that this research will provide entry points to new questions and future research in this field, and its multilateral solutions and analyses inspire for tangible follow-up the Bisotun epic romantic narrative cultural landscape revitalization, which is an abstraction of Iranian time-honored history and civilization.

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About the article: A version of this article appears in print on Jan. 6, 2020, Section A, Page 8 of the New York edition with the headline: President Repeats Threat to Target Cultural Sites

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معرفی اجمالی حریم، ضوابط و طرح ساماندهی و احیاء محوطه تاریخی، طبیعی و فرهنگی بیستون

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Genius loci, or the spirit of the place, is that quality or characteristic which makes one location or landscape different from any other, and that is unique and individual to it. The concept is somewhat abstract and intangible and tends to be more commonly understood on an emotional and subconscious level. It is, however, a most important attribute in a place and may be fragile and vulnerable when changes occur in or around the particular location. Several people have written about the subject, for example C. Norberg Schulz (1980) in his book *Genius Loci...*. The term was originally used by the Romans, who believed that each place had a spirit—sacred grottoes, groves, waterfalls or lakes, for example.

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CHAPTER 3

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Source: the brief online version of *Shennong Bencaojing (Classic of Herbal Medicine, Shen Nong's Cannon of Herbs, or Pharmacopeia of the Heavenly Husbandman)* book.online access: http://www.shen-nong.com/eng/treatment/acupuncture_collaterals.html access date:2/8/2019

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*JOSEPH SANTA-CROCE was lecturer at the Faculty of Letters of Teheran University from 1965 to 1969, and is the author of many studies on present-day Iran. He believes that the Shahname is not limited in epic literature and the great moral truths which he expresses with the same studied perfection as the epic or romantic episodes. he deduced: Yet Iran's destiny seems to be closely linked with the Book of Kings. With the passing of the centuries, as we have seen, new dynasties arise, restoring to the country her independence and language and enriching civilization as a whole. In my view it is neither rash nor unrealistic to conclude that these successive "renewals" drew inspiration and vigour from the epic work of Ferdowsi which highlights the great regal figures of Iranian history.

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Description of this moment in Persian in Nezami,s poem:

فلک را آب در چشم آمد از دور پتو قصد چشمه کرد آن چشمه نور
 نفیر از شعری گردون برآورد سبیل از شعر شکرگون برآورد
 شد اندر آب و آتش در جهان زد پرندهی آسمان گون بر میان زد

⁴¹⁷ “Taken together, the poetry, the miniatures, and the data from examination of the site suggest that Farhâd was the architect of the Sassanids works at Bisotun. The chiselled rock face must be the wall of his “passage through the mountain for twenty horsemen. ”

UNESCO, World Heritage Convention (2006), World Heritage Scanned Nomination, BISOTUN THE SITE AND THE ROCK RELIEF OF DARIUS THE GREAT, Tehran
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⁴¹⁸ The last muic work inspired by Khosrow- Shirin story is “Tar o Pod” album by Hamid Motebassem music composer which realeased in 2017.He revitalized and recalled the Sassanid music in this magnificent album.

TAR & POOD (BASED ON THE POEMS OF Nizami Ganjavi) Composed by Hamid Motebassem
 Vocal: Mahdieh Mohammad-khani Ensemble Hamid Motebassem
 Download from: <https://www.youtube.com/watch?v=ShgCEwpTz2c>

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⁴²⁰ Bijan and Manijeh is a love story in Ferdowsi's Shahnameh. Bijan was the son of Giv, a famous Iranian knight during the reign of Kay Khosrow, the Shah of Iran, and Banu Goshasp, the heroine daughter of Rostam. Bijan falls in love with Manijeh, the daughter of Afrasiab, the king of Turan and the greatest enemy of Iran,(https://en.wikipedia.org/wiki/Bijan_and_Manijeh)

⁴²¹ Zāl (Persian: زال [zɑ:l]), alternatively spelled as Zaal,[citation needed] is a legendary Iranian king from Sistan,and is recognized as one of the greatest warriors of the Shahnameh epic. He is the father of the equally legendary Iranian hero, Rostam,(Shahbazi, A. S.; Cristoforetti, Simone (2009). "ZĀL". *Encyclopaedia Iranica*.)

⁴²² Farangis (Persian: فَرَنگِیس) is a female character in the Persian epic Shahnameh. She is the eldest daughter of Afrasiab, king of Turan. She is also the second and favourite wife of Siyāvash, the saintlike prince of Iran (Siyāvash's first wife was Juraira daughter of Piran Viseh) and mother of a legendary hero and later Shah of Iran, Kai Khosrow. Although a Turanian by birth, Farangis shows loyalty to her husband's kingdom and dynasty. She accompanies her son when he leaves Turan in the hopes of gathering an Iranian army to avenge Siyāvash.(Khaleghi-Motlagh, Djadal. "FARANGĪS". *Encyclopædia Iranica*. Retrieved 27 February 2016.)

⁴²³ Tahmina (Persian: تَهْمینه Tahmīna Persian pronunciation: [tæh 'mi:ne], Tajik: Тахмина Тахмина, various other transcriptions like Tahmeena, Tehmina, Tahmineh, Takhmina) is a female character in the story Rostam and Sohrab, part of the 10th-century Persian epic of Shahnameh. Her name is mentioned as the wife of Rostam and as the daughter of Samanganshah, the sovereign of Samangan.(<https://en.wikipedia.org/wiki/Tahmina>)

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⁴²⁹ ICOMOS, 2019, report for the World Heritage Committee, Evaluations of Nominations of Cultural and Mixed Properties, 43rd ordinary session, Baku, Azerbaijan, WHC-19/43.COM/INF.8B1

⁴³⁰ P. P. Soucek, "Farhad and Tāq-i Būstān: The Growth of a Legend," in *Studies in Art and Literature of the Near East in Honor of Richard Ettinghausen*, ed. P. J. Chelkowski, New York, 1974, pp. 27-52.

⁴³¹ the poem *Širin o Kosrow* by [Amir Kosrow Dehlavi](#), and she has been omitted in [Hātefi](#)'s homonymous poem (see below). "imitations" of Neẓāmi's poems: 'Aṭṭār's *Kosrow-nāma* (or *Kosrow o Gol*); Kvāju of Kermān's *Gol o Nouruz*, composed in 742/1341; and *Farhād-nāma* by 'Āref of Ardabil or 'Ārefi (13th-14th cent.), together with other poems that relate the same story, in spite of a change in the name of the protagonist.

⁴³² 12th General Assembly of the World Heritage Convention (UNESCO, 1999), see *document WHC-99/CONF.206/7*, p. 4. For further comments on this points, also see 22nd session of the World Heritage Committee (Kyoto, 1998), *document WHC-98/CONF.203/18*, p. 10

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⁴³³ The report from an expert meeting (Reports of the World Heritage Centre and the Advisory Bodies, WHC-10/34-COM/5D) that was submitted for the consideration of the World Heritage Committee during its 34th session in 2010 offered a description of the ideal relationship between heritage protection and sustainable development. It stated:

“The protection of heritage, as an attribute of natural and cultural diversity, plays a fundamental role in fostering strong communities, supporting the physical and spiritual well-being of its individuals and promoting mutual understanding and peace. Through a variety of goods and services and as a storehouse of knowledge, moreover, a well-protected World Heritage property very often contributes directly to livelihoods and sustainable development, intended as development where each of the three pillars, the environmental, the economic and the social, including intra and intergenerational equity, is given adequate consideration.”

⁴³⁴ UNESCO Office Venice and Regional Bureau for Science and Culture in Europe (Italy), 2020, The role of visitor centres in UNESCO designated sites, 6-8 October 2019, Bamberg, Germany: report of the second regional workshop for Europe, Document code: VNI/2020/PI/H/3

⁴³⁵ The USAID Land and Urban Office, Cross-Sector Impact, <https://www.land-links.org/cross-sector-impact/>. Retrieved in :3/2/2020

⁴³⁶ World Heritage Centre and the Advisory Bodies,

UNESCO Office Venice and Regional Bureau for Science and Culture in Europe (Italy), 2020
Budapest Declaration, 2002

UNESCO, 2009, Guidelines for Master Conservation Planning

The Council of Europe EPA, 2016,

QUÉBEC DECLARATION, 2008

ICOMOS GUIDANCE, POST TRAUMA RECOVERY– 2017

IUCN WCPA Best Practice Guidance on Recognizing Protected Areas, 2008

⁴³⁷ **Conservation of natural landscape in the Bisotun region, according to Zarathustra environmental ethics:**

According to environmental pollution challenges in Bisotun site that threaten the historical layers in this region, it is recommended to apply natural landscape conservation policies with emphasis on Zarathustra environmental ethics and nature respecting doctrine. In this way, the intangible values of heritage will be revitalized in the practical action, and on the other hand, its natural context will be protected. Zoroastrians believe that everything he created is pure and should be treated with love and respect. This includes the natural environment, so Zoroastrians traditionally do not pollute the rivers, land, or atmosphere. This has caused some to call Zoroastrianism 'the first ecological religion.'

⁴³⁸ Budapest Declaration (2002), The "fifth C" (2007).

⁴³⁹ Tra natura ed artificio Michele Lepore, ISSN online: 2239-0243 | © 2017 Firenze University Press | <http://www.fupress.com/techne>

⁴⁴⁰ Cyril F. Kormos, Tim Badman, Tilman Jaeger, Bastian Bertzky, Remco van Merm, Elena Osipova, Yichuan

Shi, Peter Bille Larsen (2017). *World Heritage, Wilderness and Large Landscapes and Seascapes*. Gland,

Switzerland: IUCN. viii + 70pp.

⁴⁴¹ Reconomics Plus, builds on Reconomics (2014) and the accompanying evidence document (Comley & Mackintosh, 2014).

⁴⁴² Ecotourism.

Ecotourism is a popular way to enjoy water resources while still conserving the integrity of nature. Ecotourism is tourism directed toward exotic, often threatened, natural environments, especially in order to support conservation efforts and to observe wildlife. The fastest growing segment of the world's tourism business, ecotourism is expanding at a rate of 30 percent a year worldwide.

Read more: <http://www.waterencyclopedia.com/St-Ts/Tourism.html#ixzz6HbuxPqiE>

⁴⁴³ 'Cycle of Success' means sustainable economy for local community with protecting the natural environment.

I borrowed this phrase from the followed reference:

UNESCO ,2009, Guidelines for Master Conservation Planning of Archaeological and Cultural Heritage Sites and UNESCO World Heritage, Global Heritage Fund Conservation Planning

⁴⁴⁴ Regarding the rehabilitation plan of Gamasyab river life, the water sport should be restricted and only during the August annual festival the water sport is allowed. During the spawning season which is from the beginning of March to June of each year any recreational activity should be forbidden.

Although today there is not any rehabilitation plan for saving the life of this river ecosystem all of these recommendations proposed under BAMFAR revitalization plan in this thesis.

⁴⁴⁵ According to Council of Europe EPA, supporting the local products and creating the local brands is an essential action in regenerating the cultural heritages economically.

For more studies see:

The Council of Europe EPA, 2016, Edited by Siguencia,L.Gomez-Ullate,M., Kamara,A. Cultural Management and Tourism in European Cultural Routes:from theory to practice ,Publishing House of the Research and Innovation in Education Institute, Czestochowa, Poland, ISBN: 978-83-941533-2-8

⁴⁴⁶ I borrowed the “Joint-management activity” phrase explained in following IUCN reference: Guidelines for Applying Protected Area Management Categories, edited by Nigel Dudley, Including IUCN WCPA Best Practice Guidance on Recognizing Protected Areas and Assigning Management Categories and Governance

⁴⁴⁷ EUROPEAN COMMISSION 2013-2015 ,Directorate-General for Communications Networks, Content and Technology Cultural heritage Digitisation, online accessibility and digital preservation REPORT on the Implementation of Commission Recommendation 2011/711/EU

⁴⁴⁸ The Council of Europe EPA, 2016

⁴⁴⁹ Razi University is a public university based in Kermanshah, Iran. It is a center of research in many STEM fields such as CFD, membrane research, nano-science, and nanotechnology as well as humanities and social sciences. <https://razi.ac.ir/>

⁴⁵⁰Saviano,M. 2018 .Managing protected areas as cultural landscapes: The case of the Alta Murgia National Park in Italy. Land Use Policy,Volume 76, July 2018, Pages 290-299.<https://doi.org/10.1016/j.landusepol.2018.03.052>

⁴⁵¹ Tondossama, A. 2019,Conservation efforts crowned with success at Comoé National Park, World heritage, No. 90, pages 42-47.<https://unesdoc.unesco.org/ark:/48223/pf0000366697>

⁴⁵² As a result of the development of the sciences of conservation of cultural heritage, the new concept of Cultural Routes shows the evolution of ideas concerning the vision of cultural properties, as well as the growing importance of values related to their setting and territorial scale, and reveals the macrostructure of heritage on different levels. This concept introduces a model for a new ethics of conservation that considers these values as a common heritage that goes beyond national borders and which requires joint efforts.”

“Even if in certain sections the material traces of a Cultural Route are not clearly preserved, its existence in these areas could be shown through historiography, intangible elements and immaterial sources of information that prove their real meaning as integral components of that Route and evidence its authenticity.”

ICOMOS – 16e AG / 16th GA – Québec 2008 – Itinéraires culturels / Cultural Routes, Ratified by the 16th General Assembly of ICOMOS, Québec (Canada), on 4 October 2008

⁴⁵³ Respecting the vulnerable surfaces prehistoric caves in which the presence of visitors can damage to unexcavated layers, the no go zones should be determined.

⁴⁵⁴ Giovanni Carbonara, An Italian contribution to architectural restoration,2012 Higher Education Press Limited Company. Production and hosting by Elsevier B.V. Peer-review under the responsibility of Southeast University

⁴⁵⁵ Referring to the following articles the features of ETFE material mentioned above.

- Richardson,A. ETFE: Why this Building Material is Gaining Popularity <http://www.architen.com/articles/etfe-the-new-fabric-roof/>
- Geleff, J. Glow Up: 8 Projects Capturing the Power of ETFE Plastic <https://architizer.com/blog/inspiration/collections/etfe/>

⁴⁵⁶ Boyce, Mary, ENCYCLOPÆDIA IRANICA FOUNDATION Originally Published: December 15, 1999 -Last Updated: January 26, 2012, Vol. IX, Fasc. 5, pp. 543-546

⁴⁵⁷ The Silk Road was mentioned in 1877 by Baron Ferdinand Von Richthofen. The Silk Road is the imperfect name for this cultural road, which is only cover the trading dimension of this historic route. More studies is needed about the purpose and characteristics of this road in Bisotun heritage site.

⁴⁵⁸ Salmon, C. , 2007, Storytelling: La machine à Fabriquer des Histoires et à Formater les Esprits; La Découverte: Paris, France; ISBN 978-2707149558.

⁴⁵⁹ UNESCO,2009 ,Pahlevani and Zoorkhanei rituals, Inscribed in 2010 (5.COM) on the Representative List of the Intangible Cultural Heritage of

Humanity<https://ich.unesco.org/en/RL/pahlevani-and-zoorkhanei-rituals-00378>

⁴⁶⁰ Kheirdoust ,S. 2018 ,Pahlevani and Zoorkhaneh Rituals, TasteIran, <https://www.tasteiran.net/stories/9/pahlevani-and-zoorkhaneh>

⁴⁶¹ Throughout history, the wrestling match between Pahlavans (athletes) has taken place during New Year's Eve (Nourouz) festivals.

One of the most famous of these ceremonies held in Nowruz 1875, when the greatest hero of contemporary history in Kermanshah won the title of Champion (Pahlavan) after the defeat of rivals in wrestling contests. But because of the conspiracy of the Qajar reign and one of his rivals who hit him brutally, he lost his mind and never after that didn't attend to any race. The memory and name of Pahlavan Golzar Kermanshahi are very important for the people of this city, One who was known for his philanthropy, honesty, and strength, and if this festival holds at the same time as the Nowruz celebrations, it will keep the memory of his last competition alive.

The latest book about his life is:

Kamri Zanganeh, R., 2006, Gordnameh: The Hossein Golzar and the Transition to the 297 Pahlavan of Kermanshah Bahmanara, Kermanshah

Title in Persian: *گُرد نامه: پهلوان حسین گلزار و گذری به ۲۹۷ دلاور کرمانشاهی*

⁴⁶²Nezami (1141–1209) writes in Sharafnameh that Dara (Darius III of the Achaemenid) sends to the Alexander the Chogans mallets and ball to stating that: you should first practice enough in Chogan and it is so early for you to think about invading Persia.

Verses in Persian:

Nezāmī Ganjavī, *Eskandar-nāma*, ed. Ḥ. Waḥīd Dastgerdī, 2nd ed., 7 vols., Tehran, 1956

چو آورده پیش سکندر نهاد

به پیغام دارا زبان برگشاد

ز چوگان و گوی اندر آمد نخست

که طفلی تو، بازی به این کن درست

و گر آرزوی نبرد آیدت

ز بیهودگی دل به درد آیدت

⁴⁶³ Heitner, D. 2015, "The Economics Of Polo, The Sport Of Kings". Forbes.

<https://www.forbes.com/sites/darrenheitner/2015/05/17/the-economics-of-polo-the-sport-of-kings>

⁴⁶⁴ چو شیر ماده آن هفتاد دختر

سوی شیرین شدند آشوب در سر

به مردی هر یکی اسفندیاری

به تیر انداختن رستم سواری

به چوگان خود چنان چالاک بودند

که گوی از چنبر گردون ربوند

چو خسرو دید که آن مرغان دمساز

چمن را فاختند و صید را باز

به شیرین گفت هین تا رخس تازیم

بر این پهنه زمانی گوی بازیم

⁴⁶⁵ M. Boyce, "Textual sources for the study of Zoroastrianism", University of Chicago Press, 1990. pp. 19–20

⁴⁶⁶ Biruni, A, (Originally published: 1000 AD),” The Remaining Signs of Past Centuries”, Translate: Dana Seresht, A.,2008 , Amirkabir, Tehran

Title in Arabic: (أثار الباقیه عن القرون الخالیه)

⁴⁶⁷ BAZAN, C. 2018, Projection Mapping – The Next Step in Public Art, MUSART BOUTIQUE
<https://musartboutique.com/projection-mapping-next-step-public-art/>

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⁴⁶⁸ EUROPEAN COMMISSION, 2015, Getting cultural heritage to work for Europe, Report of the Horizon 2020 Expert Group on Cultural Heritage Directorate-General for Research and Innovation, Luxembourg: Publications Office of the European Union, 2015. ISBN 978-92-79-46046-3. Doi:10.2777/745666

⁴⁶⁹ QUÉBEC DECLARATION ON THE PRESERVATION OF THE SPIRIT OF PLACE Adopted at Québec, Canada, October 4th, 2008)

⁴⁷⁰ Vecco, Marilena- Srakar, Andrej, cultural racketeering and the systematic theft of art and antiquities

Cultural heritage in times of armed conflicts in the Middle East: Much more than material damage? Volume 33, Pages 1-302 (September–October 2018)

The bridging role has, however, brought vicissitudes.

⁴⁷¹ ICOMOS GUIDANCE, 2017 "POST TRAUMA RECOVERY AND RECONSTRUCTION for WORLD HERITAGE CULTURAL PROPERTIES, *World Heritage Committee decision in 2016*. Paris – 2017

⁴⁷² Markedly during the recent decades in Iran's cultural domain, which crosses the nowadays political borders, the collapsing heritage sites and deliberate cultural wipe off had irreversible consequences for the nations of the region. For instance, the Hatra ancient city in Iraq, which was preserving the Iranian architectural methods in the Parthian era and also the historical findings from this site in the Mosul Museum destroyed by radicalism vandalism in 2015, and unfortunately part of the civilization landmarks in the region disappeared deliberately.

On the other hand, the deliberate damage to the intangible values of cultural heritage can be scrutinized in several cases. Notably, the destruction of the intangible heritage of the great civilizations is as dangerous and destructive as physical expulsion. For illustration, we witness of this deliberate damage in several movies and mass media about Iranian cultural civilization. Utilizing the cinema and mass media in conveying the intangible cultural meanings to the future generation is rewarding, but when film companies employ cinema to humiliate, distort or even invade intangible heritages, it results in destructive drawbacks. Narrative content transmitted through historical or historical fantasy cinematic genres can evoke public awareness and motivation on the preservation of tangible heritage in the future. Alas, the Iranians have not witnessed any decent film product about their ancient civilization heritage, which is the result of the neglect of the cultural authorities inside the country. In the absence of any movie about Iranian history, on the other side, in various media products of major film companies, the civilization and culture of this land have been defamed and degraded. For instance, in the 2007 film *300* ("*300 (2006)*". *Box Office Mojo*. Archived from the original on March 13, 2009. Retrieved Jan. 20, 2020) produced in Legendary Pictures Productions, which narrates the Greco-Persian conflict, the Persians in *300* movies are depicted as decadent, demons, and bigoted nation without culture, feeling or humanity and directly called stupid Persians. Although "The Iranian Academy of the Arts submitted a formal complaint against the film to UNESCO, labeling it an attack on the historical identity of Iran," (*Iran complains to UNESCO*". *BBC*. March 18, 2007. Archived from the original on March 20, 2007. Retrieved Jan. 20, 2020.) the adverse impacts on the mind of millions of worldwide audiences of this awarded film is irrefutable.

It is an essential question of why historical movies are mostly around wars and do not illustrate the cooperation and cultural dialectics between great civilizations? In this case, the cultural connections between Iran and Greece, and after that between Iran and Roman civilization, created notable cultural synergies that emerged in flourishing cultural and architectural testimonies in both lands. The demolished Hatra and Palmira heritage sites where historical evidence of this cross border cultural combination, which both crashed intentionally a few years ago, caused to eliminate the symbol of this artistic, cultural collaboration. The critical concern is that such a distortion trend to the intangible cultural heritage of ancient civilizations like Iran in mass media pave the way for the future destruction of tangible heritage, which the world watched in historical sites of Afghanistan, Iraq, and Syria during the last decades.

⁴⁷³ KAYHAN.LONDON. (2020, February,16). کیهان لندن - گفتگو با محمود کویر درباره باززانی فرهنگی در ایران. Retrieved from <https://www.youtube.com/watch?v=CCMtUESJwII>