

Conserving Fortified Heritage

Conserving Fortified Heritage:

*The Proceedings of the 1st
International Conference
on Fortifications and World
Heritage, New Delhi, 2015*

Edited by

Shikha Jain and Rima Hooja

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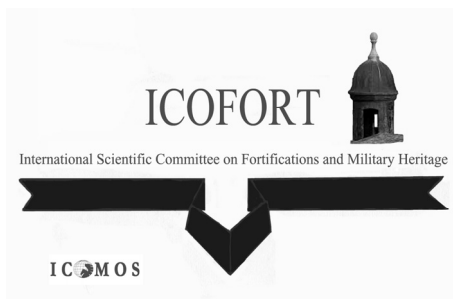


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FOREWORD

A GENERAL OVERVIEW OF ICOFORT AND THE DRAFT CHARTER ON FORTIFICATIONS

MILAGROS FLORES-ROMAN

Introduction

ICOFORT, the ICOMOS International Scientific Committee on Fortifications and Military Heritage, was established by ICOMOS in 2005 with certain objectives in mind. These were:

- To promote knowledge of structures, landscapes and monuments, including their historical, architectural, artistic and scientific values, and to encourage the preservation and maintenance of fortifications, military structures, fortress landscapes and other objects and sites connected with military heritage.
- To carry out specialized studies and promote the application of professional expertise in regard to the preservation problems of historic fortifications and military heritage.
- To actively pursue international cooperation on the identification, protection and preservation of historic fortifications, military structures, military landscapes and sites, as well as other military heritage monuments.
- To be available to help ICOMOS in its role as adviser to UNESCO and the World Heritage Committee on matters related to fortifications and military heritage. And this perhaps is its most important role.

In this capacity, one of ICOFORT's continuing activities is assisting ICOMOS in the evaluation of nominations made each year to the World Heritage list. These are conducted by expert members of ICOFORT through two different kinds of mission - technical evaluation missions and

desk review missions. These missions add to the core evaluation of World Heritage nominations. Both of these missions concentrate and analyze three critical aspects in the consideration of World Heritage nominations: authenticity, integrity and protection and management. While it is not the role of the expert to assess the universal value of the property, what is expected from site mission experts is their professional opinion on the extent to which these monuments and sites conform to the requirements of authenticity, integrity, and protection and management of the nominated property.

Alongside this mandate to support ICOMOS and the UNESCO World Heritage Committee, ICOFORT continues to work on the preparation of a Charter on Fortifications and Military Heritage to address principles, objectives and methods for the conservation, protection, management and interpretation of fortifications and military heritage.

While the purpose of the Charter on Fortifications and Military Heritage is not to diminish the guidelines established by the existing Charters, which continue to be the most relevant guidelines available. These are the Venice Charter (1964) and the Nara Document on Authenticity (1994), as well as other doctrinal documents, for example the Washington Charter for the Conservation of Historic Towns and Urban Areas (1987) and the Cultural Routes Charter (2008).

Challenges

Based on ICOFORT expert members' hands-on experience in the evaluation of nominations to World Heritage, I would like to share with you some thoughts about challenges for the management, protection and interpretation of fortifications and military heritage.

ICOFORT considers the main challenge to the conservation and management of fortifications and military heritage to be continuing to retain the same attributes on which the property's universal value was established, i.e. its integrity, authenticity and an adequate protection and management system.

Integrity and Authenticity (*the measure of wholeness and intactness of its attributes*). It is important to retain intactness of the property's proportions so that attributes remain present and to examine the impact new reuses of the property will have on the integrity and authenticity of

the property. In case of loss of “original fabric” due to the impact of natural elements, there must be a plan to mitigate this threat and ensure the integrity of the site.

Adequate protection and management system (must have adequate legislation, regulatory, institutional and traditional protection and management)

Adequate legal protection is fundamental. It is essential that nomination dossiers contain abundant information about legislation at various administrative levels and its application, as well as the effectiveness of the legal protection in general to the nominated properties.

Management is also an important factor in decision-making by the World Heritage Committee, and States Parties are expected to provide evidence of the existence of management plans when making nominations. “Management” may be interpreted in different ways, according to the nature of the property being evaluated.

Buffer Zones – another important aspect that must be considered related to the boundaries of the proposed World Heritage monument or site and if they make sense in terms of values and of management. The World Heritage Committee is insistent on viable and effective buffer zones around each property on the World Heritage List. These are intended to preserve the settings of monuments and historic centers from being adversely impacted by unsuitable contemporary development. The rationale for the delineation of the buffer must be clear and the limits of the property must be consistent.

Effective Conservation is intrinsic in all aspects of authenticity, protection and management. Nominations should provide comments on the quality and nature of conservation and restoration interventions, reconstructions (where appropriate, and in association with comments on authenticity), maintenance and monitoring programs, the internal and external conservation expertise available, etc.

Tourism Management Plan – The impact of tourism on cultural sites and monuments may sometimes be harmful to the values for which a property might be added to the World Heritage List. It is important to

formulate proper tourism management planning for the anticipated increase in visitor numbers and new demands for the resources.

Disaster Management Policy – it will be useful to comment on this if there is such a plan in place.

Monitoring of Structures – It will be useful to comment on all structures included in any nomination that are identified and inventoried, and their conditions assessed.

Authenticity, integrity, and protection and management are key elements for the evaluation of any World Heritage candidate but to safeguard cultural heritage at all levels, local, national and international understanding and support are necessary.

Experts evaluate conservation efforts designed to understand cultural heritage, its history and meaning, ensure its material safeguard and, if required, its presentation, restoration and enhancement.

Other aspects taken into consideration are legal protection, management of property, management plans for tourism, and buffer zones, but the most important aspect is the conservation of the protected resources.

The conservation of fortifications and military heritage throughout the world remains a great challenge. For many people throughout the world, the heritage of fortifications is a source of communal pride as well as a major link to their history and cultural ancestry. For others, fortifications are complex structures which, in many cases, may have long vanished and whose preservation requires enormous investments, as well as considerable economic and political commitment. Because of these complexities, work is needed to bring about greater awareness of the importance of conserving their integrity and authenticity, and planning for their protection using the best practices of management.

Preservation and restoration need to be analyzed as part of an assessment of fortifications. As part of the identification of preservation techniques, hundreds of samples of mortar, stucco, and plaster are needed to assist in dating the various elements that comprise the fortifications.

The materials used on the fortifications are necessary for understanding the current conditions of the fortifications and for assessing the durability of materials, which are certainly required for considering preservation strategies.

These interventions are often justified at a political level with clichés of urban integration, tourism development and economic sustainability, although in practice they are examples of “touristification” and/or sometimes “beautification”, neither of which respect the authenticity, integrity, or best examples of interpretation and management of the monument.

Objectives of the Charter

The goal of the ICOFORT Draft Charter on Fortifications and Military Heritage is to provide a basis applicable specifically to fortifications and military heritage. Three areas have been identified that are in need of guidelines:

- Theoretical and methodological basis
- Identification of the Values of Fortifications
- Principles for intervention in Fortifications.

Theoretical and methodological basis

Considering that the tangible or intangible entities classified as cultural heritage are always those where we recognize local, regional, national or universal values – and, we must add, in a particular **historical period and geographical and cultural context** – these should be, consequently, the points of departure and arrival for any and all preservation strategies.

Consequently, to define the principles which guide us on preservation strategies, we must try, first, **to define the main cultural values of fortifications**, which are not necessarily applicable to any and all fortifications and always have many exceptions.

On the other hand, considering the existence of many ICOMOS charters on the conservation of architectural heritage and its promotion as

a cultural and tourist attraction, this fact advises us to try, mainly, to address their specific application to fortifications. The following are considered key reference documents to inspire us: the Venice Charter (1964), the Washington Charter (ICOMOS, 1987), the Lausanne Charter (ICOMOS, 1990), the Nara Document on Authenticity (1994), the Segeste Declaration (Council of Europe, 1995), the International Cultural Tourism Charter (ICOMOS, 1999), the Charter of Krakow (2000), the Xi'an Declaration (ICOMOS, 2005), the Charter on the Interpretation and Presentation of Cultural Heritage Sites (ICOMOS, 2008) and the Quebec Declaration on the Preservation of the Spirit of the Place (ICOMOS, 2008).

The identification of the Values of Fortifications

Many fortifications have constituted an indelible landmark since the first settlements, mainly in the Iron Age, because a sedentary lifestyle required defence against other tribes and rivals. Moreover, as altitude has determined positions of advantage when facing the enemy, they add an aesthetically imposing silhouette to the landscape.

They are the fruit of human effort – from unknown handicrafts and also from prisoners – sometimes cyclopean, both physical and economic, for the building of heavy structures in inhospitable and inaccessible places that boosted natural defences, as often happened in the Middle Ages.

They are symbolic and impressive images of power in very well-known historical and geographical contexts of aggression or defence, which now involve understanding, recording and drawing the best lessons for the future. But often times fortifications are also just an image of the will of people to be politically, economically, socially and culturally independent.

Fortifications encapsulate the history of nations in space and time. Through fortifications and the borders they defined, we may read into the territory and within the strategic map that has evolved over time.

Fortifications bear historic witness to events of great human drama, in a mixture of heroism and tragedy that should not be forgotten. They are therefore places of excellence to motivate reflection towards world peace.

They are the result of applying defensive construction techniques to respond effectively to attacks, the latter constantly evolving and of ever-greater power. The fortifications testify to extraordinary human ingenuity and an exchange of technical and scientific experiences worldwide, backed up by treatises of great value and multidisciplinary interest.

Fortifications recount history in the first person, with an enormous power of persuasion, having been transformed into compelling cultural tourist attractions. They constitute teaching material of enormous educational importance because they create an environment conducive to learning.

Fortifications are extraordinary historical documents, places of memory, some with a heavy symbolism, others with a sense of romanticism – like castles – and for all these reasons their monumental evocative value must be preserved.

Most fortifications had and/or have enormous influence on the birth and development of towns. Historic defensive walls and forts need to be interpreted as intrinsic components of the historic urban landscapes they were meant to defend and protect.

In many cases the fortifications, in addition to defining an urban area, became more extended to involve a whole territory, constituting a “fortified system”. Walls were built at the same time as towns, and were made and remade along the major enlargements and most important urban transformations. Therefore, they determined the design and the town’s shape, representing a complex technical phenomenon, military, economic, social, political, legal, symbolic, and ideological that is intertwined with the history of the urban settlement.

Modern planning must protect not only individual fortified artifacts but in different ways all fortified systems that still have the value of territorial systems, in their historical, architectural, environmental and landscape values.

Principles for Intervention in Fortifications

The values previously described should constitute the departure and arrival point for any type of intervention. Thus, the formation of the team responsible for the unearthing of these values assumes crucial importance,

as a result of an investigative action that must take the first methodological step in this intervention. This team should be multidisciplinary and cannot do without specialists in military history and architecture. The same team should therefore be allowed to comment on pre-established objectives and set new ones, as well as monitor the development and implementation of the necessary projects to achieve these objectives.

The research should include archaeological work, especially for medieval and earlier fortifications.

The presentation of the fortification in its developed state, that is, before it became obsolete and unused by the military, means, in terms of principles, that not only should stylistic or typological restoration be completely proscribed, but any traces of the rehabilitation of the fortification for other purposes of a military or civilian nature which may be considered important from a historical and architectural standpoint – they are often turned into prisons – should also be retained, since they form part of the structure's identity.

Following the principle – already established by Article 9 of the Charter of Venice – that new construction, sometimes considered necessary, particularly in interventions for restoration, rehabilitation and provisions for tourism, “must bear a contemporary stamp”, such distinctiveness should not, however, be so imposing in scale, materials, and aesthetic characteristics as to conflict with the rest of the site or somehow put the fortification itself into the background. In view of the monument on which intervention takes place, we hope the architect will show humility, and not an attitude that wants to produce heritage on which to set his own stamp, as has often been the case with spectacular architecture offering in practice only a scant guarantee of reversibility (a principle to be respected).

The introduction of structures to facilitate tourist access to various parts of a fortification, such as stairs, bridges, walkways, elevators, etc. should be considered in view of the previous two principles, but also the fact that the fortifications' own original accesses constitute in themselves a form of discovery, of interpretation. One should avoid investment, sometimes quite expensive, in structures of dubious necessity but high visibility when there are conservation interventions that need to be carried out and which are necessary, but do not mark the monuments with the architect's stamp. Also in relation to the interpretive structures, and as is

already mentioned in Principle 4 of the Charter for the Interpretation and Presentation of Cultural Heritage Sites (ICOMOS, 2008), if they are too overpowering they can contribute negatively to the authenticity of places and at the same time interfere with the reading of the monuments. Here, again, the principles of effectiveness, discretion, economy and minimum intervention should be invoked.

Authenticity should constitute an unbreachable boundary for interventional material. That is, the sustainability of a monument cannot be seen only from an economic point of view. It also has to be balanced by a cultural standpoint, preserving and enhancing the values in question that are themselves the core of the attractiveness of cultural tourism. To provide an enjoyable and meaningful experience to the visitor to a fortification (Principle 3 of the International Cultural Tourism Charter (ICOMOS) cannot be confused with the supply of pleasant environments, of services and secondary activities that can be obtained at more suitable places and which are not generally in tune with the spirit of place.

It is considered acceptable, in maintenance and conservation interventions, to perform small reconstructions using techniques and materials identical to those originally employed, without having to identify the intervention other than through adequate documentation. For example, the reconstruction of battlements or wall-walks in castles, or merlons and embrasures in bulwarked fortifications, which have, through the passing of time, or some natural calamity or tourist use, lost a few stones, bricks or some mortar. However, if it is a total reconstruction, that is, from scratch, using as a model the pattern of adjacent elements that are still intact, the extent of the intervention must be made evident through the new materials used; these should not, however, differentiate themselves in an imposing manner. Even if the reconstruction is not done from scratch, but is extensive, for example in curtain walls, one can ensure a greater authenticity if the materials are differentiated. And as a general rule, the older a fortification is, or the greater the aesthetic/artistic value of the parts that have undergone intervention, the more care should be taken to identify the new materials used. In the case of prehistoric or ancient fortifications – which are usually in a state of ruin – the only material intervention acceptable will be the consolidation of the remaining structures and interventions that facilitate their interpretation.

The creation or the conservation of protected areas surrounding the fortifications (the Xi'an Declaration, ICOMOS, 2005) is considered very

important. The areas surrounding fortifications are, in general, part of the fortification itself and of its defensive capacity, and so provide its functional significance, to the point, for example, in the case of bulwarked military architecture, of causing the corresponding esplanades or glacis – these were always free of any structure or trees in time of war – to be designed with very specific defensive goals.

Considering maintenance to be a key intervention in order to avoid the need for extensive and costly conservation measures, the management plan of a fortification available for tourist enjoyment should plan for sufficient revenue to cover the maintenance of fortification material, managed locally, while an ongoing evaluation of its carrying capacity should prevent the destruction of structures beyond what would be acceptable and as a result of normal physical access by the visitor.

We consider the activities of interpretation and presentation to be an essential part of management and heritage conservation – Charter for the Interpretation and Presentation of Cultural Heritage Sites (ICOMOS, 2008) – which is therefore indispensable for the implementation of research activities with the aim of continuously improving the quality of cultural enjoyment to be provided to the visitor, at different demand levels. We must always bear in mind that research into, and subsequent scientific knowledge of, the fortifications is a *sine qua non* of doing justice to their values and maximizing their authenticity (the Nara Document, 1994). **The establishment of international scientific networks between fortifications belonging to the same typology and historical context or historical geographical context is an important objective to promote, with an expectation of return, not only from a scientific point of view but also from that of tourism.**

The performance of shows and other cultural and tourist events within fortifications is now common practice. However, if the above-mentioned reference document provides recommendations and serious restrictions on the enlivening of monuments that originally accommodated the functions in question, we must be stricter in relation to monuments that were not designed for such roles. Thus, the possible fragility of the locations and the integrity of the structure should be rigorously respected, making use of new technologies that are less invasive and avoiding exaggerated decibel levels, since vibrations can threaten the existing structure. Buildings and permanent rehabilitations must be proscribed, as must even temporary rehabilitations if these result in a substantial alteration of the

image of the monument. The safety of the audience can never be compromised, and, finally, one must consider that there are shows and events that may not be in the character of the place.

Conclusion

As the title indicates, the Charter on Fortifications is still in draft. It is our intention for it to become one of our main projects during the upcoming triennial work plan, and for it to be distributed to the ICOMOS membership for comments and discussion. Your participation is important, and we look forward to hearing your comments during the evaluation.



Castillo San Cristóbal, San Juan – Puerto Rico. Source: Author.

References

www.icomos.org
www.icofort.org

SESSION THEME:
CLASSIFYING FORTIFIED HERITAGE

CHAPTER ONE

THE NATURE OF FORTIFICATIONS: THEIR CONCEPTION, CONSTRUCTION AND SUSTENANCE

NUPUR PROTHI KHANNA

Nature-Culture Dichotomy – a cultural perception

A culture at a point in time is a representation of its relationship with nature. Disjunction with nature in the human psyche in the recent past has been responsible for encouraging human achievement without recognizing the relevance of nature in the endeavor. The result is a paradoxical dissociation, whether it is of nature from culture, of the generalist against the specialist, the ordinary versus the extraordinary or of formal protection overriding informal traditional management.

In the nature-culture debate, now assuming centre stage worldwide, the position of nations differs depending on their geographical, political, economic and anthropological histories. The Industrial Age that began in the Western world around the eighteenth century A.D.¹ brought about a disconnect between the land's natural features and man's contributions to the existing environment. The exposure of traditional societies to such widely travelled ideologies began to alter their perceptions. The rural environments of many Eastern nations continue to depend on nature, thereby recognizing that protection of the natural surroundings is vital for their sustenance.

India, today, is perched somewhere in between these two worlds. With an urban population of about four million as per the 2011 Census,² and 68.84% of people classified as rural,³ the traditional way of life in rural environs has so far been spared the onslaught of urbanization. Our formal legal and planning tools, in contrast, are an extension of Western thought, thereby in conflict with the reality of management on the ground.

The notion of Cultural Landscapes is gaining acceptance worldwide to bridge this gap between Western ideology and Eastern thinking. It is also an attempt to address diversity, to increase the understanding, definition and representation of heritage at a global level. The notion of landscape as representative of the historic environment, all encompassing, is being seen as the way forward.

This paper explores the classification of one theme, namely landscapes associated with our military or defense past. These are landscapes represented by defense structures such as “fortifications (including fortified towns), works of military engineering, arsenals, harbors and naval battlefields, barracks, military bases, testing fields, and other enclaves and constructions built or used for military and defensive purposes; Landscapes, including battlefields, territorial or coastal defense installations and earth works, ancient or recent; Commemorative monuments, including war memorials, trophies, cemeteries, cenotaphs, and others plaques or marks.”⁴ Their intangible associations of victory/defeat, valor and folklore also represent the diversity of nature and culture of India’s rich geographical palette and chequered political history.

This paper addresses how fortification nominations for World Heritage can incorporate the landscape element and in relevant cases be perceived, projected and protected as Cultural Landscapes.

Nature-Culture continuum

The concept of Cultural Landscapes has its origins in the nineteenth century, when historians and geographers attempted to describe the relationship between humans and nature. European geographers such as Alexander von Humboldt elaborated on the two-way interaction between physical landscape and folk or national cultures,⁵ which initiated the idea of Cultural Landscapes. Further to this, the American cultural geographer, Carl Sauer (1925) formulated a definition: “The cultural landscape is fashioned from a natural landscape by a culture group. Culture is the agent; the natural area is the medium, cultural landscape the result.”⁶ By the late twentieth century, as archaeologists had begun to realize the importance of the wider context to understanding ancient cultures, ecologists became aware of the impact of human interventions on the ecological status of an area. These evolving ideologies resulted in broadening the perception of ‘heritage’ beyond monuments or ruins to embody a combination of tangible and intangible associations.

The adoption of Cultural Landscapes as a category (in 1992) of UNESCO World Heritage Sites furthered the global attempt to identify the “combined works of nature and man” of “Outstanding Universal Value”⁷ in order to contribute towards a holistic perception of heritage inherently linked with nature. Further refinement in the integration of cultural and natural heritage was initiated by the Amsterdam Global Strategy meeting in 1998, which recognized the continuum and complexity of interactions taking place between culture and nature in the context of World Heritage.⁸ To respect diversity, Outstanding Universal Value (OUV) was understood to be an outcome of varying interpretations (such as a combination of the unique and representative), ranging from the “‘best of the best’; ‘representative of the best’ to ‘the best of the representative’.”⁹

According to Stephenson (2008), there was a growing awareness of the need to sustain cultural diversity and ecological diversity along with aesthetic character in the attempt to protect World Heritage.¹⁰ These discussions led to the broader issue of the “static” and “dynamic” values of World Heritage and further to deliberating on how best to manage living places that were already on the List.¹¹

There were 97 walled towns inscribed on the World Heritage List in 2014. These are representative of the modification of the natural environment into defensive fortifications.¹² Citadels, forts, ramparts, walls, bastions and strong holds make an appearance with the well-preserved landscapes of existing towns and cities (17 nominations) and ruined complexes, relating to paleo-cultural sites (8 nominations).¹³ This heritage may have preserved remnants of architecture, urban design and other expressions of their response to the natural environment and, therefore, should be perceived as being of value for more than their built fabric alone.

The VIMY Declaration for the Conservation of Battlefield Terrain (Draft of 2000) addressed the intangible association of “battlefields as poignant landscapes where physical geography has been transformed into symbolic space through war, pilgrimage, memorialization and tourism.” The draft Declaration further recognized historic sites and sacred places highlighting issues surrounding cultural heritage in its commemoration as well as presentation of the past. By addressing the future of cultural change it brought forth possible pressures and their impact on fragile landscapes. This draft Declaration may offer a way forward in its recognition of a need for multi-disciplinary exploration of challenges that

hinder protection, presentation and management of the physical remains of historic sites of conflict. The basic aim was to protect the physical fabric and intangible meanings associated with these complex cultural resources.¹⁴

Nature as the basis of an Indian ethos of landscape

South Asian ideologies largely dwell upon the interrelation of man and nature. For example, in Indian philosophy, *Dvaita Vedanta* (dualistic conclusions of the Vedas) represents a dualism between God and the universe in existence as two separate realities.¹⁵ Orthodox Hindu *Sāṃkhya* philosophy elaborates upon this as *puruṣa* (consciousness) and *prakṛiti* (matter) where *jīva* (a living being) is that state in which *puruṣa* is bonded to *prakṛiti* in some form.¹⁶

In the Indian context, therefore, man and nature are deeply entwined, as is expressed in daily life and belief systems. *Dharohar*, a term for heritage in the Indian tradition, is a combination of *dharā* – (the mother earth, *Prithvi*, that is held by Lord Vishnu), and – *ihara* (endeavor of identity through time), implying the bearing and sustenance of life.¹⁷ This is a reflection of the long history, traditions, pilgrimage, built structures, sacredscapes, *genius loci* and, above all, a deeper sense of interrelation and ecological cosmology intrinsic to our culture.¹⁸

Recognition of nature in our sustenance and hence its judicious use and protection were central to rural India till the present, where sacred forests and groves, pilgrimage corridors, and a variety of ethno-forestry practices were adopted in the form of religions and rituals for landscape protection.¹⁹ Landscape, therefore, was a revered entity that had a large impact on the perspectives of various cultural groups and influenced their building methodologies as well as cultural activities.

Cultural Norms for Fort Planning in India

Drawing on the impact of landscape on Indian philosophies, it can be said that the ethos of imbibing nature extended to all realms of life. For example, the interrelationship between site and context, albeit in a hierarchical way, was accepted as the norm in planning. Site (*sthān*), the extended space, habitat (*paryāvāsa*) and regional territory (*parikshetra*) eventually linked to the cosmos (*brahmānda*). Addressing the local and

universal, our heritage, *dharohar*, encompasses the tangible, intangible and visual across all scales of site, territory and cosmos.²⁰

The term “fort” in ordinary usage implies a stronghold offering protection and security to inhabitants that seek refuge. Sources from literature also reveal the relevance of landscape that has been noted in the etymology of fortifications. Referred to as *Durg* in Sanskrit, the fort is a place that is difficult to access.²¹ Fort construction is mentioned in many of our ancient texts, including Vedic literature (13th to 10th century B.C.) and *Kalika Purana* (8th to 10th century A.D.).²² Kautilya’s *Saptanga* (4th century B.C.), or the seven-element theory for a state, elaborates on the crucial role of forts in the defence of empires.

Due to the significance of fortifications in the protection of a region or territory, they became vital components of important cities and places of strategic value in ancient and medieval times. From references and from the remains of fortifications in the landscape today, it may be presumed that India was studded with magnificent fortresses from where powerful monarchies are said to have ruled. Though the primary motive for building forts was military defence, their influence extended to the political and administrative realm.²³

The structure responsible for the protection of the royalty, army, *praja* or “name of reign” had to be designed invincibly. Location was of paramount importance. Therefore, strategically located forts used natural terrain to their best advantage where they could see and be seen across the existing landscape. The Indian landscape has innumerable examples to illustrate this.

Fort typology in response to landscape

Factors such as choice of location, building material and technology played a crucial role in the construction of forts. In the early period (8th century A.D.) forts were built on flat surfaces or plains, as direct attacks on fortifications were comparatively few.²⁴ Frequent invasions in medieval and late medieval times (11th century to 14th century A.D.) led to the need for multiple layers of protection possibly encouraging the trend of hill forts as well as forest and water forts aiming to minimize accessibility.²⁵

Shilpa Shastras (10th and 11th century B.C.),²⁶ an ancient science of art and craft, elaborates on six major categories of forts: *Giri Durg* (Hill Fort),

Dev Durg (God's Fort), *Vana Durg* (Forest Fort), *Jal Durg* (Water Fort), *Maru Durg* (Desert Fort) and *Mishra Durg* (Mixed Fort). The *Giri Durg* or Hill Fort is considered the most formidable for protection of a princely settlement. This typology can be further categorized into *Pranther Giri Durg* (built on plain land of the hill summit), *Giri Parshva Durg* (built on hill slopes) and *Guha Durg* (built in the valley). The details for each signify the importance attributed to location and topography to ensure adequate defense.²⁷

The larger forts encompassed palaces and settlements. As centuries progressed, settlements within fortifications expanded and evolved into *Nagars* and *Mahanagars*, analogous to towns, cities and greater cities of today. Mathura and Indraprastha of Mahabharata, and Ayodhya and Lanka of Ramayana are believed to have been forts which expanded subsequently.²⁸ The transition of forts from defense structures to fortified settlements that sheltered a larger population required a change in their building mechanisms due to their transforming purpose. The introduction of improved water management systems for sustenance of these people was one such change.

Water for victory: harvesting and management of water resources

A vital point of intersection between nature and human habitation within forts was the need for ample water resources to tide through long periods of siege. Ancient Indian religious texts and epics offer a detailed insight into water storage and conservation systems that were historically prevalent.

The ancient treatise, *Arthashastra* (3rd century to 2nd century B.C.), elaborates on water works, irrigation systems, water management and their necessity for fortifications and war.²⁹ *Samrangan Sutrardhar* (11th century A.D.) presents paradigms that developed in the pre-medieval period on the important aspect of water management. Originally composed in Sanskrit by the Parmar ruler Raja Bhoja (1018-60 A.D.) of Malwa, it offers valuable information regarding water management techniques in palaces and forts, construction methods of water resources and the architecture of water bodies in the region. It elaborated on the need for fortifications and water sources in a political capital, with an abundance of *tadags* (tanks), gardens, wells and bathing places in the city.³⁰ Water was vital for survival, especially in the dry regions where ingenious techniques developed over time to collect and store rainwater.³¹

Response to Natural Context in Fort Planning in India

Nature in Nomenclature

The prominent hills chosen for building strategic fortresses usually had names relating to their natural wealth of birdlife, minerals or rocks. However, once the fortress was established it was usually christened to express the power of a particular dynasty or was associated with a prominent deity that would ensure victory and fortune at the time of battle.

Citing a few examples from the subcontinent, it can be noted that the isolated hill chosen for the Mehrangarh fort was originally known as *bhakar chiryā* or the bird's nest,³² whereas the name "Mehrangarh" (or Mihirgarh, as used earlier) is made up of the Sanskrit words *Mihir* (sun) and *Garh* (fort), meaning "fortress of the sun". This was a means of invoking the patron deity of the Rathore family, the Sun God.³³ Another example of the use of nature in nomenclature can be seen in the case of Raichur Fort, Karnataka, where the name is said to be derived from the Telugu words "*Rai*", meaning stone, and "*ooru*", meaning town. This was formulated as "*Rajooru*", or the town of stones, in order to describe the abundance of stones that were found in the fort's vicinity. Eventually, it became "*Rayachoor*" or "*Raichooru*", which comprised the words "*Racha*", or king, and "*ooru*", meaning place.³⁴

Using Topography to advantage

Western Ghats, along with other hill ranges which intersect the hinterland, were dotted with forts perched in commanding positions upon chosen summits. Forts in the interior often occupied isolated hills and rose in a conspicuous manner from the predominantly level tableland of the Deccan as well as the plains of Khandesh. They were strategically located to defend lines of communication and trade routes, or at times to serve as political strongholds that dominated wide tracts of level plain.

Ranging from elaborate hill forts along the Western Ghats such as Partabgarh, Raigarh and Asirgarh, amongst others, to the small forts of Laling or Songir in Khandesh, the rulers chose hill summits or plateaus ranging from a few acres to several hundred, the edge of which usually terminated in a nearly sheer scarp, 100 to 300 feet high, thus rendering it impregnable. Two or more lines of fortifications downhill were conceived at times for some of the larger ensembles. Gates and pathways were

usually designed along the slopes with the final approach being the most formidable. This can be seen in the last stretch of the Daulatabad Fort at Aurangabad, Maharashtra which can be accessed through a series of spirals that have been carved out of solid rock and rest completely within the rock surface of the scarp.³⁵

Another case where the natural terrain has been appropriately used to create military architecture is the fort of Amber, Rajasthan. Applying the *Giri Durg* principles of the *Shilpa Shastras*, the palaces of this Rajput fort were located on steep hill ridges, the fortification walls and gates being designed in tandem with the topography.³⁶

Along with its neighbor, the Jaigarh Fort, Amber is designed as a “*Garh*” palace in compliance with the ancient building knowledge of *Giri Durgs*. Located on the plain land of the hill summit, both forts are strategically built on plateau ranges, thereby accounting for difficult accessibility and increased defense. Design principles of *Giri Durg* require a fort to have wide ditches around it for protection from enemy attack, which at Amber is served by the Maotha Lake. The lake further serves the purpose of a reservoir for storing water for the palace.³⁷

An important design feature of these significant forts was the inclusion of large areas within the fortification to enable them to serve as a retreat during wars. In the case of Amber, the arrangement was such that Amber was not enclosed by immediate fortifications but instead relied on Jaigarh fort (located 115 meters above) for its retreat. In a larger setting, Amber palace, town and the Jaigarh Fort were further enclosed by fortifications along the hills and valley, making for a spectacular landscape in response to site topography, creating outlook points for a strong defensive network.³⁸

Other examples around the country exhibit similar characteristics across reigns and time periods. The Golconda Fort, a medieval fort on the outskirts of the city of Hyderabad, served as a dynastic abode and capital for the ruling Qutb Shahi dynasty from its foundation in 1512. Built surrounding a rocky hill that rises over 122 meters, the fortifications were comprised of three impressive curtain walls set amidst a formidable landscape of huge granite boulders deterring invaders in their appearance as natural cannons poised to tumble down.³⁸ The use of the landscape through its topography to determine the fort’s form and for the design of

impregnable entry and exit points portrays how the terrain was utilized to its complete potential for protection.

Water harvesting mechanisms for sustenance

As already explained, management of water for fortifications was addressed in immense detail in many ancient literature sources. As has been mentioned earlier, *Arthashastra* (3rd century to 2nd century B.C.) sheds light on various aspects of water works, their construction, consumption and management, including their relevance in war.³⁹ Forts were conceived by the side of streams, rivulets, rivers or water-filled furrows serving as an impediment to access as well as providing water during peace times.⁴⁰

Though water was always considered a vital element in the fulfillment of the role of a fortification, the geological under layers did not always allow digging of deep troughs for the purpose. Further, with springs present mainly on plains, where percolation through the fissures of this impermeable stratus alone is possible, the availability of water on top of the hill was a prime necessity at the time of siege.⁴¹ Innovative solutions to these challenges are aptly demonstrated in many fortifications in Rajputana or present-day Rajasthan.⁴²

A land of irony and extremes, the desert state of erstwhile Rajputana housed the Rajput warrior clans. Rajputs were prolific builders, with forts and palaces dotting the ancient Aravalli landscape. Some of the most imposing and magnificent forts and palaces in the world conceived by them narrate tales of their gallantry, courage and the tragedies of the past. Their survival in the harsh Thar Desert is an expression of building and living with nature which is notably visible in their water harvesting techniques.⁴³

Inscribed on the World Heritage List as the “Hill Forts of Rajasthan”, six extensive and majestic examples, built between the 8th and the 18th century A.D., illustrate exemplary responses to their natural context, be it the river at Gagron, the dense forests at Ranthambore, or the desert at Jaisalmer.⁴⁴ Based on traditional Indian principles, these forts represent an important phase in the development of a contextual architectural typology, a legacy that lives on to this day.