ISSN: 3108-0812

Journal of Creative Research in English Literature & Culture

VOLUME-2, ISSUE-4, APRIL 2026

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Preface

We are delighted to present, with great pleasure, the **Volume-2, Issue-4, April 2026** of the **Journal of Creative Research in English Literature & Culture (JCRELC)** — a peer-reviewed international journal devoted to the exploration and advancement of literary and cultural scholarship.

JCRELC is part of the **SPARC Institute of Technical Research** publication series and was envisioned to meet the growing global demand for an academic platform that unites critical thinking, creative inquiry, and interdisciplinary research in the field of **English Literature and Cultural Studies**. The journal aims to serve as a bridge between scholars, educators, and practitioners, providing an inclusive space for diverse voices and perspectives.

The mission of JCRELC is to foster intellectual exchange, innovation, and academic excellence by publishing original and thought-provoking research in areas such as:

English Literature:

Literary theory and criticism, comparative literature, postcolonial studies, modern and contemporary literature, diaspora studies, gender and identity, eco-criticism, digital humanities, narrative and stylistic studies, and creative writing.

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Media and popular culture, film and performance studies, cultural theory, identity politics, globalization and culture, heritage and memory studies, translation and intercultural communication, visual arts, and linguistic representation in literature and media.

Each article published in this inaugural issue exemplifies the journal's commitment to promoting meaningful scholarship and fostering dialogue that connects literature and culture with the evolving dynamics of society.

We extend our heartfelt gratitude to all **Editorial, Reviewer, and Advisory Board Members** who have contributed their expertise, as well as to the **authors** whose valuable research enriches this publication. Our appreciation also goes to the **editorial team of the SPARC Institute of Technical Research** for their consistent guidance and support in bringing JCRELC to life.

We hope that this inaugural issue of JCRELC will serve as a valuable resource for scholars and readers alike, inspiring continued exploration and critical engagement in the vibrant domains of **English Literature and Cultural Studies**.

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ISSN: 3108-0812
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Website: www.jcrelc.com

Geography of the Distribution of Orchin Domes and Factors Affecting Their Proliferation

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Received:- 28 March 2026/ Revised:- 08 April 2026/ Accepted:- 15 April 2026/ Published: 30-04-2026

Abstract— *This study investigates the distribution and characteristics of Orchin domes, also known as pineapple domes, in southern Iran. These domes represent a distinctive regional variation within Islamic-Iranian architecture, characterized by their stepped, conical form. Using a descriptive-analytical approach drawing on both library sources and extensive field studies, this research documents over 40 Orchin dome sites across seven Iranian provinces—Lorestan, Ilam, Kohgiluyeh and Boyer-Ahmad, Khuzestan, Bushehr, Fars, and Hormozgan—with additional examples identified in Iraq. The findings reveal that the highest concentration occurs in Khuzestan and Bushehr provinces, areas historically connected to Persian Gulf trade networks. Analysis suggests that the proliferation of these domes resulted from multiple converging factors: climatic adaptation to the hot and humid conditions of southern Iran, inspiration from natural forms such as palm trunks and pineapple fruits, continuity of ancient symbolic traditions emphasizing ascension, and cultural-commercial interactions with East Asian countries, particularly India. The similarity between Orchin domes and Indian temple architecture reflects the role of maritime trade routes in facilitating architectural exchange. These domes, often serving as tombs, represent the distinct cultural and historical identity of their regions while demonstrating how architecture mediates between cultural influence, environmental context, and symbolic expression.*

Keywords— Iranian architecture, Orchin domes, Persian Gulf, cultural influences, natural elements, architectural geography.

I. INTRODUCTION

Architecture is considered one of the most important aspects of civilization in every era. Iranian architecture after Islam has seen four stylistic developments: the Khorasani style, the Razi style, the Azeri style, and the Isfahani style. This does not mean that all the architectural heritage of Islamic Iran absolutely follows one of these four styles. Rather, the interplay of styles within these four main categories has also created sub-branches in the architecture of this land. An example of this has occurred in areas of Iran that have been more exposed to other civilizations for some reason. The basis for this borrowing in the field of architecture was probably provided by the conquests and territorial expansion of the Islamic Caliphate, climatic similarities, and trade relations.

One of these areas is the Persian Gulf region. This region has long been a center of international trade. In proportion to the radius of influence of the traders and residents of the northern Persian Gulf, extensive contact occurred between the people of this region and other areas. The main commercial destinations of the inhabitants of this region were parts of South and Southeast Asia, especially India. Based on this and according to initial evidence, aspects of the architecture of the northern Persian Gulf region can be seen as different from the general principles governing the architecture of Islamic Iran.

One of the main elements of buildings is the dome. Domes are divided into two categories in terms of appearance: Nar domes and Rak domes. Orchin domes are considered a type of Rak dome. These domes represent aspects of architecture that differ in form from other domes located in the northern and central regions of Iran. In a preliminary observation, if we consider a hypothetical triangle in southwestern Iran with its vertex at the city of Shushtar and its base along the line connecting Kharg Island and Borujerd, we can say that the points within this triangle contain Orchin domes. The number of these domes is small and they appear only in Iran—specifically in southern and southwestern locations—with a number also in Iraq, and this is what makes these domes unique.

Despite their distinctiveness, the extent of the distribution of this type of dome has not yet been thoroughly investigated. While previous studies have examined the formal and structural characteristics of Orchin domes, a comprehensive geographical analysis of their distribution and the factors governing their proliferation across different regions remains lacking. This lacuna hinders a full understanding of their significance as a regional architectural phenomenon. This study addresses this gap by investigating the distribution of Orchin domes, documenting their locations and characteristics, and analyzing the reasons for their concentration in specific geographical areas. Specifically, this research seeks to answer the following questions: In which regions of Iran were Orchin domes most frequently used, and what factors contributed to their proliferation in these areas?

II. RESEARCH BACKGROUND

In architectural books, limited attention has been paid to Orchin domes, providing restricted information to researchers in this field. Therefore, the present study addresses this existing necessity. The relevant literature can be organized around several key themes.

Foundational Documentation: Ahmad Eghtedari (1996) in his book *Historical Monuments and Monuments of Khuzestan* provides essential documentation of historical structures in Khuzestan, including valuable information on Orchin domes. His fieldwork-based approach established a foundation for subsequent studies, though his work focuses primarily on description rather than analytical comparison across regions.

Historical and Architectural Analysis: Salehi Kakhki and Sepidnameh (2013), in an article titled "An Archaeological Research on the History and Architecture of Mudras Domes in Iranian Architecture," examine the historical development of these domes. Their research traces chronological patterns but does not adequately address the geographical distribution that would explain regional variations. Similarly, Saeedian et al., in "The Evolution of the Orchin Dome Based on Factors Effective in the Formation of an Architectural Symbol" (2012), investigate the origin, geometric structure, and formative factors of Orchin domes. While their work provides important insights into symbolic meanings and structural principles, it does not achieve a complete understanding of how these factors varied across different geographical contexts.

Structural and Typological Studies: Majidi and Fardin Mehr (2013) offer a comprehensive classification of dome types in traditional Iranian buildings, situating Orchin domes within the broader Rak dome category. Zamrashidi (2008) provides detailed analysis of arch and dome construction techniques, including specific attention to Orchin dome construction methods. Tabrizi and Yadegari (2017) apply fractal geometry perspectives to understand the geometric properties of Orchin domes, offering novel analytical tools for understanding their formal logic.

Regional Studies: Several scholars have examined Orchin domes within specific provincial contexts. Qaed Sharaf et al. (2015) conducted comparative studies of Orchin domes in Bushehr Province, while Sobhani Nejad et al. (2015) examined examples in Kohgiluyeh and Boyer-Ahmad. Hadinejad Dashti (2017) documented shrines in Dashti County, providing valuable local context. These regional studies, however, remain fragmented and have not been synthesized into a comprehensive geographical analysis.

Symbolic and Cultural Interpretations: Saeedian et al. (2011, 2012) have explored the symbolic dimensions of Orchin domes, linking their stepped form to concepts of ascension and the connection between earth and sky. Mahmoudi and Ranjbar (2020) examined factors affecting the formation of specific examples, contributing to understanding of cultural significance.

Despite these contributions, no study has systematically mapped the geographical distribution of Orchin domes across their entire range or synthesized the multiple factors—climatic, cultural, historical, and technical—that explain their proliferation in specific areas. The present study addresses this gap by integrating field observations with existing scholarship to create the first comprehensive geographical analysis of this distinctive architectural form.

III. A LOOK AT DOMES: STRUCTURE, TYPES, AND THE PLACE OF ORCHIN DOMES

Domes and domed roofs in Iran were created partly due to the lack of long and strong timber, which is the main element of roof covering in many other traditions (Pirnia, 2004). Iranians considered the dome as a means of separation from the earth and connection to the sky. It should be noted that they were among the first peoples to present innovative ways of building domes on quadrangular ground, using them in mosques, tombs, and other buildings.

The history of domed buildings dates back to the third millennium BC in the Mesopotamian region. An example of these early domes can be seen in the ziggurat of Chogha Zanbil. Dome-building became popular during the Sassanid era, which likely inherited Mesopotamian dome-building traditions. During this period, the method of doming evolved to such an extent that its influence continues to the present day. The special ideological position of the spherical shape and the materials available to the architect can be reasons for the continuous use of the dome form in Iranian architecture.

Structurally, domes are divided into two groups: Nar domes and Rak domes. Nar domes are the most common type in Iran and are also considered the main roof covering of mosques. In terms of shape and form, this dome is spherical. Examples include the dome of the Imam Mosque and the Allahverdi Khan Mosque in Isfahan and the Agha Bozorg School in Kashan.

The Rak dome, structurally different, is pyramidal or conical and is often placed on a cylindrical or prismatic base. The Rak dome has been used more on the shores of the Caspian Sea because, climatically, it is more suitable than the Nar dome—it removes atmospheric precipitation faster and better from the building and bears great resemblance to the sloping roofs of houses in that region. The most famous example is the Qaboos Dome in Mazandaran Province, considered one of the finest architectural works of the 4th century AH.

The Rak dome has various types, including:

- **Orchin Dome**: exemplified by the Daniyal Nabi Dome in Susa
- **Khorstuk (conical) dome**: exemplified by the Mil Radkan Dome in Quchan
- **Pyramidal dome**: exemplified by the Abu Lulu Domes in Kashan and the dome of the Khanqah of Haj Abdul Samad in Natanz
- **Sarvuk Dome**: exemplified by the domes of Shah Cheragh and Ali Ibn Hamza in Shiraz
- **Combinations of Rak and Nar**

Regarding the parts that make up the dome structure, the structure consists of three parts: the dome house (the ground of the dome), the Beshen or Heikal (the part that rises above the base in cube form, with one or two sides open), and finally the Chapire (meaning "gathering").

Domes are also divided into three categories based on construction technique:

1. **Single-shell domes**: The simplest type, used for ordinary buildings that are often small in scale and less expensive than double-shell domes. Stone domes of this type are often found in Sassanid buildings, cisterns, and neighborhood mosques.
2. **Double-shell domes**: Composed of two shells—the parietal or inner shell and the outer shell. This type is divided into three subtypes according to how the outer shell is placed on the parietal.
3. **Three-shell domes**: In addition to the two inner and outer shells, these also have a middle shell, which usually has a structural role and may be used for decoration (Majidi & Fardin Mehr, 2013).

IV. EXAMINING THE STRUCTURE AND FEATURES OF THE ORCHIN DOME

During the Seljuk period, which represents one of the peaks of Iranian art and architecture, dome construction in tomb buildings in southern Iran developed a special style distinct from the types of domes in other parts of the country. A new type of dome—the Orchin dome—emerged during this period (Saeedian et al., 2012; Zamrashidi, 2008).

Orchin domes are similar in external shape to conical Rak domes but are distinguished by their stepped construction with successive levels. These domes are used primarily for tombs and shrines and are usually taller than other domes, which some scholars interpret as symbolizing the gradual ascent toward God's kingdom (Zamrashidi, 2008). Orchin domes are known as "pineapple domes" in English and "dômes alvéolés" in French.

The main characteristic of these domes is that they are tiered and stepped: in each step or floor, the plan of the main base of the dome is repeated with smaller and smaller dimensions. The construction method is as follows: first, the top of the roof was molded in the shape of a cone with wood; then, behind the mold, bricks were laid on the inner base of the dome (the main base), while the outer base was fashioned in the desired shape—star-shaped or polygonal. In this manner, the dome was raised floor by floor, relying on the mold (Eghtedari, 1996; Saeedian et al., 2011).

Most Orchin domes are constructed of brick, with the notable exception of the Tuil dome in Dezful, which is made of stone. The domes are often covered with a layer of plaster and lime, but the Suleiman bin Ali dome in Ganaveh, due to the large size of its lateral surfaces, features light blue tiles.

Orchin domes are divided into two groups based on base plan:

Domes with a Star-Shaped Base: In this type, there is a precise architectural relationship between the external and internal plans. The main origin of the external star-shaped structure is influenced by the geometric relationship between the internal sides of the dome. This geometric relationship causes the base of the dome to be star-shaped externally and regular polygonal internally. The relationship of the inner base of the lower floor with the upper floor is such that connecting the midpoints of the polygonal sides of the lower floor to each other forms the polygon of the upper floor. Domes with star-shaped bases are rarer, with only five known examples: the Imamzadeh of Shirmard Mamasani, Imamzadeh Abdullah in Shushtar, Mir Mohammad Hanafiyeh in Kharg, Sultan Zubaideh in Baghdad, and Imam Dur in Samarra (Eghtedari, 1996; Saeedian et al., 2012).

Domes with a Polygonal Base: Iranian architects considered the more symbolic nature of these domes, their greater stability against climatic factors, and most importantly, their elevated position for creating an impressive effect on the urban landscape and skyline—particularly to highlight their value and social status. In this type, the base of the domes is a regular polygon, with each floor representing a cross-section with a polygonal base. Examples include the dome of Imamzadeh Jafar in Borujerd, the dome of Daniyal Nabi in Susa, the dome of Sheikh Omar Suhrawardi in Baghdad, the dome of Sulayman ibn Ali in Ganaveh, and the dome of Yaqoob Laith Safari in Dezful (Eghtedari, 1996; Saeedian et al., 2012).

Several factors have been proposed as contributing to the emergence of Orchin domes in southern and southwestern Iran: the lack of necessary technology and techniques for constructing Nar domes; seasonal rains and humidity causing building erosion; the desire to highlight buildings through tall domes; the symbolic meaning of movement from earth to heaven; and the need to prevent direct sunlight from striking the building (Qaed Sharaf et al., 2015; Mahmoudi & Ranjbar, 2020).

V. GEOGRAPHICAL DISTRIBUTION OF ORCHIN DOMES

If we consider a hypothetical triangle in southwestern Iran with its vertex at the city of Shushtar and its base along the line connecting Kharg Island and Borujerd, we can say that the points within this triangle contain Orchin domes (Sobhani Nejad et al., 2015). Orchin domes in Iran are limited to the south and southwest of the country, and their relatively small number makes these domes distinctive. A number of similar domes are also found in Iraq.

Based on extensive field studies and library research, the present study has documented Orchin domes across seven Iranian provinces: Lorestan, Ilam, Kohgiluyeh and Boyer-Ahmad, Khuzestan, Bushehr, Fars, and Hormozgan. The highest concentration occurs in Khuzestan and Bushehr provinces, areas with direct historical connections to Persian Gulf maritime trade. Table 1 summarizes the distribution by province.

TABLE 1

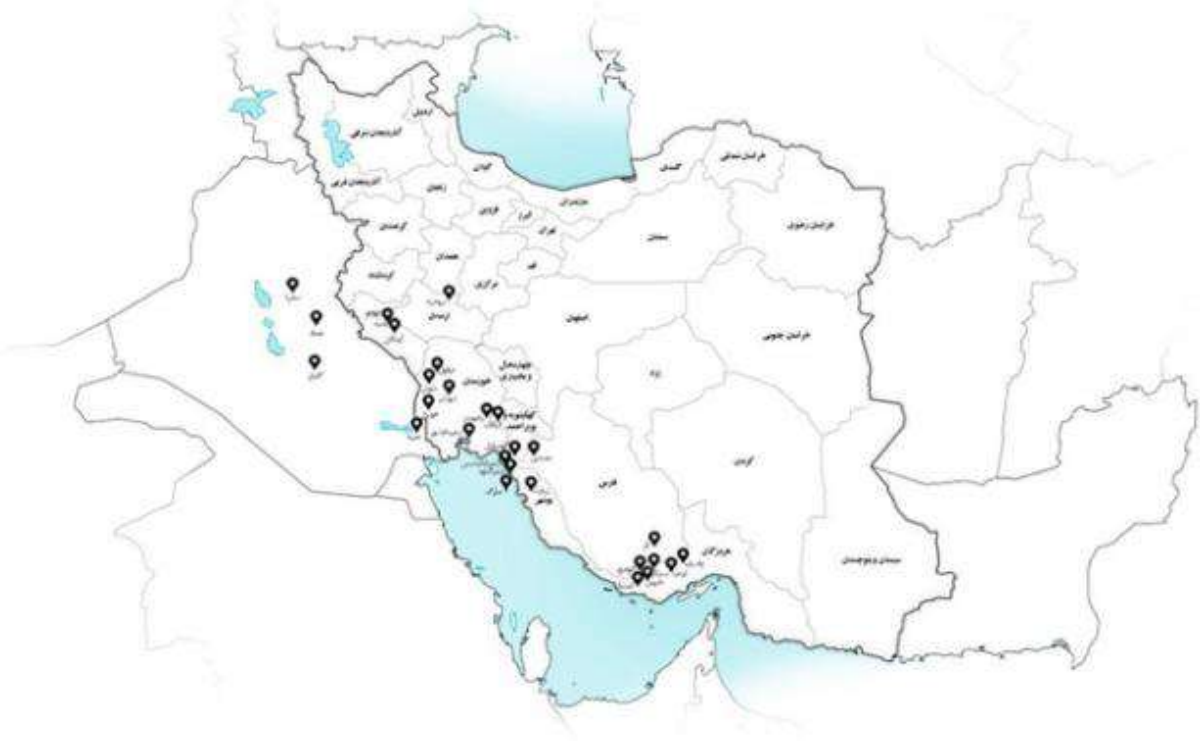
DISTRIBUTION OF DOCUMENTED ORCHIN DOMES BY IRANIAN PROVINCE

Province	Number of Documented Sites	Key Examples
Khuzestan	25+	Daniel Nabi, Pir Ruband, Imamzadeh Abdullah, Yaqub Laith Safari
Bushehr	7	Imamzadeh Sulayman ibn Ali, Mir Mohammad Hanafiyeh, Sheikh Mansour Khazai
Kohgiluyeh and Boyer-Ahmad	3	Lishtar Dome, Imamzadeh Baba Ahmad, Imamzadeh Pir Ghazi
Hormozgan	3	Two-Domed Tomb of Kohard, Sheikh Hassan Ali, Kholos Mausoleum
Fars	3	Pir Darvish Ali, Imamzadeh Baba Monir, Imamzadeh Shir Mard
Lorestan	1	Imamzadeh Jafar
Ilam	2	Imamzadeh Seyyed Salah al-Din Muhammad, Jaber's Tomb

A study of the geographical distribution of Orchin domes shows that this type of dome is significantly concentrated in the southern and southwestern regions of Iran—areas located primarily in warm and relatively humid or warm and semi-arid climatic zones. The concentration of examples in these provinces, as well as their limited presence in Iraq, indicates that this architectural form was developed and sustained in response to specific environmental and cultural conditions of these regions.

From a climatic perspective, the aforementioned regions are characterized by intense solar radiation, high temperatures, seasonal and sometimes heavy rainfall, and significant relative humidity in areas close to the Persian Gulf. In such conditions, the Orchin dome form, with its stepped structure, exhibits a different and more adaptive function than smooth, monolithic domes. The successive breaks in the dome surface reduce direct sunlight hitting the building shell and help moderate the temperature in the space below. In addition, these breaks facilitate faster drainage of rainwater and reduce moisture persistence on the dome surface—a factor that plays an important role in reducing material erosion in hot and humid climates.

Spatial analysis of the documented examples shows that the highest density of Orchin domes is observed in provinces that are either directly adjacent to the Persian Gulf (Bushehr, Hormozgan, Khuzestan) or located along the transitional areas from the southwest to the central plateau (Lorestan, Ilam, Kohgiluyeh and Boyer-Ahmad, and parts of Fars). This dispersion pattern, on the one hand, strengthens the connection of these domes with the warm climate of the south and, on the other hand, reveals the role of historical communication routes in southwestern Iran for the spread of this architectural form.



Distribution Map of Orchin Domes

VI. DOCUMENTED ORCHIN DOMES BY PROVINCE

The following sections present the documented Orchin dome sites organized by province, based on field studies and available documentation.

6.1 Lorestan Province:

6.1.1 Imamzadeh Jafar Mausoleum:

Located in Borujerd County, Lorestan Province, this building dates back to the Seljuk period. The dome of Imamzadeh Jafar is a stepped dome with 18 floors. The complex includes the main tomb attributed to Imamzadeh Jafar, the tomb of the two sisters, porches, an entrance gate, and a public cemetery. This monument was registered as a national monument on May 5, 1997, with registration number 1855 (field study).

6.2 Ilam Province:

6.2.1 Imamzadeh Seyyed Salah al-Din Muhammad:

Located in Abdanan County, Ilam Province, this shrine dates back to the 7th and 8th centuries AH. An old cemetery adjacent to this shrine remains in use. The dome is double-layered with a polygonal plan and exceeds 15 meters in height. This building was registered as a national monument on March 8, 2003, with registration number 7975 (Sobhani Nejad et al., 2015).

6.2.2 Jaber's Tomb:

Located in the village of Jaber, Dareh Shahr County, Ilam Province, this building dates back to the early Islamic centuries. According to local beliefs, the tomb belongs to Jaber bin Abdullah Ansari. The original dome was of Orchin type with 10 octagonal floors, reaching 16 meters in height from tomb floor to dome apex. It should be noted that the current dome is of a different type with a cylindrical neck, built on a four-arched structure after the original was destroyed. This work was registered on January 20, 2007, with registration number 16930 (field study).

Imamzadeh Seyyed Salah al-Din Muhammad

Jaber's Tomb

6.3 Kohgiluyeh and Boyer-Ahmad Province:

6.3.1 Lishtar Dome:

Located in Gachsaran County, Kohgiluyeh and Boyer-Ahmad Province, this dome takes its name from the rural district in which it is situated. The building dates back to the Timurid period and is constructed in a conical, stepped style. The function of the Lishtar Dome is not precisely known; local residents believe it was originally an imamzadeh, while others suggest it was built over the grave of a notable figure from the Timurid era. On December 6, 1997, this building was registered as a national monument with registration number 1935 (Sobhani Nejad et al., 2015; Salehi Kakhki & Sepidnameh, 2013).

6.3.2 Imamzadeh Baba Ahmad:

Located in Bahmai County, Kohgiluyeh and Boyer-Ahmad Province, this imamzadeh is traced back to Imam Musa ibn Jafar (AS). The building dates back to the Qajar period. The dome has 13 floors and exceeds 12 meters in height. This monument was registered on October 24, 2003, with registration number 10580 (Salehi Kakhki & Sepidnameh, 2013).

6.3.3 Imamzadeh Pir Ghazi (Jafar):

Located in Dehdasht, Kohgiluyeh and Boyer-Ahmad Province, this tomb has a square plan with beautiful muqarnas on the interior. The dome is of Orchin type, and the building stands alone. The architecture dates back to the Seljuk period. This work was registered on March 15, 2001, with registration number 3561 (Salehi Kakhki & Sepidnameh, 2013).

Lishtar Dome

Imamzadeh Baba Ahmad

Imamzadeh Pir Ghazi (Jafar)

6.4 Khuzestan Province

6.4.1 Dome of Daniel the Prophet:

Located in Susa, Khuzestan Province, this is one of the most famous Orchin domes in Iran. The dome has 25 steps, is double-shelled, and rests on a circular base with two spires above the entrance doors. The current building was constructed in 1870 by order of the Shiite cleric Jafar Shushtari and built by Hajj Mullah Hossein Memar, following the destruction of the previous building by flood. This building was registered in 1931 under number 51 as a national monument (Eghtedari, 1996; Saeedpour et al., 2011).

6.4.2 Pir Ruband Tomb (Sultan Seyyed Ali Siahpoosh):

Located in the Rudband neighborhood of Dezful, adjacent to a public cemetery, this tomb derives its name from local tradition that Sultan Seyyed Ali, an enlightened Sayyid, controlled the Dezful River and protected the city from flooding. Three inscriptions are found in this tomb: one from the period of Shah Abbas Safavi, an illegible tombstone inscription, and one from the Qajar period containing prayers and greetings. The tomb consists of a quadrangular room with an octagonal roof imitating Seljuk architecture. The dome is a Rak-type dome with 20 floors (Eghtedari, 1996; Saeedpour et al., 2011).

6.4.3 Imamzadeh Abdullah Mausoleum:

Located in Shushtar County, Khuzestan Province, this imamzadeh's lineage goes back to Imam Zain al-Abidin (AS). According to historical documents, this building dates from the era of the Abbasid Caliph Al-Mustansir Billah and was rebuilt in the 7th century AH. Interior decorations include stone inscriptions and stucco work from the Seljuk, Safavid, and Qajar periods. The dome is double-layered with an exterior Rak-type facade and interior covering. The mausoleum originally included a guest house, school, library, kitchen, and other facilities that have gradually disappeared. This work is registered as number 364 in the National Monuments List (Eghtedari, 1996).

Dome of Daniel the Prophet

Pir Ruband Tomb

Imamzadeh Abdullah Mausoleum

6.4.4 Tomb of Khadmagh Khidr (Khidr Nabi):

Located on the road from Shushtar to Masjed Soleyman, this tomb is also known as Khwajeh Khidr and Maqam Khidr. The architecture reflects Seljuk period influence, though evidence suggests later renovations. The dome is of Orchin type, similar to other Khuzestan monuments (Eghtedari, 1996).

6.4.5 Tomb of Yaqub Laith Safari (Shah Abul Qasim):

Located on the Dezful-Shushtar road near the village of Islamabad, this building is the tomb of Sheikh Abul Qasim bin Ramadan Balkhi Jozi, known as Shah Abul Qasim, whose lineage traces back to Musa bin Jafar (AS). The tomb is also locally known as the tomb of Yaqub Laith Safari. The dome is of Orchin type with 19 floors (Eghtedari, 1996).

Tomb of Khadmagh Khidr

Tomb of Yaqub Laith Safari

6.4.6 Additional Khuzestan Sites:

The following buildings represent additional examples of Orchin domes in Khuzestan Province:

- Tomb of Abbas ibn Ali and Imamzadeh Zain al-Abidin in Haft Tappeh
- Tomb of Pir Isaq
- Tomb of Qadamgah Abolfazl
- Tomb of Amir Hazer
- Tomb of Imam Reza Deimi
- Tomb of Pir Habash
- Tomb of Seyyed Muhammad (Mahmud) and Imamzadeh Tuil in Dezful
- Tomb of Saleh Peymber
- Tomb of Shah Najaf
- Tomb of Sar Bakhsh
- Maqam Hussein, Maqam Seyyed Saleh
- Tomb of Pir Fath
- Tomb of Ali, Tomb of Abbas Kechike
- Tomb of Bibi Do Khairun
- Tomb of Pir Changpa
- Tomb of Sheikh Mohammad Sawar
- Tomb of Seyyed Qutb al-Din
- Tomb of Seyyed Hassan, Tomb of Seyyed Naser al-Din
- Tomb of Nabi Allah
- Tomb of Sozposh Do Peiron
- Tomb of Amir al-Momenin Do Peiron
- Tomb of Ali Gotvand
- Tomb of Shahrason

- Tomb of Muhammad ibn Zaid
- Tomb of Bushran
- Tomb of Sultan Ibrahim
- Tomb of Morteza Ali
- Tomb of Ali Kam Dardeh
- Tomb of Shoaib Nabi
- Tomb of Soufan Ali
- Shi Nishan and Dar Aghili tombs in Shushtar
- Seyyed Hossein Zahedon tomb
- Chahar Piroon tomb
- Pir Alamdar tomb
- Abbas bin Ali tomb in Ramhormoz
- Irahim Khalil tomb in Hoveyzeh
- Imamzadeh Hamzeh in Mahshahr

6.5 Bushehr Province

6.5.1 Imamzadeh Hassan (AS) Mausoleum:

Located in the Imam Hassan district of Deylam County, Bushehr Province, this imamzadeh's lineage traces back to the seventh Imam, Hazrat Musa ibn Jafar (AS). The building materials include stone and plaster, and the structure dates back to the Ilkhanid period. The present mausoleum has three rooms, with the dome located over the second room and the third room serving as the burial place. The dome follows the Orchin style similar to those in Khuzestan Province. This monument was registered in the National Monuments List on March 16, 2008, with registration number 22169 (field study).

6.5.2 Tomb of Imamzadeh Sulayman ibn Ali (AS):

Located in Ganaveh, Bushehr Province, this imamzadeh's lineage goes back to Imam Zain al-Abidin (AS). The building dates from the Safavid and Qajar periods, though the dome is newer, constructed approximately 70 years ago. The dome is stepped with a polygonal base decorated with light blue tiles. The base is circular with six floors. This building was registered nationally on January 31, 2000, with registration number 2576 (Eghtedari, 1996; Qaed Sharaf et al., 2015).

6.5.3 Dome of Mir Mohammad Hanafiyeh:

Located on Kharg Island, Bushehr Province, this tomb honors the son of Imam Ali (AS), as confirmed by an inscription. The tomb features a 15-story, star-shaped dome and a small circular dome. The interior is decorated with star and octagonal inlays from the Mughal era, with tiles bearing the date 1337 AH. The primary construction material is brick. This tomb was registered on December 7, 1998, with registration number 2205 (Qaed Sharaf et al., 2015; Al-Ahmad, 1982).

Imamzadeh Hassan (AS) Mausoleum

Tomb of Imamzadeh Sulayman ibn Ali

Dome of Mir Mohammad Hanafiyeh

6.5.4 Sheikh Mansour Khazai Mausoleum:

Located in the village of Ziarat, Borazjan County, Bushehr Province, this building dates back to the Timurid era. The structure consists of three parts: the dome chamber, the tomb room, and a porch. Construction materials include brick, rubble, and plaster. The dome is an Orchin type with a polygonal base, featuring 16 floors and 24 sides, reaching over 8 meters in height. The floors are simple and undecorated. Local tradition suggests this complex may have functioned as a caravanserai, with traces of mosque columns visible on the northern side supporting this interpretation. A public cemetery surrounds the mausoleum and remains in use. The tomb was renovated by the Cultural Heritage Organization in 2001 and was registered nationally on November 25, 2000, with registration number 2881 (Qaed Sharaf et al., 2015).

6.5.5 Tomb of Abd al-Limam (Prince Zayn al-Abidin):

Located in the village of Ziarat Saheli, Dashti County, Bushehr Province, this tomb's lineage is variously attributed to descendants of Imam Baqir (AS), Imam Sadiq (AS), or Musa ibn Jafar (AS). The original building dates back to the Ilkhanid period, with later renovations. The dome is a single-shell Orchin with a star-shaped plan, constructed from local coral stone and plaster mortar (Hadinejad Dashti, 2017; Nistani & Hagiri, 2016).

Sheikh Mansour Khazai Mausoleum

Tomb of Abd al-Limam

6.5.6 Tomb of Shah Abdul Azim (Safa Anizim):

Located in Dashti County, Kaki District, Bushehr Province, there is disagreement regarding the lineage of the buried person—some consider him a descendant of Musa ibn Jafar (AS), others of Imam Hassan Mujtaba (AS), and some consider him the brother of Shah Reza in Isfahan. This tomb dates back to the Ilkhanid era, and its dome is of Orchin type. Construction materials include stone and plaster. This tomb was registered as a national monument in 2007 with registration number 22182 (Hadinejad Dashti, 2017).

6.5.7 Imamzadeh Bibi Zuleikha Mausoleum:

Located in the village of Chah-Kotah near Bushehr, this mausoleum features a stepped dome with three floors. The building dates back to the Qajar period and was registered nationally on March 16, 2008, with registration number 22176 (Encyclopedia of the History of Architecture and Urban Planning of Iran).

Tomb of Shah Abdul Azim

Imamzadeh Bibi Zuleikha Mausoleum

6.6 Hormozgan Province:

6.6.1 Two-Domed Tomb of Kohard:

Located in Bastak County, Hormozgan Province, this building houses the tombs of several local elders and celebrities, including Haj Sheikh Abdol Rahman Bozorg, Judge Haj Mullah Hussein, and Haj Mullah Abdul Wahid. The name derives from the presence of two Orchin dome structures adjacent to each other. The building dates back to the Afshari period, and the domes feature star-shaped plans. The architect was Haj Mohammad Sharif Kazem. The two-domed tomb was registered as a national monument on February 16, 2004, with registration number 10927 (field study).

6.6.2 Tomb of Sheikh Hassan Ali:

Located in Bastak County, Kohij District, Hormozgan Province, this tomb honors Sheikh Hassan Ali, a scholar residing in Kohij. The building dates from the Safavid period with later Pahlavi-era renovations. Construction materials include stone and local plaster coating, with the last renovation in 1993. The dome is of Rak type. The building was registered on June 7, 2006, with registration number 15398 (field study).

6.6.3 Kholos Mausoleum:

Located in Kholos village, Bastak County, Hormozgan Province, this mausoleum is the burial place of Mullah Ali Mollahi. The dome is of Orchin type and was restored approximately 20 years ago (field study).

Two-Domed Tomb of Kohard

Tomb of Sheikh Hassan Ali

Kholos Mausoleum

6.7 Fars Province:

6.7.1 Tomb of Pir Darvish Ali:

Located in Larestan County, Fars Province, two kilometers from Latifi City, this building dates back to the Islamic era. It was registered as a national monument on August 10, 2005, with registration number 12694 (field study).

6.7.2 Imamzadeh Baba Monir:

Located in Mamasani County, Fars Province, this building is constructed of stone and plaster with a Rak-type dome. This monument was registered in 2001 with registration number 4543 (field study).

6.7.3 Imamzadeh Shir Mard:

Located in Mamasani County, Fars Province, this building dates back to the Safavid era and forms a small complex consisting of the older main building and later extensions. Construction materials include stone and plaster, with an octagonal plan. The dome is double-layered of Orchin type. Two stone lions flank the entrance, likely explaining the name ("Shir Mard" meaning "Lion Man"). It was registered as a national monument on March 15, 2001, with registration number 3068 (field study).

Tomb of Pir Darvish Ali

Imamzadeh Baba Monir

Imamzadeh Shir Mard

6.8 Iraqi Examples

In addition to Iranian sites, similar domes can be traced in Iraq, including:

- Imam Dur in Samarra
- Sheikh Omar Suhrawardi in Baghdad
- Imam Hassan Basri in Basra
- Azgil al-Peegham in Kifal

VII. FACTORS INFLUENCING THE PROLIFERATION OF ORCHIN DOMES

The dome is a symbolic element with relatively common meanings across many cultures, allowing identification of shared concepts between different traditions. A building with a square base and a dome atop it—particularly in the Orchin form—represents the connection between heaven and earth; the transition from square to circle symbolizes the transition from the material world to the heavenly realm (Saeedian et al., 2012). The Orchin dome draws upon multiple sources of inspiration that have shaped its development within different stylistic frameworks and regional contexts. These sources, formed within natural, cultural, and religious contexts, provide the basis for the continuity and evolution of this architectural element across different periods and lands.

7.1 Ancient Civilizational Background:

Among the sources of inspiration for Orchin domes are Mesopotamian palaces, temples, and ziggurats. The ziggurats used in the facades of palaces and temples carried symbolic meaning and were considered a means of connection between heaven and earth, embodying both divine descent and human ascent. The elongated, solid, and stepped nature of these ziggurats, reminiscent of Orchin domes in form, had fundamental roots in the religious traditions of these civilizations. Ziggurats—the word means "high place"—refer to multi-story, cube-shaped buildings that decrease in size as height increases. This stepped and ascending structure, with diminishing dimensions and upward movement, can be interpreted as a source of inspiration for Orchin domes.

In addition to their architectural function, ziggurats held symbolic value, with each floor dedicated to rituals for different gods. The Chogha Zanbil ziggurat in Susa exemplifies this simultaneous structural and symbolic significance. Furthermore, elements such as Achaemenid fire altars, the steps of Persepolis, the motifs on Darius's tomb, the tomb of Cyrus in Pasargadae, the tomb of Mandana (Cyrus's mother) in the Bazpez plain, and motifs on coins from Seleucid and Sasanian periods represent additional sources of inspiration. The common feature among these examples is the presence of tiered, diminishing structures embodying gradual movement from bottom to top.

Accordingly, it can be concluded that Orchin domes have religious and ritual roots, their formation closely linked to religious beliefs, symbolic concepts of ascension, the connection between earth and sky, and ancient traditions of pre-Islamic civilizations (Eghtedari, 1996; Saeedian et al., 2012).

7.2 Natural Inspiration:

Nature has always been one of the most important sources of inspiration in architectural thought and practice throughout history. In traditional societies, where construction knowledge was primarily based on experience, observation, and oral transmission, natural patterns played a fundamental role in forming architectural forms and construction systems. Orchin domes can be considered a clear example of this link between nature and architecture.

The logic of Orchin dome formation is based on the repetition of layers, each placed upon the lower layer with smaller dimensions. This pattern bears significant resemblance to natural structures such as the trunk of a palm tree, a star, a dahlia flower, a pine cone, and a pineapple—structures in which repetition and gradual reduction of components result in balance and coherence of the overall form.

In the historical context of architecture, this imitation of nature can be analyzed not as mere copying of external forms, but as deep understanding of the logic of growth and stability in natural elements. By observing these patterns, traditional architects developed construction methods that allowed covering openings and creating domed spaces without relying on complex engineering tools. From this perspective, the Orchin dome represents the combination of historical experience, observation of nature, and functional needs—a form in which nature served not only as a source of visual inspiration but also as a conceptual guide in architectural development (Tabrizi & Yadegari, 2017).

7.3 South Asian Connections: The Indian Influence

In addition to ancient and natural sources of inspiration, the formation and construction of Orchin domes appear to have been influenced by cultural and architectural traditions beyond the Persian Gulf. Examination of the plan and structure of these domes reveals significant similarities with the towers of Indian temples.

In Indian temple architecture, the plan of the main structure is repeated in smaller dimensions in the upper floors—a solution that is not merely structural but carries symbolic meaning. In this system, the gradual ascent of floors and reduction of dimensions represent the human soul's aspiration for union with the divine, while the descent from the upper point expresses the divine desire to connect with the mortal world. Similar symbolic approaches appear in Chinese architecture, where tiered roofs represent stages of spiritual journey, with the final tier symbolizing heaven.

This conceptual and formal similarity strengthens the possibility of mutual influence among Asian architectural traditions. Lieutenant Colonel Louis Pauly, in his reports, mentioned the existence of temples in the port of Genaveh and stated that these buildings, resembling Hindu temples, had Orchin-type domes made of spiral brick or stone. According to his observations, the architecture of these temples in Genaveh, as well as in neighboring ports and cities, preserved clear evidence of Hindu presence in the region until later periods.

The village of Kholos in Hormozgan Province is particularly noteworthy in this context. The inhabitants of this village were originally Indians who migrated to Iran before the advent of Islam. It is possible that the Kholos Shrine was originally built as a temple for their religious rites—a possibility reinforced by the building's clear similarities with Indian temple architecture, though its function changed in later periods. A similar example of this presence and influence can be seen in Bandar Abbas, where Indian merchants built a temple for their religious rituals (Zanganeh, 2002; Zamrashidi, 2008; Eghtedari, 1996; Movahed, 2005).

Thus, it can be inferred that the tradition of dome-building in India, particularly in the form of tiered and stepped temple towers, influenced the formation of Orchin domes in southern and southwestern Iran. This influence developed within the context of commercial, migratory, and cultural interactions between the Persian Gulf coasts and the Indian subcontinent, reflected in the architecture of this region.

VIII. DISCUSSION: A MULTI-FACTORIAL MODEL FOR ORCHIN DOME PROLIFERATION

The evidence presented in this study supports a multi-factorial explanation for the proliferation of Orchin domes in specific regions of Iran. Rather than resulting from a single cause, the concentration of these domes in southern and southwestern provinces reflects the convergence of several distinct but interrelated factors.

Climatic Adaptation: The stepped form of Orchin domes provides functional advantages in hot and humid climates. The tiered surfaces reduce solar heat gain by creating self-shadowing, while facilitating rapid drainage of seasonal rainfall—a significant improvement over smooth domes in which water runoff can be slower and moisture penetration more problematic. This climatic efficiency helps explain why Orchin domes predominate in the warm provinces of Khuzestan, Bushehr, and Hormozgan, while other dome types prevail in central and northern Iran.

Symbolic Continuity: The stepped form carries deep symbolic resonance in the cultural history of southwestern Iran, connecting to ancient Mesopotamian and Elamite traditions of ziggurat construction as well as Achaemenid stepped tombs. This symbolic continuity—the association of ascension with sacred architecture—provided a conceptual framework within which the Orchin form could be meaningfully deployed for religious structures, particularly tombs and shrines.

Natural Prototypes: The resemblance of Orchin domes to palm trunks, pine cones, and pineapples suggests that traditional architects drew upon observed natural patterns. This biomimetic approach is consistent with broader patterns in traditional architecture, where forms are often derived from intuitive understanding of natural structures rather than abstract geometric principles alone.

Trans-Regional Exchange: The similarity between Orchin domes and Indian temple architecture, combined with historical evidence of commercial and cultural exchange across the Persian Gulf, points to Indian influence as a significant factor. Maritime trade routes that connected southern Iran with the Indian subcontinent facilitated not only the exchange of goods but also the transmission of architectural ideas and forms. The concentration of Orchin domes in port cities and their hinterlands—Bandar Abbas, Bushehr, Genaveh, Kharg Island—supports this interpretation.

Chronological Patterns: While precise dating of many structures remains challenging, available evidence suggests that Orchin domes appear primarily from the Seljuk period onward, with continued construction through the Safavid and Qajar eras. This temporal distribution aligns with periods of intensified trade and cultural exchange across the Persian Gulf.

The interaction of these factors created conditions under which the Orchin dome form was not merely introduced but was sustained and reproduced over centuries. Climatic suitability ensured its functional viability; symbolic resonance provided cultural meaning; natural prototypes offered intuitive design logic; and trans-regional exchange supplied formal models and perhaps technical knowledge. In this interpretation, the Orchin dome represents a regional architectural type shaped by the particular environmental and cultural conditions of southern Iran, yet connected to broader networks of exchange spanning the Indian Ocean world.

IX. CONCLUSION

According to the findings of this study, Orchin domes, as distinctive architectural features of southern and southwestern Iran, are distributed across the provinces of Lorestan, Ilam, Kohgiluyeh and Boyer-Ahmad, Khuzestan, Bushehr, Fars, and Hormozgan, with the highest prevalence in Khuzestan and Bushehr provinces. Limited examples of this dome type are also observed in Iraq. This relatively limited geographical distribution makes Orchin domes a distinctive and regionally focused element in Iranian architecture.

Analysis of the distribution patterns reveals that the presence of these domes is concentrated in areas that historically experienced sustained cultural, commercial, and migratory interactions across the Persian Gulf. Direct and continuous commercial connections with the lands of East and Southeast Asia, particularly the Indian subcontinent, played an effective role in strengthening and stabilizing this architectural form. The tradition of dome-building in India, especially in the tiered and stepped forms of temple architecture, was transmitted to southern and southwestern Iran through these interactions and is reflected in the formal characteristics of Orchin domes.

In addition to external influences, the coexistence of architecture and nature is evident in the similarity of these domes to elements such as palm trunks, pineapple fruits, and pine cones, indicating direct influence from the natural environment on form generation. These similarities have not merely aesthetic significance but also reflect the development of structures well-adapted to the climatic conditions of southern Iran, including intense sunlight and high humidity. Climatic and structural efficiency can thus be considered a primary factor in the adoption and continued use of this dome type.

Furthermore, historical and cultural influences from ancient times have played an important role in the formation and consolidation of Orchin domes. Architectural elements such as ziggurats, Mesopotamian temple facades, the tomb of Cyrus, and the steps of Persepolis all feature stepped and ascending structures formally and symbolically similar to Orchin domes. This historical background provided a foundation upon which the stepped form could carry meanings related to ascension, sanctity, and the connection between earth and sky.

In summary, the proliferation of Orchin domes in southern and southwestern Iran resulted not from any single factor but from the convergence of multiple fundamental influences: climatic and technical adaptation, inspiration from local nature, continuity of ancient symbolic traditions, and reinforcement through trans-regional connections, particularly with India. This combination of factors enabled the Orchin dome to become established as an efficient, meaningful, and identity-forming architectural type in these regions, sustaining its reproduction over centuries.

Future research should focus on comparative architectural analysis with Indian temple forms to more precisely identify specific points of correspondence and divergence. Detailed chronological seriation using material analysis techniques could refine understanding of temporal patterns in Orchin dome development. Investigation of the roles played by specific Sufi

orders, merchant communities, or craft guilds in transmitting architectural knowledge across the Persian Gulf would further illuminate the social mechanisms underlying this distinctive architectural tradition.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Journal of Creative Research in English Literature & Culture (JCRELC)
ISSN: 3108-0812
[Vol-2, Issue-4, April 2026]
Website: www.jcrelc.com

Ethics and Ecology in the Economy of Existence

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Received:- 30 March 2026/ Revised:- 09 April 2026/ Accepted:- 18 April 2026/ Published: 30-04-2026

Abstract— *The transition from agrarian to industrial modes of life constitutes one of the most significant developments in human civilisation, producing ruptures across multiple levels of existence with profound ecological and ethical implications. While this progress has been defined by unprecedented knowledge acquisition and increased human control over environmental resources, it has simultaneously resulted in the depletion of the planet's wealth and growing apprehension that modern developmental trajectories may prove detrimental to human survival. This paper examines the historical origins of the ecological crisis, tracing its roots to European Enlightenment rationality and the birth of modern science. It argues that the modern conception of human freedom and rationality, while emancipatory in certain respects, has paradoxically legitimised the exploitation of other species and natural systems. Drawing on ecological economics (Nordhaus), historical analysis (Grayling, Habermas), and philosophical critique (Rousseau, Wittgenstein, Agamben), the paper proposes that redefining man not primarily as a rational or moral being but as a living being among other living beings may offer a more viable foundation for environmental ethics. The paper concludes by reflecting on the degeneration of critical reading culture in the digital age as a contributing factor to climate scepticism and intellectual paralysis.*

Keywords— Ecology, Existence, Modernity, Enlightenment, Environmental Ethics, Climate Crisis.

I. INTRODUCTION

One can understand a phenomenon only when one knows its origin. A true scientific analysis applies reason to observations in an attempt to discover the deepest mysteries of human nature and its relation to the physical world. The ecological conflagration of the present time must be set in a historical perspective if one aims to arrive at a possible course of action. It is partially the effect of that mode of knowledge and life which goes back to the birth of European science and its related developments—developments from which the world at large could not remain unscathed.

The transition from agrarian to industrial modes of life is perhaps one of the most significant developments in the history of civilisations, resulting in rupture at different levels of human existence with profound implications. This progress is defined by unprecedented acquisition of knowledge and maximisation of man's control over environment and its resources. For a very long time, the ancestors of modern man were quite helpless against the forces of nature, which led to its deification—a perception that largely informed moral and religious discourses. The development of European science over the last four hundred years has gradually changed this traditional perception of nature, and the subsequent development of technology transformed man's whole relation with his immediate environment, resulting in the destruction and depletion of the planet's wealth.

For the last few decades, there has been growing apprehension that the modern course of progress is detrimental to human survival. This apocalyptic vision has permeated contemporary scientific, social, political and literary discourses. Since the cosmic challenge is so complex, it seems to go beyond legal and political intervention alone. On the other hand, there is a growing suspicion and refutation of the scientific facts on which the consciousness of the crisis is based. Since there is no going back to the premodern stage of life, mankind must deal with the crisis from within the conditions of modernity itself. In this

situation, the paper intends to examine the contradictions of progress and explore some alternatives to heighten the consciousness of contemporary man about his immediate world in the general struggle for survival.

One can illuminate the equation of man and his environment by observing the small organic societies whose residues are deplorably left in the last phases of their disintegration and disappearance in developing economies. Reflections on such communities, where production and consumption are still not fully commodified, help one form an image of the earliest or pre-industrial mode of life—an image that can serve as an objective correlative for understanding the paradox of the industrial economy and its pernicious impact on ecology and human existence. There is a growing literature constituting the ecological discourse that projects an apocalyptic vision of the world, posing fundamental questions of human freedom and survival. Such questions will likely absorb the whole emotional and intellectual energy of posterity in the general struggle for existence.

II. THE HISTORICAL ORIGINS OF THE ECOLOGICAL CRISIS

The birth of modern European science and the subsequent technological and economic progress have not only left a deep mark on other civilisations but also underline a series of ruptures at the level of human intellect and emotion, thought and feeling. Indeed, the history of mankind has passed through various vicissitudes, but the peculiar trait of the great transition of seventeenth-century Europe is that in the making of the scientific phenomenon only a few individuals were involved—whom A.C. Grayling calls "geniuses"—who changed the great premodern continuum of mankind into the modern. Grayling's hypothesis is that the seventeenth century changed the entire course of human history by creating a new consciousness in man about himself and the universe. In an age permeated with the fear of being dominated and the ambition to dominate others, European civilisation made a great leap in the discovery of knowledge. Grayling writes: "The realisation that there are other worlds, that the universe is stupendously larger and more complex than the pre-modern pictures of it were capable of suggesting, required a major intellectual revolution" (16). It required, among many imperatives, an intellectual emancipation from medieval and pre-modern mentality and assumptions about man and his world.

What is known as Renaissance, Reformation, or Enlightenment was, at an intellectual level, characterised by the consciousness to explore the world—an enterprise not without war and aggression against other civilisations and cultures under the veneer of the ideology of progress. This ideology at political and economic levels set mankind on an entirely different course of development. It created political and economic conditions in which mankind had to gradually renounce its traditional agrarian and cultural practices. When one reflects on colonialism and capitalism, one hardly fails to perceive the pernicious power of capitalism. Its dynamics lie in denying all pre-existing and existing modes of economic life. The study of anthropology and ethnology makes it clear that the ideology of progress gained impetus from the encounter with those civilisations still living on minimal technological and economic capital—against whom Thomas Hobbes could not suppress his prejudice. His description of natural man gives one a perspective on European modernism and individualism.

With the dawn of the modern era, mankind indeed made a great leap in its material and epistemological domains. The age of Galileo and Newton ushered in a new consciousness created by the explorers of the new world. The expeditions of Columbus and Pigafetta created a unique consciousness in European civilisation about other civilisations and also about man's place on this planet. Thus, the consciousness of European modernity is both textual and anthropological. As this consciousness came under intense critical scrutiny in the twentieth century under unprecedented historical and political conditions, it is rewarding to understand its nature and function—an understanding that may help one comprehend the predicament of our ecology and existence.

In his comprehensive study of European modernity, Enlightenment, and subsequent epistemological and economic developments, Habermas writes: "In his famous introduction to the collection of his studies on the sociology of religion, Max Weber takes up the 'problem of universal history' to which his scholarly life was dedicated, namely, the question why, outside Europe, 'the scientific, the artistic, the political, or the economic development… did not enter upon that path of rationalisation which is peculiar to the Occident?'" (01). For Weber, modernity and rationality are simultaneous phenomena. To Weber, according to Habermas, European rationalism signifies a cultural revolution, as Grayling also foregrounds. According to Habermas, this revolution for Weber marked "the process of disenchantment which led in Europe to a disintegration of religious world views that issued in a secular culture…. What Weber depicted was not only the secularisation of western culture, but also and especially the development of modern societies from the point of view of rationalisation" (01).

III. RATIONALITY, INDIVIDUALITY, AND THE PARADOX OF FREEDOM

The preceding observations bring to our speculation the coexistence of a plurality of modes of social organisation, diversity of culture, and alternative modes of economic life in the premodern world and pre-capitalist economy—modes that gradually

dissolved with the expansion of colonialism, forces of globalisation, and transition to industrial modes of economic production and consumption. Similarly, on the other hand, the normative value of rationality created scepticism regarding the perception of traditional values, ethics, and morality under the impetus of the ideology of progress. The idea of rationality propounded the notion of individuality based on assumptions peculiar to Occidental thought and probably alien to other civilisations. It is imperative to re-examine the paradox of this rationality and individuality.

Unlike the premodern age, modernity can be identified with a consciousness permeated by a peculiar sense of individuality and freedom—the very foundation of the philosophy of humanism. It was to promote individual freedom that all social, political, and economic institutions were conceived and established in modern Europe. This project set out to maximise and maintain the supremacy of man over nature and other species—a notion not without paradoxical implications, or what Agamben calls "dialectical tension" (12).

Our modern idea of freedom, seen through the history of Enlightenment, is a relatively recent phenomenon. The way it is being realised through economic and political institutions has not left other species unimpaired and unaffected. We still pursue it with the same delusion, without realising that the world we inhabit in the twenty-first century has fundamentally changed. Therefore, the modern conception of human rights, whose great principles were conceived primarily in the eighteenth century, looks paradoxical in retrospect. The principles of rights emanating from Enlightenment and inspiring the French Revolution were driven by the desire to abolish the privileges of nobility and the immunity of clergy to promote liberty.

The idea of man as a rational being is not without moral basis. But his material pursuit is in constant conflict with the universal rights of other species. However, if one wants to conceive a basis for human freedom that imposes its will without distinction, then one should redefine man not as a rational and moral being but as a *living being*. The idea of rationality and morality differs across civilisations. But the idea of man as a biological being is probably the most universally acceptable proposition, the implications of which can illuminate the course of mankind's past and present. The concept of rationality, with its associated ideal virtues, contradicts the rights of other species. But when man limits his identity to that of a living being, the rights of the human being stop whenever and wherever their exercise endangers the existence of others. If man's survival is so symbiotically dependent on other beings, then exploitation legitimised at the expense of others cannot continue forever without leading to the annihilation of others. Just before his death, the great physicist Stephen Hawking tried to make the world conscious of this fact—a dystopic vision that H.G. Wells had projected in his writings long ago. The right to life and free development of all living species should be considered the only indispensable right, because the extinction of any species causes an irreparable loss to the universe of creation.

IV. LANGUAGE, THOUGHT, AND THE SCHISM BETWEEN CONSCIOUSNESS AND LIFE

Most of mankind's problems are effects of the medium of communication. Wittgenstein puts it philosophically with remarkably curious brevity: all problems of man arise from the misunderstanding of the logic of language. Therefore, according to Wittgenstein, "it is not surprising that the deepest problems are in fact not problems at all" (27). Wittgenstein's deconstruction of the language of philosophy offers an insight on a different plane: that the demands of human thought and those of biology are based on inverse propositions. This schism between thought and life is probably a prominent feature of European modernity, the impact of which can be perceived at different levels of social, political, and economic policies.

The factors accounted for the bleak prospect of human survival are rooted in the self-consciousness of man of scientific civilisation. The whole endeavour of industrial man to protect the material environment is counterproductive. Nature is not like entities in museums. Nature should not be protected *for* man; rather, it should be protected *against* man. This underlines the fact that man himself is the cause of the problem of which nature has become the victim. The rights of other living species are rights *in regard to* man, not vice versa. Otherwise, the rate of extinction of species and destruction of nature may increase, imperilling human economy and survival.

V. ECOLOGICAL ECONOMICS AND THE MORAL IMPERATIVE

William Nordhaus has taken the debate and discourse on climate change and its economic consequences to a new height by incorporating ecology in terms of economic value. He observes, on the morality of Cartesian rationality, in a manner that is illuminating both in retrospect and in anticipation. Nordhaus writes on the authority of Schopenhauer: "the assumption that animals are without rights and the illusion that our treatment of them has no moral significance is a positively outrageous example of western crudity and barbarity" (134). Nordhaus has drawn the world's attention to one of the most critical issues of our time—the catastrophic consequences of ecosystem annihilation—which earned him recognition from the Nobel Committee. Though there have been mass extinctions on earth over the last half billion years, as biologists and ecologists have

documented, there is growing apprehension, based on scientific observations and facts, that the combination of climate crisis and human influences will cause the next extinction. Nordhaus's great contribution lies in making the world aware that the value of ecosystems, like that of space, goes beyond commerce and economy:

> Economists have long recognised that people do not live by bread alone – there is a definite value of nonmarket activity. Many things that people care about are not produced and sold in markets … Understanding the economics of nonmarket activities is important because the impacts of climate change fall outside the marketplace… Of all the areas we have examined, the impact of climate change on species and ecosystems are the furthest from the markets … Some people may object that even asking these questions displays a crude materialism – that trying to weigh life against money is an immoral act. But this is surely wrong. The real immoral act involves omitting the values of these species when we count up the losses from climate change (125-126).

Nordhaus's analysis of the impact of global warming on agriculture, food production, and human health not only warns of an impending catastrophe but also calls for sensible and effective climate-conducive economic policies. His recommendation of taxation on carbon emissions is conceived in terms of mitigation. Beyond the environmental ethics of the individual, this requires government intervention to slow the pace of global warming. Since the challenge transcends individual nations, it requires international agreement and intervention. Nordhaus argues that unless the world, particularly the major economies, makes concerted efforts with stringent regulations and effective implementation, the crisis will reach the point of no return. The Kyoto Protocol was indeed an ambitious endeavour to develop an international framework that would effectively harmonise the economic policies of different countries. But countries did not find it economically in their long-term national interest. If the world is truly serious, countries should rise above their narrow and immediate interests—what Nordhaus calls the "nationalist dilemma"—for maximum national welfare in the long run (317).

VI. PREMODERN ETHICS AND THE QUESTION OF MORALITY

If man is a moral being, he is so only in the sense that his virtues promote the life of other species. It was this concept of morality—enunciated by some civilisations for the mutual preservation of species, elements of which can be perceived in the totemic beliefs of premodern civilisations, in the cultural practices of Hinduism, Buddhism, and Jainism, and most conspicuously in humble and illiterate peasantries—that once regulated human relations with nature. This humility was probably the ethics of agrarian communities throughout mankind's preindustrial condition. The societies that until recently lived on bare means of subsistence seemed to operate by the belief, however superstitious, that man is not the master of nature. By means of customs, superstition, and totemic beliefs, they restricted man's consumption and exploitation of other living and non-living beings and thus imposed a strict morality for mutual preservation.

It is a great irony of the Age of Enlightenment that all of our progress, particularly in the last two hundred years, has been at the expense of other species and fellow beings. Seen from this perspective, the role of education in the age of scientific enlightenment—in eradicating and undermining traditional beliefs—has resulted in contradictions today. Though the progress of civilisation is supposed to reform traditional belief and enlighten mankind about all forms of violence and despotism in social and cultural practices, one should not be ignorant of the fact that, despite refinement in the appearance of social existence, concealed forms of cruelty are inherent in governance and administration and in the general abuse of political power.

VII. THE ECONOMIC PARADOX: KEYNES ON PROGRESS AND PROSPERITY

There is no doubt that with the progress of knowledge and science, mankind has seen unprecedented improvement in the material composition of life. This newly discovered prosperity is historically a new phenomenon, though it has unfortunately not percolated to all sections of societies on the planet. Nevertheless, the magnitude of this prosperity is historically so unprecedented that it poses a series of economic and biological problems about which Keynes was apprehensive almost a century ago. The economist thought that with the progress of science, technology, and medicine, modern man has been able to somehow overcome problems against which his ancestors were helpless—namely, the fear of nature, of hunger, disease, and death. With technological development and medical progress, life in general is not so uncertain, particularly in advanced economies, as it was in the past.

What worries Keynes the most is not only the magnitude of progress and population but the suddenness with which it has happened—a development that, on reflection, staggers the imagination. Keynes writes: "From the earliest times of which we have record—back, say, to two thousand years before Christ – down to the beginning of the eighteenth century, there was no very great change in the standard of life of the average man living in the civilised centres of the earth" (360). Keynes rightly attributes the great continuum to two interconnected factors: lack of technological advancement and man's inability to

accumulate capital. With improvement in these spheres, human greed—which remained dormant for millennia—renewed its strength. For instance, one can speculate that the general standard of life in India at the end of the nineteenth century was not very different from what it had been for centuries. In the past, prosperity was confined to a very tiny minority while life in general was characterised by poverty.

Recent progress is not only unprecedented and historically unique but, given the great continuum of poverty, finite resources, and climatic cataclysm, the prospect of the current rate of progress and prosperity is very uncertain. Moreover, it has not been without debilitating effects on human health and happiness, social upheaval, and increasing economic inequality. These realities should enlighten those at the helm of power and policy regarding the direction in which the world is heading before it is too late and the whole progress proves pyrrhic. If man is a rational being, his rationality lies probably in this realisation.

The economic analyses by Keynes and Nordhaus also offer the insight that the requirements of life go beyond producing and feeding, and that for the health and happiness of mankind, equilibrium between production and consumption is a fundamental requirement. With the transition to industrial modes of production, the trajectory of development and the prospect of survival are running on cross purposes. This transition has caused such depletion of natural resources, extinction of species, and destruction of ecosystems that any effort at resolution is bound to absorb our whole mental and emotional energy. Since, unlike managed systems such as economic, financial, and political crises, the elements of environmental problems are largely unmanageable.

VIII. THE AGRARIAN ALTERNATIVE AND ROUSSEAU'S WARNING

The only possibility one can speculate upon is that of judicious living in consonance with rational policy that can have some mitigating effects. In this respect, one can imagine the small organic agrarian communities that, once so vibrant in India and elsewhere, are unfortunately in their final phase of disintegration and decay. Such communities can help one form an image of premodern societies that can serve as an objective correlative to explain the paradox of industrial civilisation. These communities—whose vestiges can perhaps still be discovered in inaccessible regions of India—maintained a healthy harmony and reveal an intimate working of all forms of life.

Given the cataclysmic prospect which mankind is perhaps doomed to face, it was in this stage that mankind was destined to stay by nature. It was in this mode of life that Rousseau, the great philosopher, thought mankind should have stopped, lest it suffer from regret and nostalgia:

> "There is, I feel, an age at which the individual man would wish to stop… Discontented with your present state, for reasons which threaten your unfortunate descendants with still greater discontent, you will perhaps wish it were in your power to go back; and this feeling should be a panegyric on your first ancestors, a criticism of your contemporaries, and a terror to the unfortunates who will come after you" (69).

More than two centuries ago, the great philosopher was unconsciously addressing the man of today. Had his contemporaries paid serious attention to the recluse genius, mankind might not have come to face this catastrophic end.

The transition from agrarian to industrial modes of life was not only an economic phenomenon. It created what Lewis Thomas calls "human chauvinism" (05). It imperceptibly changed the entire morality of man—his relation with nature as well as with his fellow beings. The consciousness of this discontinuity may not help mankind to go back, as we have reached almost a point of no return, yet it is necessary to remember that man is a living being and that his immediate challenge of survival goes beyond economic and political policies. Ecologists and economists are conscious of this fact. Nordhaus's comprehensive research contains exhaustive analysis and elaborate political and economic suggestions, but he is well aware that despite being a scientific and economic problem, it is also a moral imperative. This is what he seems to suggest in his observation: "True, scientific controversies have been central to public debates about global warming. However, in reality the ultimate source—and the solutions—lies in the realm of the social sciences" (17). Al Gore (awarded the Nobel Peace Prize in 2007 along with the Intergovernmental Panel on Climate Change), whose *An Inconvenient Truth* (2006) revolutionised contemporary consciousness of the climate crisis, is more categorical: "by rising to meet the climate crisis, we will find the vision and moral authority to see all these not as political problems, but as moral imperatives" (214).

IX. INTELLECTUAL DEGENERATION IN THE DIGITAL AGE

The insight one gains from the observations of Nordhaus, Al Gore, and other sensitive ecologists and economists also makes one conscious, on a very different level, that those engaged in the study of language and literature have probably very little qualification to speak about such matters. Nevertheless, the only way they are capable of making any contribution—no less

significant—is to make one see how reason applied to observations can illuminate the deepest problems of man and his environment. Beyond the climate conventions and conferences on which millions of dollars are wasted, one should try to change one's perspective to reflect on the equation of ecological crisis and intellectual degeneration.

The degeneration of reason and the disintegration of virtues in the age of modern means of communication have left their pernicious effect on the health of democracy as well as ecology. This is what Al Gore seems to convey in his observation on the diminishing role of reason and logic in matters of political and economic policies and the increasing falsification of facts in the television and digital era. The flood of visual images circulated in rapid succession not only disrupts the power of concentration and reflection but also paralyses the rational faculty and the very capability of analysis and interpretation. This enervation of intellect can partially explain climate scepticism. Consequently, there is exponential growth of knowledge and greater accessibility to education, yet there is active denial of the knowledge of the climate crisis that is based on scientific facts, observations, and conclusions.

The intellectual health of man is not independent of the nourishment that reading is supposed to supplement. The birth of democracy and the development of reading culture in the post-printing era in Europe were simultaneous phenomena. Since the quality of people's thoughts is not independent of the means and mode of communication, the increasing loss of reading habit in the digital era has profound impact on the health of the human mind. Al Gore sees the culture of reading beyond technical advantages as an ethical exercise—a fundamental requirement of man's intellectual as well as spiritual health. In this respect, the growing tendency of consumerism—which Ramsey Clark, the former Attorney General of the United States, considers the most dangerous immorality and evil of modern times—and the loss of reading have an underlying relation with the degeneration of human consciousness and the prospect of survival.

X. CONCLUSION

This paper has attempted to trace the ecological crisis to its historical and intellectual origins in European modernity, Enlightenment rationality, and the transition from agrarian to industrial modes of production. It has argued that the modern conception of human freedom, while emancipatory in certain respects, has paradoxically legitimised the exploitation of natural systems and non-human species. Drawing on ecological economics, historical analysis, and philosophical critique, the paper has proposed that redefining man not primarily as a rational or moral being but as a living being among other living beings may offer a more viable foundation for environmental ethics. The paper has further suggested that the degeneration of critical reading culture in the digital age has contributed to climate scepticism and intellectual paralysis, exacerbating the very crisis that demands our most reasoned attention.

No solution is offered here with easy confidence. The problems are too deep, the contradictions too entrenched. But if there is a beginning, it lies in the recognition that man is not the master of nature but a participant in a community of living beings whose rights and existence are intertwined with his own. The path forward—if there is one—requires not a return to a romanticised premodern past but a judicious integration of rational policy, moral imperatives, and a recovered capacity for sustained, critical reflection. Whether mankind possesses the will for such a transformation remains the open question of our time

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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