

Climate, Environment, and Leisure in Antiquity: A Comparative Anthropological–Historical Analysis

Mubarak M. Aldossari

Department of Languages and Translation
Faculty of Education and Arts, University of Tabuk, Saudi Arabia
maldossary@ut.edu.sa

Abstract

The study develops an interdisciplinary anthropological/ historical approach to the study of climate, environment and leisure in ancient societies. Most research on environmental adaptation has been dedicated to the technological systems, to agriculture and to political transformation, but less to symbolic and affective aspects of climatic experience. This article proposes that ancient societies interpreted, negotiated, and emotionally managed environmental instability through leisure activities, such as festival and music, dance, athletic competitions, and public spectacles, which can be considered mechanisms of cultural climate regulation.

The study uses a comparative qualitative approach based on ritual theory, cultural ecology, environmental history, and the anthropology of embodiment, and draws on case studies of ancient Egypt, Greece, Rome, South Asia, and Mesoamerica. The analysis shows that leisure practices turned climatic rhythms into ways of social participation that were intelligible and that served to support emotional continuity, communal identity, and symbolic order.

These results suggest that ancient societies did not respond only through material means to climate change, but also through ritualized performance and embodied participation. Seasonal festivals allowed communal life to coincide with the environment, music and dance brought climatic experience to an emotional level, and recreational systems allowed physical interaction with the environment.

It adds to the field of environmental humanities and historical anthropology by conceptualising leisure as an adaptive cultural institution that is part of the ecological organisation. In addition, it proposes that, in ancient societies, resilience was not only related to technological strategies for survival, but to the continuity of symbols, collective memory, and emotional regulation.

Keywords: climate adaptation, environmental humanities, leisure, ritual, cultural ecology, antiquity, anthropology, embodiment, resilience

1. Introduction

Climate has influenced human civilizations not only in terms of material limitation and ecological dependence, but also as a system of ritual meaning and collective memory and symbolic cultural organization. Seasonal rainfall, river flooding, agricultural productivity, and environmental stability were the essence of life for ancient societies. Climatic variability affected food production, political power, demographic structure and economic continuity. But the environment was not limited just to subsistence.

Climate, Environment, and Leisure in Antiquity: A Comparative Anthropological–Historical Analysis

There were also symbolic and performative processes of dealing with ecological uncertainties that were developed in ancient communities and open for interpretation, organization, and social negotiation.

Climate history has largely been defined by environmental crises, political collapse, migration and economic change. Climatic instability is recognized as a key factor in social change and institutional fragility (Parker, 2013), and an increasing number of studies in the field of environmental history have begun to explore the influence of climate change on social, cultural, and political shifts. In addition to that, there is also archaeological evidence of reduced population levels, settlement changes, and political collapse in several ancient civilizations in the event of prolonged droughts and environmental stress (Renfrew & Bahn, 2020).

Yet, despite the progress made, climate scholarship has maintained a focus on technological adaptation and economic response and given comparatively little attention to symbolic mediation and collective cultural practice. Rituals, festivals, music, theatrical performance, and recreation often are overlooked as secondary cultural manifestations and not as means by which societies actively struggled with environmental dependency.

The separation between ecological adaptation and symbolic culture is being disputed with recent advances in the environmental humanities. However, environmental experience is clearly recognized as being culturally constructed and formed via ritual, memory, emotion and collective imagination, and not simply through material engagement with the environment (Sörlin, 2012; Hulme, 2017). Thus climate is not just a physical state, but also a cultural phenomenon which is understood in the context of social institutions and symbol systems.

Anthropologists have also pointed out that when ritualised collective action arises, it often appears in situations of uncertainty and ecological dependence. Rappaport (1999) suggests that ritual is a way of stabilizing the collective experience, reducing its randomness and making it more structured and symbolic. Similarly, Ingold (2000) argues that human societies “dwell” in meaningful ecological relationships that are co-constructed by environment, embodiment, and cultural perception.

However, the role of leisure as a means to adapting to climate change in ancient societies has not been systematically examined. Previous research frequently treats ritual, environmental adaptation, recreation, or seasonal festivals as discrete units of analysis, and does not take into consideration the interdependence of these factors.

In the view of some historians ancient festivals were essentially structures of religious legitimation and political power (Beard, North, & Price, 1998). Others have focused on their economic and civic roles in the urban organization (Kyle, 2014). These meanings are still important, but they can be partial in not fully capturing the wider environmental aspects of collective leisure activities.

This study suggests that leisure in Antiquity was a cultural climate regulator. Climatic rhythms were translated into ritualized patterns of music, dance, athletic games, seasonal feasts, and other forms of emotional, social and symbolic order among the ancient peoples, under an environmental constraint.

It is important to note here that the argument does not presume that the ancient practice of leisure was a conscious attempt to solve the climatic instability in a modern scientific way. Instead, the study suggests that these practices were used to mediate and collectively experience and interpret the environmental uncertainty. Leisure and culture constituted an ecological dependency through the repetition of rituals, embodied participation, and the coordination of seasonal activities.

The central research question that will guide this article will be therefore:

How did the ancient societies deal with climatic and environmental uncertainties through leisure practices that culturally regulate and respond?

In order to answer this question the article uses an interdisciplinary anthropological–historical approach that combines cultural ecology, ritual theory, environmental history, archaeology and the anthropology of time. To uncover patterns of climate-symbol-recreation-collective resilience, comparative case studies are examined from ancient Egypt, Greece, Rome, South Asia, and Mesoamerica.

This article brings together environmental humanities and historical anthropology and thus adds to the new interdisciplinary debate of cultural aspects of climate adaptation in historical societies.

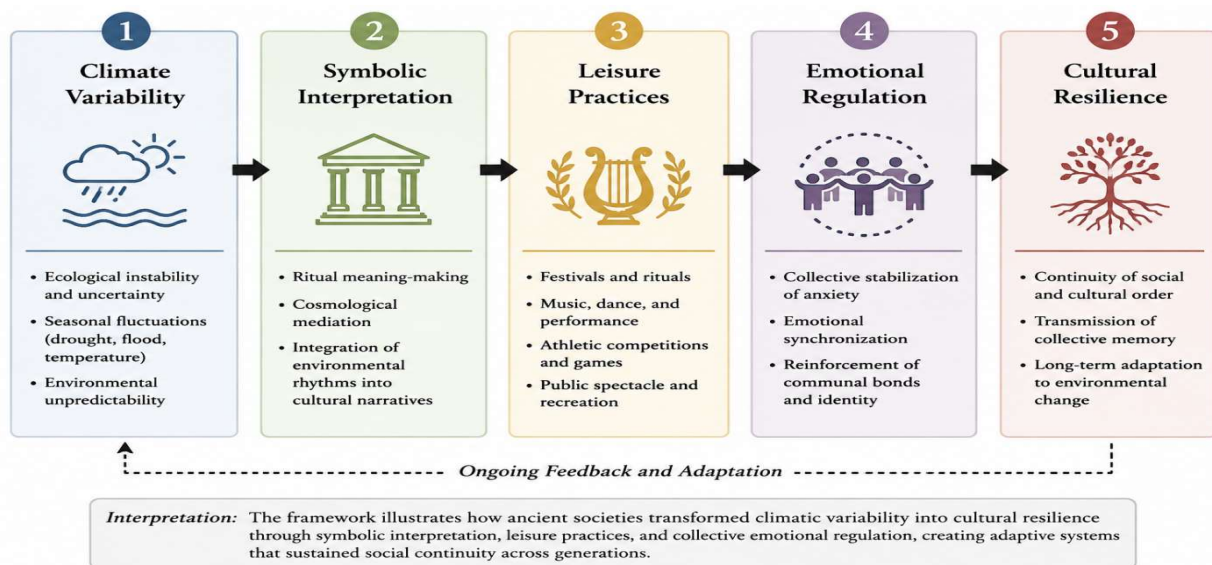


Figure 1. Climate–Leisure Adaptation Framework

Climate, Environment, and Leisure in Antiquity: A Comparative Anthropological–Historical Analysis

This study, however, has several limitations in an interpretive approach. In some cases certain historians might object that the use of terms like “climate regulation” in the context of ancient ritual would be to over-emphasize environmental explanation and to discount religious autonomy or political symbolism.

These criticisms highlight the political and symbolic nature of ritual change, which is always complicated. In the present study, it is therefore not claimed that environmental adaptation can be used to explain ancient leisure systems alone. Rather, it suggests climatic dependency was one of the important aspects of a broader social and symbolic field. Religious, political, emotional and environmental roles were all served by ritual, recreation and performance.

2. Literature Review and Theoretical Framework

2.1 Climate and Human Societies in Historical Scholarship

For decades, the correlation between climate and civilization has been a topic of study for historians, archaeologists, anthropologists, and environmentalists. The prevailing views in contemporary scholarship are rejecting simple environmental determinism, instead replacing it with more nuanced approaches of interaction, adaptation and cultural mediation (Hulme, 2017).

Environmental historians have shown that climatic changes have played a major role in demography, agriculture, migration and political unrest in many historical settings (Parker, 2013). Archaeological studies also correlate extended droughts and ecological stress with changes in society and the collapse of institutions in ancient civilizations (Renfrew & Bahn, 2020).

However, many climate related studies remain solely on adaptation technologies, economic transformation, irrigation and political decay. Symbolic and cultural reaction to the uncertainty of environment is still relatively little explored.

More and more, environmental humanities scholarship calls such separation into question. Experience of the environment is now known as culturally mediated, that is, through memory, ritual, emotion, narrative and collective imagination (Sörlin, 2012).

2.2 Ritual Theory and Environmental Uncertainty

Anthropological theories of ritual are relevant to the climate/collective cultural action connection. Ritual theorists have long held that a sense of symbolic order is created through the repetition of ritual in the context of uncertainty.

Rappaport (1999) defines a ritual as a system of communication, which, when repeated, stabilizes collective understanding and is structured by social relationships. As with bell (1997), ritualisation is also what sets ordinary from extraordinary experience, how societies can control anxiety and how they can strengthen their communities.

These views are well confirmed by history. Both in the past and in several civilizations, drought, crop failure, flood or climatic irregularity were common to elicit a greater level of ceremonial activity, such as rain rituals, public processions, sacrifice and seasonal festivals (Gavin et al., 2020).

However there are some scholars who warn of a view of ritual that is only understood in adaptive terms. Asad (1993) suggests that ritual has theological and symbolic qualities in and of itself rather than being related to the environment. Such tension points to the need to view pleasure practices as multi-dimensional institutions, functioning at the same time in religious, political, emotional, and ecological spheres.

2.3 Cultural Ecology and Symbolic Adaptation

The theoretical approach of cultural ecology also contributes to the understanding of leisure as a way to adapt to climate change. Cultural ecology is the focus on the interrelationship between environmental factors and human culture systems.

Ingold (2000) proposes that humans do not just inhabit environments but rather live and engage within contexts of meaningful ecological relationships, which are related to perception, embodiment and memory.

This is especially key to the understanding of leisure activities in ancient times. Climate was not a passive factor in the seasonal festivals, ritual performances, athletic games and music. Instead, they shaped the collective experience of societies' environmental rhythm.

As communities continued to perform, they "socialised" the fluctuating ecology into temporal patterns that were understandable to humans. The agricultural cycles were transformed into institutionalized rituals by the use of ritual calendars and the seasonal shifts were given symbolic significance by the repetition of ceremonies.

Some anthropologists warn that functionalist interpretations are prone to overemphasizing the social stability and ignore the hierarchy, exclusion, and political contestation in ritual systems (Ortner 2006). Such critiques highlight the need to view leisure as a culturally negotiated process rather than something that is always harmonious in relation to ecology, power, embodiment, and symbolism.

3. Methodology

The methodology in this study is interdisciplinary, qualitative, historical, environmental and archaeologic, with comparative interpretation.

The research examines the ways in which ancient people incorporated the climatic facts into their leisure activities (festival, music, dance, athletic games, and public recreation). Instead of seeing leisure as a space on the fringes of environmental management and organisation, the research sees it as a culturally located discursive means of negotiating ecological uncertainty.

The study has a comparative case-study approach, using:

- Ancient Egypt,

Climate, Environment, and Leisure in Antiquity: A Comparative Anthropological–Historical Analysis

- Ancient Greece,
- Ancient Rome,
- South Asia,
- and Mesoamerica.

The reason for choosing these civilizations is that all of them have shown a significant dependence on the environment, be it river floods, seasonal rains, monsoons, agricultural seasonality or climatic variability. Furthermore, all the chosen civilizations had public leisure activities that were quite conspicuous and were embedded in ritual and political practice.

The sources are primary, such as descriptions of public festivals and ceremonies, inscriptions, historical narratives, religious texts, and archaeological finds, including ritual calendars. Secondary works include mostly archaeological analyses, environmental history scholarship and anthropological studies, as well as peer-reviewed journal articles and university press books.

Analytical process goes through four stages:

1. Identification of climatic and environmental characteristics associated with each civilization.
2. Examination of major leisure practices linked to environmental rhythms.
3. Anthropological analysis of the symbolic and social functions of these practices.
4. Comparative synthesis identifying broader patterns linking climate, symbolism, embodiment, and collective adaptation.

There are a number of methodological limitations to be noted. History and archaeology records are not equally plentiful among all civilizations and throughout all history. In all matters of symbolic meaning, there is scholarly inference involved, and public festivals and spectacles often served to reinforce both hierarchy and political authority as well as communal cohesion.

Despite these drawbacks, the interdisciplinary and comparative approach offers a solid framework to grasp the cultural responses of ancient societies to climatic uncertainties, through leisure and symbolic enactment.

4. Ritual Temporality and Environmental Rhythm

4.1 Ancient Egypt: Nile Flooding and Ritual Stability

The case of ancient Egypt has one of the clearest examples of the influence of environmental rhythms on the organization of ritual and collective leisure. The fertility and economic productivity of Egyptian civilization was based on the annual flooding of the Nile River.

The dates of the Opet Festival show in Egyptian records from the New Kingdom that it coincided closely with the annual inundation of the Nile, especially during the Akhet season, when the flooding water was a symbol of fertility, renewal, and cosmic balance (Assmann, 2001).

Perhaps the most important occurred at the Opet Festival during the flood season (Baines & Malek, 2000) in Thebes. This ceremony involved the conveyance of divine statues from one temple complex to another with elaborate public processions, music, ritual dancing, feasting, and communal celebration.

From an anthropological perspective, the Opet Festival was a performative reaction to climatic uncertainty. Ritual was a means of making unpredictable environmental dependence into structured symbolic order which was to stress continuity, fertility, and cosmic stability.

4.2 Greece: Agricultural Rhythm and Civic Festivals

Festivals in Greece were closely linked to the seasons, agricultural activities, and climatically favorable times for travel and public gatherings (Burkert, 1985).

Traditionally the Olympic Games took place in the second full moon after the summer solstice, a time of the year when it was climatically possible to travel from region to region and to gather large numbers of people throughout the Greek world, as Miller (2004) points out.

The Panathenaia, the Olympic Games and Dionysian festivals were among the most significant of the Greek festivals. They had a religious ceremony, athletic competition, music, poetry, drama, and communal celebration.

Greek festivals were an expression of performance in the appropriate seasonal conditions, they involved civic participation, and were not Egyptian in their dependence on divine kingship.

Theatrical festivals in Greece commented on suffering, instability, fertility, renewal and change, providing a means of collective reflection on uncertainty and social vulnerability.

Thus Greek festival culture provides an example of possible civic forms of environmental adaptation without a central ritual.

4.3 Rome: Spectacle, Urban Climate, and Imperial Order

Many aspects of the Roman public leisure were seasonal, and they had been inherited from its predecessors in the Mediterranean, while other forms were uniquely linked to imperial urbanism and the phenomenon of large-scale spectacle.

Public games (Ludi) were typically held at times when it was convenient to assemble outdoors and to allow for varying degrees of mass participation (Futrell, 2006).

In the Colosseum, archaeological research has shown that retractable awnings (vela) were used to cover the entire amphitheatre or large portions of it to mitigate exposure to heat in the Mediterranean to conduct public spectacles (Boatwright et al., 2011).

Climate, Environment, and Leisure in Antiquity: A Comparative Anthropological–Historical Analysis

Meanwhile, public entertainment was also used for other political ends in the Roman Empire. Gladiatorial games, theatre and chariot races provided a structured and controlled space for communal emotional involvement and simultaneously validated imperial position.

Thus, Roman spectacle was not only a climatic regulation but also a political regulation.

5. Climatic Soundscapes and Emotional Synchronization

5.1 Seasonal Music and Climatic Emotion in South Asia

The connection of music to climate was particularly intricate in traditions from South Asia in which musical systems were specifically linked to seasons, weather and moods of the atmosphere.

In its classical Indian context the monsoon raga Megh Malhar is specifically related to rain and the renewal of the atmosphere, but also to emotional anticipation and anticipation due to the transformation of the season (Beck, 1993).

In contrast to the Mediterranean ritual systems which were more public and civic celebrating, the climatic adaptation of the South Asian was more often aesthetic internalization. The music of the seasons was used to create emotional synchronization with the rhythm of the environment and not to centralise ceremonial control.

Emotions of waiting, hoping, recharging and respite around the changing of seasons were expressed through Monsoon ragas. Climatic rhythm was thus internalized in an emotional manner, by means of sound, mood and embodied listening.

5.2 Dance, Embodiment, and Seasonal Ritual

In many cultures, ritual movement and whole-body performances were central elements of seasonal celebrations and farming rituals.

Planting seasons, harvest festivals, fertility rituals and rain rituals were often accompanied by dances. The body's motion was a sign of renewal, continuity, change and unity.

Durkheim (1995 [1912]) suggests that when people all engage in the same ritual together they become emotionally synchronized and united as a community because of their shared acting with their bodies.

Physical aspects of environmental conditions: heat, fatigue, rain, seasonal changes. Dance made these bodily experiences into organized collective performance and thus gave societies a way of culturally processing their dependency on the environment through dance and rhythm.

Dimension	Ancient Egypt 	Ancient Greece 	Ancient Rome 	South Asia 	Mesoamerica 
 Environmental Context	Annual Nile flooding and arid climate; agriculture fertility dependent on inundation.	Mediterranean climate with marked seasons; agriculture dependent on seasonal cycles.	Mediterranean climate with hot summers; urban density and large public gatherings.	Monsoon-dominated climate; strong seasonal variation and agricultural dependency.	Rainfall variability and agricultural cycles; ecological zones with seasonal wet-dry patterns.
 Dominant Leisure Forms	Ritual festivals (e.g., Opet), processions, music, dance, feasting.	Athletic games (Olympia), theatrical festivals (Dionysia), music, poetry, public celebration.	Public games (<i>ludi</i>), gladiatorial contests, theatre, chariot races, mass spectacles.	Seasonal music (<i>ragas</i>), dance, devotional festivals, poetic performances.	Ritual ballgames, ceremonial dances, festivals, offerings, community feasts.
 Seasonal / Ritual Timing	Flood season (Akhet) – Opet Festival coincident with Nile inundation.	Linked to agricultural calendar; Olympics held in second full moon after summer solstice.	Scheduled in favorable seasons; summer spectacles with architectural adaptations (e.g., <i>vela</i> awnings).	Tied to monsoon onset, seasonal transitions, and agricultural milestones.	Aligned with agricultural cycles, solstices, and cosmological calendars.
 Symbolic Focus	Cosmic order (Ma'at), divine kingship, fertility, renewal.	Civic identity, honor, excellence (<i>arete</i>), communal participation, divine-human balance.	Imperial authority, public order, virtue, loyalty, and civic unity through spectacle.	Emotional states of nature, devotion, harmony with seasonal rhythms.	Cosmic cycles, fertility, sacrifice, lineage, connection between humans and deities.
 Adaptive Function	Ritualized assurance of fertility and cosmic stability; social cohesion through shared belief.	Reinforcement of civic solidarity and identity; bodied discipline and inter-polis cooperation.	Regulation of masses, reinforcement of political legitimacy, and social integration.	Emotional regulation and internal synchronization with environmental rhythms.	Maintenance of cosmic balance and agricultural fertility through ritual performance.
Interpretation: Despite distinct environmental conditions and cultural expressions, these civilizations used leisure practices as symbolic mechanisms to align human life with ecological rhythms and to sustain social and cosmic order.					

Figure 2. Comparative Civilization Matrix

6. Embodiment, Recreation, and Ecological Experience

6.1 Athletics and Environmental Discipline in Ancient Greece

One of the best examples of recreation as a form of embodied climatic engagement is that of the athletic culture of the ancient Greeks.

Athletic festivals were to take place during times when the climate was consistent and there was a downturn in farming activities, allowing for wide regional participation (Miller, 2004). Running, wrestling, discus throwing, and the pankration were all competitions that demanded stamina in the open-air environmental exposure.

In the ancient Greek philosophy, there was a strong connection between the discipline of the body and moderation, balance, harmony, and self-control. These goals were mirroring some of the wider cultural conceptions of ecological adaptation.

6.2 Roman Spectacle and Urban Environmental Control

Greek culture was based on athletics, while Roman culture was more recreational. These features were increasingly focused on visual impact, mass entertainment, imperial power and urban structure, whereas Greek festivals privileged disciplined excellence of the body and civic engagement.

Climatic conditions were an important factor in the planning of large-scale events, like gladiatorial games, theatrical performances and chariot races. In Roman amphitheaters, architectural features were adopted to control environmental exposure during outdoor activities.

Climate, Environment, and Leisure in Antiquity: A Comparative Anthropological–Historical Analysis

Roman spectacle is thus one way of seeing how simultaneously these aspects of recreation (climate, politics, architecture, embodiment and mass emotion) relate to each other.

6.3 Recreation and Environmental Symbolism in Mesoamerica

The connection between recreation and environmental symbolism seems particularly pronounced in Mesoamerican cultures in which ritualised ballgames intertwined athletic contests with cosmological and ecological significance.

Ballcourts are often located in central ceremonial places at Chichén Itzá and Copán, where they are closely related to the themes of fertility symbolism and cosmological imagery (Scarborough & Wilcox, 1991).

In the cosmology of Mesoamerica, athletic feats were not always just for fun but rather were also part of a symbolic complex associated with fertility, sacrifice, movement in the sky and continuity in agriculture.

Collective symbolic interactions with ecological uncertainty became public participation, which changed recreation.

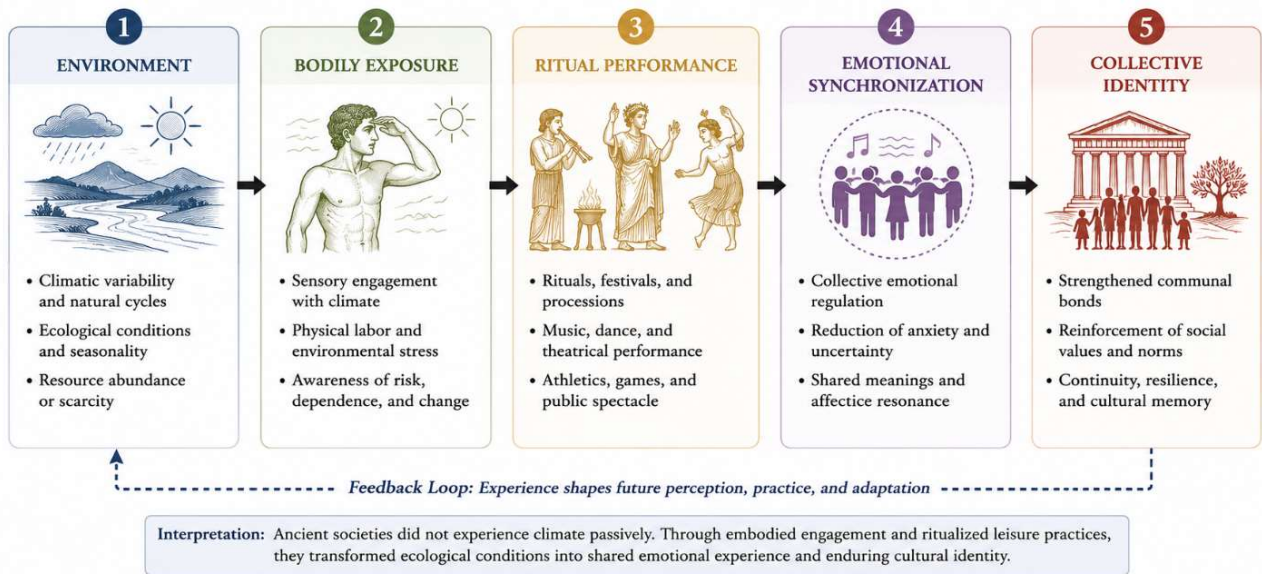


Figure 3. Embodied Climatic Experience in Antiquity

7. Discussion: Leisure as Cultural Climate Regulation

Instead of just reacting to climate via technology, ancient societies often dealt with climate by ritualizing temporality, by being embodied and by maintaining symbolic continuity.

The results of this study indicate that climate adaptation in antiquity does not only have to be interpreted by technological or economical means. Ancient cultures also used symbolic systems that could help them process environmental uncertainty into collective experience in an emotionally intelligible way. Leisure

thus was not just the area of entertainment, but a system for managing ecological instability in the social sphere.

Festivals, music, dancing, athletic events and public recreation were not secondary, unrelated to material survival. Instead, they were culturally structured means of societies dealing with, and emotionally engaging with, environmental dependency.

A major trend that can be seen from the comparative analysis is the connection between ritualized leisure and uncertainty reduction.

The agrarian civilizations were utterly vulnerable to environmental conditions which were not fully predictable. Persistent social anxiety was caused by flood variation, irregular rainfall, drought, crop failure and seasonal instability.

This uncertainty was symbolically controlled through leisure practices. Festivals made the change of seasons a regular event for people. Music captured the natural world's pulse, transforming it into an emotional structure. Perform synchronized total body movement to the agricultural cycles. Ideals of endurance and resilience under environmental strain were developed through athletic competition. Public spectacle was an orchestration of collective emotion in climatically shaped urban spaces.

Meanwhile, the ancient leisure systems were not throughout harmonious institutions. Public festivals or spectacles were used to often reproduce hierarchy, elite power, exclusion and political control.

The comparative evidence also shows that reactions to climate were very different depending on the political structures and social organization. In early civilizations like ancient Egypt, where societies were very centralized, environmental dependency allowed for ceremonial ideologies that emphasized divine kingship, cosmic order, and ritual hierarchy.

Greek city-states found more decentralized modes of climatic involvement that stressed citizenship, physical self-control and bodily representation. Roman society was characterized by a fusion of environmental management, imperial spectacle and urban governance. The music of South Asia comes as another example where climatic rhythm was internalized emotionally, via seasonal aesthetics.

These differences illustrate that climate does not have uniform cultural responses. Environmental conditions are interpreted subject to the political institutions, symbolic systems and social organization that are already in place.

Theoretical Contribution

In this study, the authors make a contribution to the environmental humanities by suggesting that leisure historically served as a buffer between ecological upheaval and social continuity. This model moves beyond material resilience to symbolic and affective aspects of adaptation to climate change.

8. Conclusion

Climate, Environment, and Leisure in Antiquity: A Comparative Anthropological–Historical Analysis

This research has investigated the interdisciplinary anthropological–historical aspects of the connection between climate, environment and leisure in ancient societies.

The study shows that leisure served as a powerful cultural tool to manage environmental dependency and climatic uncertainty in various civilizations through examination of festivals, music, dance, athletic games and public recreation.

The results show that the response of ancient societies to climate was not restricted to technological or agricultural adaptation, nor political management. They also created symbolic and performative systems which converted the natural rhythms of the environment into collective experience of social meaning.

Seasonal festivals were used to coordinate collective life with the agricultural cycle, astronomical observation, flood and climatic change. The music and dance brought the experience of the environment into emotional and embodied expression; the environmental rhythm was thus internalized culturally. Forms of athletic competition and public recreation not only shaped the way that the body interacted with the environment, but also helped to establish a sense of community, civil order, and political order.

Thus, the main theoretical contribution of this study is the re-conceptualization of the leisure as a system of cultural climate regulation.

Contrary to the view of festivals, music, and recreation as second-class cultural phenomena, the research shows that they were active ways in which societies dealt with the uncertainty of the environment, interpreted and negotiated it, and emotionally processed it.

Meanwhile, limitations of adaptive understandings of ritual and leisure are also acknowledged. Ancient recreation systems weren't always harmonious or egalitarian. Political hierarchy, religious authority, imperial legitimacy, and social exclusion were often reaffirmed in public festivals and spectacles.

The present study therefore does not presume that there was a material resolution of environmental crisis by leisure. Instead, it suggests that symbolic and performative systems were also integral to the cultural negotiations of ecological uncertainties, and the ways in which societies tried to maintain social continuity in an unpredictable environment.

The ancient leisure practices are an indication that climate adaptation has been and never was an issue of survival only. It has also been a question of meaning, memory, embodiment and the human capacity to convert environmental uncertainty to cultural experience.

References

Adger, W.N., 2000. Social and ecological resilience: Are they related? *Progress in Human Geography*, 24(3), pp.347–364.

- Asad, T., 1993. *Genealogies of Religion: Discipline and Reasons of Power in Christianity and Islam*. Baltimore: Johns Hopkins University Press.
- Assmann, J., 2001. *The Search for God in Ancient Egypt*. Ithaca: Cornell University Press.
- Baines, J. and Malek, J., 2000. *Cultural Atlas of Ancient Egypt*. Revised ed. Oxford: Phaidon.
- Beard, M., North, J. and Price, S., 1998. *Religions of Rome*. Cambridge: Cambridge University Press.
- Beck, G.L., 1993. *Sonic Theology: Hinduism and Sacred Sound*. Columbia: University of South Carolina Press.
- Bell, C., 1997. *Ritual: Perspectives and Dimensions*. New York: Oxford University Press.
- Boatwright, M.T., Gargola, D.J. and Talbert, R.J.A., 2011. *The Romans: From Village to Empire*. 2nd ed. Oxford: Oxford University Press.
- Burkert, W., 1985. *Greek Religion*. Cambridge, MA: Harvard University Press.
- Durkheim, E., 1995 [1912]. *The Elementary Forms of Religious Life*. Translated by K.E. Fields. New York: Free Press.
- Futrell, A., 2006. *The Roman Games: A Sourcebook*. Oxford: Blackwell.
- Gavin, M.C., McCarter, J., Mead, A., Berkes, F., Stepp, J.R., Peterson, D. and Tang, R., 2020. Religion and climate change: Rain rituals in Israel, China, and Haiti. *Religions*, 11(11), p.554.
- Hulme, M., 2017. *Weathered: Cultures of Climate*. London: SAGE.
- Ingold, T., 2000. *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London: Routledge.
- Kyle, D.G., 2014. *Sport and Spectacle in the Ancient World*. 2nd ed. Oxford: Wiley-Blackwell.
- Miller, S.G., 2004. *Ancient Greek Athletics*. New Haven: Yale University Press.
- Ortner, S.B., 2006. *Anthropology and Social Theory: Culture, Power, and the Acting Subject*. Durham: Duke University Press.
- Parker, G., 2013. *Global Crisis: War, Climate Change and Catastrophe in the Seventeenth Century*. New Haven: Yale University Press.
- Rappaport, R.A., 1999. *Ritual and Religion in the Making of Humanity*. Cambridge: Cambridge University Press.
- Renfrew, C. and Bahn, P., 2020. *Archaeology: Theories, Methods, and Practice*. 8th ed. London: Thames & Hudson.
- Scarborough, V.L. and Wilcox, D.R. (eds.), 1991. *The Mesoamerican Ballgame*. Tucson: University of Arizona Press.
- Sörlin, S., 2012. Environmental humanities: Why should biologists interested in the environment take the humanities seriously? *BioScience*, 62(9), pp.788–789.

Climate, Environment, and Leisure in Antiquity:
A Comparative Anthropological–Historical Analysis

Stobart, H., 2006. *Music and the Poetics of Production in the Bolivian Andes*. Aldershot: Ashgate.

Zerubavel, E., 1981. *Hidden Rhythms: Schedules and Calendars in Social Life*. Berkeley: University of California Press.