

Human-Nature Boundaries: Cultural Heritage, Landscape Ecology, and Healing in the Kumano Kodo

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Abstract: The Kumano Kodo, an ancient pilgrimage route network in the Kii Peninsula of Japan, serves as a unique case study in the intersection of cultural heritage, landscape ecology, and human-nature relationships. This paper explores the dynamic interactions between human interventions and natural processes along the Kumano Kodo, highlighting how landscape ecology principles illustrate the blurred boundaries between nature and culture. The rewilding of the human-imposed structures, coupled with the restorative experiences of modern pilgrims, reinforces the notion of coexistence rather than dominance over nature. The findings support Turner's theory of landscape dynamics and Morton's assertion that the human-nature dichotomy is artificial, showing how human interventions and natural processes coalesce in a living landscape. The study also applies Kaplan's Attention Restoration Theory to demonstrate the psychological benefits of engaging with cultural landscapes. However, the research is limited by its focus on a specific demographic of pilgrims and calls for more diverse methodologies in future studies. Broader data collection will offer deeper insights into the long-term psychological effects and cultural significance of such heritage sites.

Keywords: Kumano Kodo, cultural heritage, landscape ecology, psychological restoration, ecological resilience.

1. Introduction

The Kumano Kodo, a UNESCO World Heritage site, is a historically significant network of pilgrimage routes traversing the Kii Peninsula in Japan. These routes link Kyoto with the Kumano shrines, a pilgrimage destination steeped in the spiritual traditions of both Shintoism and Buddhism. While originally facilitating the spiritual journeys of ancient pilgrims, the Kumano Kodo now serves as a testament to the evolving relationship between human interventions and natural landscapes[1]. The Kumano Kodo has been traversed for over a millennium by pilgrims seeking spiritual renewal, and it remains deeply embedded in Japan's cultural and spiritual history. The route connects Kyoto, Japan's ancient capital, with the three grand shrines of Kumano: Kumano Hongu Taisha, Kumano Nachi Taisha, and Kumano Hayatama Taisha. These shrines, hidden within dense forests and remote mountainous landscapes, reflect Japan's syncretic relationship between Shintoism and Buddhism.

As global attention to environmental conservation intensifies, the need to harmonize ecological integrity with cultural preservation becomes increasingly urgent. Human activities continue to reshape landscapes, making the interplay between natural rewilding and cultural landscapes a key

factor for future conservation strategies. The Kumano Kodo, with its rich history of human interaction, spiritual importance, and engagement with natural ecosystems, offers a compelling case study. Examining how ecological processes and human influences coexist in this context provides valuable insights into sustainable landscape management and informs the broader conversation on conserving both natural and cultural heritage.

This study will employ a multidisciplinary approach, integrating field observations with theoretical perspectives from landscape ecology, cultural heritage studies, and environmental psychology. Observations were conducted across various sections of the Kumano Kodo to evaluate the degree of natural rewilding and the interactions between human-made structures and ecological processes. Additionally, interviews with contemporary pilgrims were carried out to gain insight into their experiences and the impact of the natural environment on their psychological well-being. This paper aims to explore how the boundaries between humans and nature shift over time, particularly through the lens of landscape ecology, which examines the interactions between ecological processes and human influence. By analyzing the Kumano Kodo, this study seeks to understand how these processes contribute to both the ecological resilience of natural landscapes and their cultural significance.

2. Theoretical analysis

In the context of landscape ecology, the Kumano Kodo exemplifies a dynamic mosaic of human-altered and natural habitats. Anthropogenic structures, such as stone steps and shrines, along with natural elements like moss-covered trails, offer a vivid demonstration of the interplay between human activity and natural processes. According to Forman's theory of landscape heterogeneity, the pilgrimage routes exhibit fragmented ecosystems, where human interventions like tea houses and shrines interact with natural habitats[2]. Over time, the landscape undergoes rewilding as nature reclaims these human-made elements, resulting in a blurred boundary between cultural and ecological landscapes. Forman's theory of fragmentation plays a key role here, as the pilgrimage routes disrupt the continuity of natural ecosystems, creating fragmented patches where human and natural forces coexist. The fragmentation of the landscape, however, does not result in ecological degradation; instead, it enhances the diversity of the environment. As human-made structures age and become overgrown by vegetation, the Kumano Kodo exemplifies rewilding—a process where nature gradually reclaims human-altered areas. For instance, moss and creeping plants envelop the stone steps and pathways, softening the impact of human intervention and symbolizing the resilience of natural ecosystems.

This interaction aligns with Turner et al.'s theory of landscape dynamics, which asserts that landscapes are not static but continually shaped by both natural and human forces[3]. The Kumano Kodo's transformation over time illustrates this dynamic interaction. Initially, human activity dominated the landscape, constructing routes, shelters, and religious monuments. However, over the centuries, as human activity diminished or shifted, natural processes began to regain control. The gradual covering of human structures by vegetation illustrates this ongoing dialogue between human presence and ecological recovery. The dynamic interaction of human and natural forces on the Kumano Kodo underscores the principle of landscape resilience—the capacity of an ecosystem to absorb disturbance and reorganize while retaining its essential structure and functions. The process of rewilding, evident in the overgrowth of stone structures and the return of native flora, demonstrates that while human presence has left a mark, the natural ecosystem maintains its integrity and continues to evolve.

3. The ecological and cultural impact of the Kumano Kodo

3.1. Landscape Ecology: Rewilding and Human-Nature Interactions

The concept of landscape as a human experience is deeply rooted in earlier studies of perception and psychological interactions with nature. For example, Kaplan's framework on human-nature relationships highlights how humans perceive and connect with natural environments, while Gobster et al.'s model examines the intersection between aesthetics and ecological systems, emphasizing how our appreciation of beauty and ecological processes intertwine[4]. These frameworks underscore the idea that landscapes are not merely physical spaces but are shaped by human emotions, perceptions, and interactions with nature. Hence, the Kumano Kodo offers a striking example of the dynamic relationship between human activity and natural forces. The stone steps, shrines, and resting areas that line the routes have contributed to the fragmentation of ecosystems, disrupting habitats and altering species distributions. This fragmentation is in line with the theory of landscape heterogeneity, which describes the mosaic of different habitats resulting from both natural and anthropogenic influences. However, over time, nature reclaims these human-altered spaces, demonstrating its resilience.

However, the passage of time reveals nature's resilience and adaptability. As the pilgrimage paths age, natural succession begins to reclaim these human-altered landscapes. Moss, lichens, and other vegetation gradually colonize the stone steps, once a clear sign of human intervention. Tree roots weave through cracks in the ancient paths, slowly eroding the hard surfaces, and ferns and grasses sprout in the shaded areas along the route. These processes not only blur the boundary between culture and nature but also serve as a reminder that human influence on landscapes is temporary. In accordance with Turner's landscape ecology theories, the Kumano Kodo illustrates that landscapes are dynamic systems where human-made structures and natural elements continuously interact, shift, and evolve[5].

3.2. Cultural Heritage and Ecological Resilience

As Naveh and Lieberman emphasize, multifunctional landscapes provide a crucial interface where ecological and cultural purposes intersect, offering spaces that fulfill both human needs for spiritual reflection and support broader ecological processes[6]. The Kumano Kodo pilgrimage routes are a prime example of such landscapes, where the human-made elements—shrines, statues, and pathways—coexist with the natural environment, creating a rich tapestry that blends cultural heritage with ecological significance. These routes serve not only as sacred spaces for spiritual journeys but also as dynamic ecosystems that support the regeneration of wildlife and plant species. The rewilding of the pilgrimage routes reflects nature's capacity to integrate human-made elements into its broader processes. This transformation challenges traditional approaches to cultural heritage conservation, which often aim to preserve human-made structures in a static state. Instead, the Kumano Kodo suggests that a more fluid approach to conservation, one that embraces natural processes and allows for ecological succession, can lead to a more harmonious relationship between humans and nature. This perspective aligns with Morton's argument in *Ecology Without Nature*, where he suggests that the division between humans and nature is artificial and that true balance can only be achieved through coexistence[7].

The Kumano Kodo, as a cultural landscape deeply intertwined with nature, plays a crucial role in enhancing the resilience of cultural heritage. This site exemplifies how the coexistence of natural processes and human interventions can ensure long-term sustainability, aligning with the findings of Santangelo et al., who highlighted that cultural heritage resilience can be significantly enhanced when integrated with natural ecosystems. In the case of the Kumano Kodo, the regrowth of natural

vegetation, the gradual covering of stone steps by moss and lichens, and the erosion of human-made structures by tree roots illustrate nature's reclamation of human imprints. This ecological resilience not only preserves the site but allows it to evolve alongside natural forces [8]. The management strategy of the Kumano Kodo emphasizes minimal intervention in natural processes, allowing vegetation and landscape dynamics to blend with the cultural elements, creating a symbiotic relationship between ecology and heritage. This approach contrasts with traditional static preservation methods commonly used in cultural heritage conservation. As noted by Naveh and Lieberman, multifunctional cultural landscapes not only preserve historical and cultural values but also support ecological processes such as plant regeneration and habitat restoration[6]. The Kumano Kodo demonstrates how embedding cultural heritage within the dynamic evolution of ecosystems can enhance both its ecological resilience and its ability to adapt to future environmental changes. Furthermore, modern pilgrims walking the Kumano Kodo experience the restorative power of nature, in line with Wilson's Biophilia Hypothesis, which suggests that humans have an innate connection to nature that enhances psychological and emotional well-being[9]. This coexistence of human and natural elements reinforces the importance of the Kumano Kodo as a resilient cultural heritage site, maintaining a balance between nature and culture while providing both ecological and spiritual healing.

4. Analysis of the psychological recovery and healing effects of Kumano Kodo on tourists

More and more research highlights the restorative role of natural environments in promoting both physical and mental health. Restorativeness, in this context, refers to the physiological and psychological benefits gained through contact with natural settings, particularly forests. One of the foundational theories supporting this concept is Wilson's Biophilia Hypothesis, which suggests that humans have an innate affinity for nature[. According to this hypothesis, humans are biologically predisposed to seek connections with natural environments, as these settings have historically been vital to human survival and well-being. Natural attraction to environments like forests plays a significant role in mental well-being, as it fosters a sense of calm, emotional balance, and rejuvenation[9]. Kaplan's Attention Restoration Theory (ART) further supports the idea of nature as a restorative medium. ART posits that immersion in natural settings helps individuals recover from mental fatigue caused by the demands of daily life[10]. When people spend time in nature, the effortless engagement with natural stimuli—such as the sound of rustling leaves, the sight of a flowing stream, or the feel of a cool breeze—allows the brain to relax and recover from cognitive overload. Together, Wilson's Biophilia Hypothesis and Kaplan's Attention Restoration Theory create a framework for understanding why natural environments, particularly forests, are so effective in promoting mental and emotional health.

Forests are widely recognized as quintessential restorative environments, offering profound mental and physical benefits. Time spent in forests consistently leaves individuals feeling more relaxed, rejuvenated, and energized compared to urban settings. This effect is largely attributed to the forest's multi-sensory experience, which promotes both relaxation and well-being. For instance, the natural sounds of chirping birds and flowing water, combined with the visual serenity of lush greenery, trigger a calming response in the brain[11]. Additionally, forest environments provide opportunities for solitude and quiet reflection, allowing individuals to process emotions, alleviate stress, and gain perspective on personal challenges. Forests are also rich in fresh oxygen, thanks to their high concentrations of plant life, which improves respiratory health and oxygen circulation throughout the body. Sunlight filtering through the tree canopy facilitates the natural absorption of vitamin D, a nutrient associated with enhanced mood and increased energy levels. The soothing natural sounds in forests, such as birdsong or the gentle rustle of leaves, have been shown to reduce anxiety and lower blood pressure[11]. Meanwhile, the diverse range of forest aromas—from the scent of damp earth to

the fragrance of pine—can stimulate positive psychological responses. This combination of sensory stimuli creates an immersive experience that not only engages the mind but also reduces stress and fosters a deep sense of relaxation.

The Kumano Kodo's natural beauty and peaceful atmosphere make it an ideal location for individuals to unwind, restore balance, and reconnect with nature. Field interviews with modern-day pilgrims revealed that many experienced psychological renewal during their journey along the Kumano Kodo. The moss-covered stones, towering trees, and tranquil forests provided a sense of peace and connection with nature, helping to alleviate the stresses of daily life. The physical journey through the natural landscape, coupled with the spiritual significance of the route, fostered deeper self-awareness and emotional reconnection with nature. This journey, where human-made elements such as shrines blend harmoniously with the wilderness, underscores the fluid relationship between humans and the natural world. Just as the boundaries between the constructed path and untamed forest shift and overlap, so too do the psychological boundaries that separate individuals from nature. The natural environment on the Kumano Kodo acts as a catalyst for redefining these boundaries, suggesting that both physical and mental separations are not fixed but are continually reshaped by the environment and one's interaction with it.

5. Conclusion

The case of the Kumano Kodo provides valuable insights into the fluid boundaries between human and natural environments. The process of rewilding along the pilgrimage routes demonstrates how human-made structures are gradually assimilated by natural processes, supporting Turner's theory of landscape dynamics and Morton's argument that the human-nature dichotomy is a false one. Rather than viewing human interventions as separate from or opposed to nature, the Kumano Kodo exemplifies a more integrated approach, where human and natural elements coexist and influence one another.

Furthermore, the psychological experiences of modern pilgrims along the Kumano Kodo highlight the restorative potential of cultural landscapes. The therapeutic effects of engaging with nature, as described by Kaplan's Attention Restoration Theory, suggest that cultural heritage sites like the Kumano Kodo should be managed with a focus on coexistence rather than preservation in a static state. By allowing natural processes to unfold and integrating human-made elements into the broader ecological landscape, the Kumano Kodo offers a model for how cultural and natural heritage can be preserved in a way that respects both ecological resilience and human well-being. These findings suggest that the Kumano Kodo is not merely a static cultural heritage site but a living landscape where human interventions and natural processes continuously interact. This dynamic interaction challenges traditional approaches to both cultural heritage conservation and environmental management, advocating for a more fluid and adaptable approach that respects the autonomy of natural processes.

Despite these insights, the study of the Kumano Kodo has limitations. This study focuses primarily on the experiences of a specific group of pilgrims, which may not represent the full range of cultural or demographic backgrounds. Future research should incorporate more diverse methodologies, including longitudinal studies to assess the lasting impact of the pilgrimage on psychological well-being. Incorporating both quantitative and qualitative data—such as interviews, surveys, and psychological assessments—would provide a more comprehensive understanding of the mental and emotional effects of the Kumano Kodo.

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