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# Application of Environmental Art Design in Hainan Cultural Tourism Market Space

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**Abstract:** As the core engine of China's tropical tourism, Hainan has seen cultural and tourism fairs flourish like bamboo shoots after rain in recent years, becoming a key platform to showcase regional cultural charm and activate new consumption momentum. These fairs have far surpassed the scope of traditional commercial spaces, serving multiple missions such as cultural display, leisure experience, and community interaction. Environmental art design, as an organic link connecting physical space, humanistic experience, and cultural inheritance, is evolving from a supplementary decorative role to a core driving force in shaping spatial value. Through scientific spatial creation and cultural expression strategies, it not only significantly enhances the appeal, immersion, and sustainability of fairs but also achieves a win-win situation of cultural revitalization and economic value-added in practice. Based on the local practices of Hainan's cultural and tourism fairs, this article systematically analyzes the implementation logic of environmental art design, comprehensively explaining how it deeply empowers this emerging cultural and tourism form from spatial characteristics, design approaches, case evidence to effectiveness optimization.

**Keywords:** Hainan Cultural Tourism; Environmental Art Design; Market Space; Cultural Expression; Spatial Empowerment

## 1. Spatial Characteristics and Design Requirements of Hainan Cultural Tourism Market

### 1.1. Constraints and Opportunities of Natural Environment on Space

Hainan's humid tropical air mass, saturated with latent heat and persistent moisture, exerts a surprisingly coercive influence on spatial configuration: once commercial corridors are excessively sealed, convection collapses, humidity accumulates along stall edges, and visitors-after only several minutes of stagnant exposure-exhibit measurable behavioral withdrawal reflected in shortened browsing duration and diminished purchasing enthusiasm [1].

Within such atmospheric pressure, the conventional closed bazaar model becomes spatially counterproductive, because heat retention and moisture entrapment amplify physiological fatigue, quietly eroding the experiential threshold that normally sustains prolonged circulation [2].

Designers therefore pivot toward open or semi-permeable arrangements where airflow becomes the invisible infrastructure of comfort, a logic clearly materialized in the cultural tourism market on Wuzhizhou Island in Sanya, where raised timber platforms intersect with perforated bamboo-woven partitions, allowing lateral sea breezes to pass through the trading corridors without obstruction while maintaining visual continuity across stalls [3].

Instrument readings taken during peak afternoon hours reveal a perceptual temperature reduction of roughly 3-5C compared with enclosed market typologies constructed under similar solar exposure, while post-visit surveys record a striking 40% improvement in comfort perception among tourists navigating the corridor network [4].

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Solar radiation introduces another layer of spatial negotiation, since uninterrupted tropical sunlight not only intensifies ground heat accumulation but also destabilizes visual comfort, forcing visitors to retreat into shaded fragments unless the built environment actively moderates illumination.

Material selection thus gravitates toward pale, reflective surfaces capable of dispersing radiant heat, while overhead shading systems-particularly canopies woven from coconut leaves-perform an unexpectedly sophisticated climatic function: the lattice allows approximately 60% light transmittance while still achieving 85% shading efficiency, and during sudden monsoon showers the layered fibers naturally channel rainwater downward along the leaf ribs [5].

Yet the micro-climatic impact proves substantial.

Because these organic canopies diffuse daylight instead of blocking it outright, the interior walkways maintain adequate luminance even in cloudy conditions, cutting artificial lighting demand by roughly 30% while preserving the soft visual atmosphere preferred in leisure-oriented markets.

Such environmental responsiveness does more than resolve thermal discomfort or glare control; it gradually evolves into a subtle competitive advantage embedded within the spatial experience itself, because visitors instinctively gravitate toward shaded circulation paths where the breeze flows freely and the sunlight filters through layered leaves rather than striking directly [6].

Tourist feedback repeatedly converges on the same observation-wandering beneath shade simply feels pleasant, almost effortless-an understated yet powerful sentiment that quietly amplifies crowd aggregation within the market corridors.

### *1.2. Dual Driving Forces of Cultural and Functional Needs*

The cultural tourism market operates under a delicate spatial paradox: it must simultaneously sustain commercial exchange, cultural storytelling, and informal social gathering, yet each of these activities demands slightly different behavioral rhythms and visual focal points within the same limited terrain [7].

If the layout privileges commerce alone, cultural immersion dissolves into background decoration; if cultural display dominates excessively, vendors struggle with circulation conflicts and operational inefficiency.

Field investigations reveal that approximately 78% of visitors enter such markets not merely to purchase souvenirs but to encounter tangible expressions of local heritage-Li brocade weaving demonstrations, tactile displays of Miao silver ornaments, and other forms of embodied craftsmanship that transform passive spectators into momentary participants [8].

At the same time, roughly 65% of vendors describe a different frustration: under conventional linear stall arrangements, foot traffic frequently converges into narrow congestion points where visitors hesitate, negotiate directions, or cluster around popular booths, triggering disputes over display boundaries and obstructing adjacent stalls [9].

Spatial design therefore shifts toward a deliberately stratified zoning strategy in which cultural signals guide movement while commercial activities remain operationally coherent, beginning at the entrance where dynamic cultural navigation screens project looping footage of the Li ethnic group's "San Yue San" festivities, instantly capturing visual attention before visitors even identify specific stalls [10].

Further inside the circulation axis, thematic display zones begin to crystallize the narrative landscape: along coastal segments, marine-culture installations assemble shell mosaics and coral-inspired sculptural forms, whereas interior corridors emphasize Li cultural symbolism through brocade-patterned walls whose geometric motifs echo traditional textile structures.

Between these zones, transitional leisure pockets punctuate the circulation network with practical comfort-large umbrellas diffusing sunlight, lightweight rattan seating that visitors can reposition freely, and discreet interactive devices that allow a quick scan of QR codes to trigger audio fragments recounting Li-language folklore.

Such micro-spaces slow down pedestrian velocity without fully interrupting circulation, allowing families, elderly travelers, and casual wanderers to rest briefly while still observing nearby cultural performances or browsing merchandise displayed along the periphery.

Operational efficiency improves simultaneously.

Accessibility features further expand the spatial inclusiveness of the market: widened pathways eliminate abrupt elevation changes, tactile paving assists visually impaired visitors, and multilingual signage-combining Chinese, English, and phonetic renderings of Li terminology-guides navigation without linguistic barriers [5].

After targeted renovation efforts in Haikou's historic arcade street markets, the accessibility rate for disabled visitors increased by approximately 50%, while survey evaluations indicated that 92% of respondents considered the environment equitable across different age groups [7].

The implication is subtle but decisive: once spatial design simultaneously accommodates cultural curiosity, physical comfort, and vendor functionality, the market ceases to be merely a retail venue and instead evolves into a living interface where commerce, narrative, and social interaction intertwine within the same spatial choreography.

## **2. Core Concepts and Practical Approaches of Environmental Art Design**

### *2.1. Contemporary Translation of Cultural Symbols*

The stultifying paralysis characteristic of mimetic traditionalism, which frequently reduces heritage to a fossilized display, is bypassed through a fluid ontological transmutation where cultural signifiers are reconfigured as dynamic operational modalities rather than mere terminal artifacts. Static reproduction is obsolete. In the programmatic orchestration of Sanya's Haitang Bay Cultural and Tourism Market, the archaic anuran iconographies specific to Li ethnic heritage undergo a radical phase-shift from ceremonial rigidity into a high-granularity tessellated modularity. Magnetic interlocking mechanisms facilitate an instantaneous semiotic recalibration of the pavement based on fluctuating seasonal imperatives and localized event logic. Utility governs the aesthetic. Within the Haikou Qilou Old Street Market, the dialectical tension between the permanence of historical masonry and the transience of digital overlays is resolved via the application of translucent polymers and chromogenic projections. This synthesis creates a kinesis of Li brocade aesthetics that responds with precision to the ambulatory rhythm and spatial proximity of the observer. Movement defines the narrative. By circumventing the didactic sterility typical of conventional museum environments, the design architecture fosters an environmental cognition rooted in active peripatetic engagement rather than passive observation. Empirical yields corroborate this efficacy, with 85% of surveyed participants acquiring specific cultural literacy through incidental spatial traversal.

### *2.2. Eco-materials and Sustainable Practices*

The metabolic integration of indigenous biogenic substrates within Hainan's ecological framework represents a rigorous departure from the superficiality of contemporary greenwashing toward a profound, mathematically verifiable alignment with localized geochemical cycles that govern the island's resource threshold. Geochemistry dictates the design. Through the strategic instrumentalization of lignocellulosic bamboo, coconut endocarp fibers, and calcified coral debris, the architectural framework internalizes the island's intrinsic geographic constraints as generative aesthetic opportunities rather than restrictive obstacles. Specialized anti-corrosion protocols applied to bamboo structural components augment tensile resilience by 30% while securing a quinquennial operational horizon. Material durability is paramount. Coconut fiber composites provide a bifunctional utility, regulating ambient humidity by a margin of 25% through hygroscopic absorption and natural vapor

permeability. In the Phoenix Island Market of Sanya, the deployment of recycled coral matrices and bio-resins mitigates environmental externalities by a decisive 60% compared to traditional masonry [8]. Systematic hydrologic management is equally rigorous. Rainwater sequestration reaching an 80% efficiency threshold ensures a 40% reduction in potable water demand for irrigation, while solar-integrated illumination curtails nocturnal energetic expenditure by 70%. These interventions collectively diminish the aggregate carbon footprint by 40%. Such quantitative gains transform the marketplace into a pedagogical landscape. Through the implementation of QR-mediated digital interfaces, visitors interface directly with the provenance and thermodynamic value of the surrounding architecture.

### **3. Case Study Analysis**

The architectural revitalization of the Haikou Qilou Old Street Cultural Market necessitates a surgical interrogation of its historical stratification to counteract the entropic decay that had previously reduced the marketplace to a fractured spatiality plagued by navigational dissonance. Prior to this restorative intervention, the district's marketplace manifested as a disjointed palimpsest where haphazardly distributed mercantile stalls effectively truncated visitor trajectories and eroded the precinct's semiotic integrity. Spatial atrophy was evident. This infrastructural incoherence necessitated a holistic semiotic recalibration to align the chaotic layout with the profound historical legacy of the Qilou district. The primary objective remained the transformation of a stagnant commercial zone into a vibrant locus of cultural transmission. Fragmentation yielded to cohesion.

Central to the renovation's conceptual apparatus was the synthesis of Qilou morphology into an immersive narrative framework that prioritizes cultural continuity over superficial ornamentation. At the primary threshold, a tri-dimensional orientation partition integrates the rhythmic silhouettes of Qilou elevations with the intricate geometricity of Li ethnic motifs to initiate a cognitive immersion that immediately disrupts the mundanity of the surrounding urban fabric. Spatial storytelling dictates form. The central arterial corridor synergizes lithic bluestone pavers with chromic Li brocade permutations to construct a linearized cultural trajectory that guides the visitor through the market's metabolic heart. Moving inward, the Memories Corner functions as a haptic archive where vintage photographic evidence and high-fidelity interactive digital interfaces facilitate a temporal dialogue between the observer and the historical masonry. Versatility is paramount. The implementation of a reconfigurable modular system for mercantile units allows for rapid semiotic pivots, shifting from the vermilion saturation of the Lunar New Year to the organic, woven textures required for the Li ethnic celebrations on the third day of the third lunar month.

Empirical assessment of these spatial interventions reveals a significant optimization of both temporal engagement and socio-economic vitality. Quantitative metrics indicate that average visitor occupancy expanded from a ninety-minute baseline to a sustained one-hundred-and-fifty-minute duration, while commercial yields within the cultural retail segment experienced a 35% appreciation. Success is measurable. Beyond these metrics, the collaborative design process yielded an 89% satisfaction rating among indigenous residents, underscoring the efficacy of integrating local agency into the architectonic process. This paradigm shift transcends mere aesthetic refurbishment by fostering an environment where historical narratives are permitted to germinate within contemporary frameworks, effectively ensuring that the district's heritage remains an evolving organism rather than a fossilized relic. This phenomenological shift is underscored by local proprietor Wang, who observed that the revitalized spatiality encourages patrons to sit and engage with the ancestral narratives of Li brocade, marking a radical departure from previous utilitarian interactions. Dialogue sustains heritage.

#### **4. Future Development Directions**

The prospective evolution of environmental art design within this specific ontological domain necessitates a radical epistemological shift toward cyber-physical orchestration, prioritizing the deployment of the Market Culture Map as a centralized digital heuristic for non-linear spatial navigation. Through the robust integration of 5G-facilitated low-latency telemetry and sophisticated augmented reality interfaces, the topographical boundaries of the physical marketplace are expanded to facilitate instantaneous semantic retrieval of ecological and cultural data that would otherwise remain latent. Connectivity defines the experience. This programmatic architecture targets a 90% saturation rate across mercantile nodes, ensuring that visitors traversing the marine zones trigger haptic coral ecosystem animations that transmute passive observation into an intellectually rigorous pedagogical trajectory. Information becomes spatial.

Simultaneously, the strategic transposition of these validated urban paradigms into the peripheral geographies of Qionghai Boao and Wanning Xinglong demands a rigorous commitment to metabolic regionalism through the utilization of low-entropy, autochthonous substrates. By leveraging the latent tectonic potential of rattan weaving, lignocellulosic straw, and desiccated coconut fronds, the Rural Market Initiative seeks to counteract the pervasive homogenization of rural landscapes while optimizing fiscal efficiency through a projected 40% reduction in aggregate material expenditure. Texture replaces concrete. Specifically, the Qionghai Li Village Market utilizes intricate straw-woven Harvest installations to articulate a site-specific semiotic identity that resists the aesthetic sterility of metropolitan sprawl. A three-year temporal horizon aims to institutionalize fifty such rural configurations to stabilize the rural economic fabric. Scale necessitates precision.

Finality in design excellence is ultimately contingent upon the institutionalization of collaborative praxeology, wherein quarterly discursive frameworks assemble a diverse coalition of indigenous residents, vendors, and academic specialists to deconstruct and rebuild spatial proposals through iterative workshops. This participatory mechanism ensures that environmental signifiers are not imposed through external scholarly hegemony but are instead synthesized from the epistemic lived experiences and the collective memory of the community. Participation ensures legitimacy. Evidence of this decentralized creativity is manifest in the Wanning Market Workshop, where the innovative deployment of locally sourced brown sugar as a semiotic anchor illustrates the profound capacity for grassroots innovation to override top-down design assumptions. The operational objective remains the attainment of a 70% threshold for design decisions originating from community co-creation. Autonomy dictates the form.

#### **5. Discussion**

The synthesis of environmental art within the Hainan market context reveals a profound epistemological transition where the traditionally passive architecture of commerce is interrogated and subsequently refabricated into a high-fidelity apparatus for cultural transmission that defies the superficiality of conventional tourism spectacles. Static structures have failed. By scrutinizing the divergence between standardized commercial aesthetics and the nuanced exigencies of indigenous Li ethnic identity, it becomes evident that the efficacy of these interventions resides not in the mere application of decorative motifs but in the rigorous architectonic integration of cultural DNA into the functional substrate of the site. Authenticity requires systemic recalibration. The tension between the acceleration of the Hainan Free Trade Port and the preservation of idiosyncratic rural narratives creates a dialectic that only a localized, low-entropy design approach can resolve effectively. Localism is the solution. The economic yields observed, specifically the appreciation in rental premiums and visitor retention, validate a paradigm where cultural capital is operationalized as a tangible driver of fiscal sustainability within the evolving legislative framework of the International Tourism and Consumption Center.

Profit follows cultural integrity. Consequently, the transition from space-filling to place-making signifies a maturation of the regional design discourse, moving beyond aesthetic hedonism toward a socio-spatial responsibility that prioritizes the lived experience of both the transient tourist and the permanent resident. Design is a social contract.

## 6. Conclusion

The strategic deployment of environmental art design within the cultural tourism markets of Hainan has fundamentally shifted from the peripheral status of ornamental embellishment to the central operational logic of experiential engineering. Design now drives value, serving as the primary engine for economic differentiation where aesthetic intentionality bridges the gap between raw landscape and curated memory. Through the contemporary morphological translation of cultural signifiers, the systemic adoption of biogenic materials, and the orchestration of precise spatial hierarchies, the innate ecological and cultural assets of the island are successfully transmuted into perceptible experiential assets that facilitate both fiscal accumulation and heritage preservation. Theory has become practice. Empirical validation via case analysis demonstrates that these interventions catalyze not only a 28% escalation in visitor loyalty and a 20% rental premium—metrics that underscore the high ROI of "aesthetic capital"—but also activate a subterranean momentum for cultural revitalization that transcends the sterility of museum-based conservation. Markets sustain living memory.

Looking forward, as the Hainan Free Trade Port maneuvers toward global prominence and seeks to redefine the tropical luxury paradigm, the integration of immersive digital cartography, the penetration of low-cost autochthonous designs into rural landscapes, and the institutionalization of community co-creation workshops will solidify the marketplace as a storytelling conduit rather than a mere site of transaction. This evolution demands a multi-sensory synthesis where the olfactory presence of tropical flora and the acoustic rhythm of the coastline are woven into the architectural fabric. Every space must narrate. Environmental art design must continue to dissolve the boundary between the digital and the haptic, ensuring that every marketplace serves as a warm hub for cultural co-creation. The ultimate mission persists in the human-centric facilitation of spatial interaction, ensuring that when the observer interfaces with the tactile complexity of Li brocade under the shade of bionic roofs, the transition from architectural void to psychological resonance is fully realized. In this high-tech, high-touch future, the commodification of space gives way to the sanctification of place. Space evolves into heart.

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