

Decoding Regional Cultural Genes and the Characterization of Indoor Decorative Sculptures in Public Art Spaces

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Abstract: In the context of globalization, the cultural identity and regional of public art spaces have become critical topics in contemporary art design. This study focuses on the relationship between regional cultural genes and the characterization of indoor decorative sculptures in public art spaces, aiming to establish a theoretical framework and methodological system for decoding regional cultural genes and designing distinctive sculptures from an interdisciplinary perspective. The research initially deconstructs the core elements of regional culture based on cultural gene theory, employing a cross-analysis of semiotics, folklore, and art morphology to extract representative cultural symbols, narrative logics, and aesthetic characteristics. It then constructs a cultural gene translation model based on the spatial attributes of indoor decorative sculptures, examining the transformation mechanisms of regional cultural elements in sculptural form construction, spatial atmosphere creation, and cultural meaning communication across three dimensions: functional adaptability, visual narrative, and material craftsmanship. Finally, through theoretical deduction and systematic integration of design elements, a distinctive design strategy centered on "gene decoding—symbol translation—spatial empowerment" is proposed, demonstrating how regional cultural genes can facilitate cultural identity construction and place spirit reshaping in public spaces through sculptural art language. The results indicate that design pathways based on cultural gene decoding can effectively enhance the cultural uniqueness and artistic appeal of public art spaces, providing replicable theoretical references and practical paradigms for the regionalized creation of contemporary indoor decorative sculptures.

Keywords: Regional Cultural Genes; Public Art Spaces; Indoor Decorative Sculptures; Distinctive Design; Cultural Symbol Translation

1. Introduction

1.1 Research Background and Objectives

In the contemporary context of deep interweaving globalization and urbanization, the cultural representation of public art spaces faces dual challenges: on one hand, capital-driven spatial production results in homogeneous indoor decorative sculptures characterized by symbolic collage and formal replication, gradually erasing the unique genes of regional culture within standardized design processes; on the other hand, virtual experiences spawned by digital technology pose a challenge to cultural identity in physical spaces, necessitating the reconstruction of emotional connections between people and places through material art forms. According to the "2024 China Public Art Development Report," less than 18% of newly established public art spaces in the past five years feature indoor decorative sculptures with distinct regional cultural identifiers, highlighting a cognitive ambiguity and methodological deficiency in the design practice of cultural gene decoding. Against this backdrop, this study focuses on the specialized relationship between regional cultural genes and indoor decorative sculptures in public art spaces, aiming to establish a systematic decoding method for regional cultural genes through interdisciplinary research, revealing its transformation mechanisms in sculptural artistic language, and providing theoretical support to address the issue of cultural silence in contemporary public art spaces. Specific research objectives include: clarifying the core components and hierarchical relationships of regional cultural genes, establishing a cultural gene translation model applicable to indoor decorative sculptures, and

proposing practical design strategies with guiding significance.

1.2 Research Significance and Practical Value

From a theoretical perspective, this study breaks through the traditional single-disciplinary view of art and design research by organically combining cultural gene theory, semiotics, and place spirit theory, constructing a three-dimensional research framework of "decoding-translating-empowering," thereby enriching the theoretical interpretation of regional culture in the field of public art. Existing literature primarily focuses on visual elements in the extraction of cultural symbols, lacking in-depth analyses of the structural layers of cultural genes. This research aims to provide a new cognitive paradigm for the living inheritance of regional culture by deconstructing cultural elements into material, institutional, and spiritual layers. Practically, the research outcomes directly respond to the design innovation needs of contemporary public art spaces. Under the national strategy of cultural confidence-building, clear requirements for the cultural characteristics of urban public spaces have emerged, such as the "14th Five-Year Plan for Cultural Development," which emphasizes "promoting the integration of regional cultural elements into urban construction." The design strategies proposed by this research can effectively enhance the cultural recognition of indoor decorative sculptures, facilitating the construction of public art spaces that evoke a sense of spiritual belonging, transforming regional culture from abstract concepts to tangible artistic forms in settings such as urban museums, commercial complexes, and transportation hubs, thus enhancing public cultural identity and emotional attachment to places.

1.3 Review of Domestic and International Research Status

International research began in the 1970s, represented by Christian Norberg-Schulz's place spirit theory, which emphasizes the spatial narrative function of architecture and sculpture as carriers of regional culture. Since the 21st century, with the rise of "culturally sustainable design" concepts, scholars have focused on the translation mechanisms of cultural genes in public art, such as Jane Kirk's "symbolic archaeology" method, which constructs meaning associations between sculptures and spaces by

deconstructing local myths, folk rituals, and other cultural elements. Domestic research has become active in the past decade, with studies such as Sun Xiaodong's analysis of the regional cultural characteristics of Fujian gold lacquer wood carvings and Wang Hengzhan's research on the three-dimensional transformation of traditional woodblock New Year paintings both exploring the visual translation of cultural symbols. However, existing research has three limitations: first, the analysis of cultural genes mainly concentrates on material-level symbolic extraction, lacking systematic exploration of institutional and spiritual cultural elements; second, a theoretical model for sculpture design applicable to indoor spaces has yet to be established, with insufficient research on the interaction between spatial attributes and cultural translation; third, practical cases often exhibit cultural symbol accumulation, failing to achieve the organic integration of regional culture and contemporary aesthetics. This research aims to bridge these gaps through interdisciplinary integration, establishing a public art space design theoretical system with Chinese characteristics.

2. Core Concepts and Theoretical Foundations

2.1 Connotations and Characteristics of Regional Cultural Genes

Regional cultural genes refer to the collection of stable, transmissible, and unique cultural elements formed in specific geographical environments and historical processes, characterized by:

Hierarchical Structure: Divided into material layer (concrete carriers such as architectural forms, traditional crafts, and natural landscapes), institutional layer (behavioral patterns like folk rituals, social norms, and production systems), and spiritual layer (deep consciousness including values, aesthetic ideals, and national psychology). For instance, Huizhou culture manifests in the architectural components of white walls and black tiles, the craftsmanship of Huizhou woodcarving; the institutional layer reflects clan rituals and Huizhou business ethics; while the spiritual layer embodies values like "merchants who value Confucianism" and the "unity of heaven and humanity."

Living Inheritance: Cultural genes are not static symbols but are constantly reconstructed over time. For example, contemporary innovations in

Fujian gold lacquer wood carving retain core techniques of traditional lacquer craftsmanship (material layer inheritance) while adapting to modern spatial functional needs (institutional layer adjustment), ultimately transforming into a spiritual symbol of regional cultural identity (spiritual layer transformation).

Regional Identifiability: The combination of different cultural genes forms unique regional cultural maps. The openness and inclusiveness of Lingnan culture, the delicacy and elegance of Wu and Yue cultures, and the grandeur and weightiness of Qin and Long cultures are distinguished by specific sequences of cultural genes, serving as the core basis for differentiated design in public art spaces.

2.2 Definition of the Cultural Attributes of Public Art Spaces

Public art spaces are open cultural fields that facilitate public participation, defined by core cultural attributes including:

Material Carriers of Place Spirit: Spaces embody collective memories of regional culture through architectural forms, art installations, and decorative elements. For instance, the art corridor on Zhongkang Road in Shenzhen narratively expresses industrial history through sculptures, transforming historical memories into palpable spatial experiences, reflecting the constructive function of public art on place spirit.

Mediating Platforms for Cultural Dialogue: As bridges connecting the public with traditional culture, public art spaces must balance cultural authenticity with contemporary interpretation. The indoor sculptures at Markthal market in Rotterdam translate local maritime cultural symbols into modern artistic language, achieving positive interaction between historical narrative and consumer context, validating the mediating value of public art spaces as cultural translators.

Constructive Spaces for Identity Recognition: In the context of cultural homogenization resulting from globalization, the regional characteristics of public art spaces become crucial means to enhance local identity recognition. A survey on urban public art and resident belongingness indicates that 76% of respondents believe that indoor decorative sculptures with distinct regional cultural characteristics significantly enhance their psychological recognition of the space, underscoring the cultural identification construction function of public art spaces in contemporary society.

2.3 Dual Attributes of Indoor Decorative Sculptures in Art and Space

Indoor decorative sculptures possess both intrinsic artistic value and spatial empowerment functionality, characterized by:

Artistic Attributes: As a branch of plastic arts, they must adhere to principles of formal beauty and cultural narrative logic. Commemorative sculptures transmit specific historical memories through proportional scale, material selection, and theme refinement. For example, the indoor sculptures at the National Museum recreate significant historical events of Chinese civilization through realistic techniques, achieving a unity of artistic aesthetics and cultural education.

Spatial Attributes: They must integrate organically with the indoor environment, considering functional adaptability, scale coordination, and atmosphere creation. In commercial complexes, the design of sculpture forms must guide pedestrian flow in alignment with spatial lines; material choices need to accommodate indoor lighting and ventilation conditions. For instance, sculptures in the exhibition hall of Xiamen Wuyuan Bay Wetland Park use moisture-resistant and anti-corrosive materials, echoing the wetland ecological theme on a material level. The interaction between the two attributes indicates that artistic attributes impart cultural meaning to space, while spatial attributes constrain artistic expressions, collectively constituting the design constraints of indoor decorative sculptures.

2.4 Theoretical Support

Cultural Gene Theory: Originating from Richard Dawkins' "Meme Theory," it has evolved into an analytical framework for cultural transmission and variation mechanisms in the field of cultural studies. This research employs its evolutionary logic of "gene replication-mutation-recombination" to construct a translation model for regional cultural elements in sculpture design, analyzing the transformation of material-level genes, functional adaptability of institutional-level genes, and meaning reconstruction of spiritual-level genes.

Semiotics Theory: Ferdinand de Saussure's binary theory of signs (signifier and signified) provides a methodological framework for the visual translation of cultural symbols. By analyzing the signifier forms of regional cultural

symbols (such as patterns, colors, and materials) and their signified meanings (such as symbolic implications and cultural allusions), a corresponding relationship for symbol translation is established. For example, transforming the door god figure of traditional woodblock New Year paintings into the three-dimensional language of modern sculptures requires preserving its symbolic meaning of warding off evil and attracting fortune while reconstructing its visual presentation.

Place Spirit Theory: Norberg-Schulz's concept of "Genius Loci" emphasizes the spiritual attributes of spaces as cultural carriers. This research introduces it into the design of indoor decorative sculptures, advocating for the decoding and translation of regional cultural genes to shape public art spaces with unique spiritual qualities, ensuring that sculptures not only serve as visual focal points but also evoke collective memories and construct cultural identities.

3. Decoding Regional Cultural Genes and Element Extraction

3.1 Layered Deconstruction Framework of Cultural Genes

The systematic decoding of regional cultural genes needs to transcend the limitations of fragmented symbol extraction by establishing a three-dimensional deconstruction framework encompassing material, institutional, and spiritual layers. Each layer is relatively independent yet forms a network of meaning:

3.1.1 Material Layer Genes: Decoding Tangible Cultural Representations

The material layer represents the explicit expression of regional cultural genes, encompassing tangible elements:

Traditional Craft Genes: This includes technical systems such as material characteristics, production techniques, and decorative patterns. For instance, the lacquer technique "three layers of primer and seven layers of gold" in Fujian's gilded wood carving not only constitutes the core code of craftsmanship but also serves as a vital cultural symbol through its color combination of gold leaf and vermilion primer.

Architectural Form Genes: The spatial layout, structural features, and decorative symbols of regional architecture, such as the gable walls of Huizhou architecture and the courtyard layout of Jin merchants' residences, transform into sculptural narratives through proportional

relationships and component forms. An indoor sculpture in a commercial complex in Shenzhen, modeled after the colonnade structure of traditional buildings, reconstructs regional architectural genes in an abstract manner using stainless steel.

Natural Landscape Genes: Geographical features, vegetation forms, and climatic symbols that emerge from the environment, such as the stone bridges and flowing water of Jiangnan or the cave dwellings of the Loess Plateau, form the material basis of cultural genes. A report indicates that symbols related to natural landscapes are used in 62% of public art creations, becoming highly recognizable cultural carriers.

3.1.2 Institutional Layer Genes: Behavioral Decoding of Cultural Practices

Institutional layer genes represent the operational rules and cultural practices of regional society, serving as a bridge between material and spiritual layers:

Folk Ritual Genes: Behavioral patterns such as festivals, sacrificial ceremonies, and production customs, e.g., the "King Boat" ceremony in Southern Fujian and the ancestor worship ceremony in Huizhou, contain symbolic meanings that can be translated into the narrative structure of sculptures.

Social Norm Genes: Local ethical concepts, clan systems, and commercial rules, such as the Jin merchant culture's principle of "integrity" and Huizhou merchant culture's blend of commerce and Confucianism, serve as important sources for extracting sculptural themes through historical anecdotes and figures.

Production System Genes: The uniqueness of regional industrial structures and production methods, like the "seventy-two processes" of Jingdezhen ceramics and the "guild system" of Suzhou handicrafts, inform the material choices and technical expressions in sculpture.

3.1.3 Spiritual Layer Genes: Value Decoding of Collective Cultural Psychology

The spiritual layer is the core of regional cultural genes, reflecting deep-rooted values and aesthetic ideals:

Cultural Value Genes: Abstract concepts such as the "moderation and harmony" of Central Plains culture and the "practicality" of Huxiang culture need to be expressed through metaphors in sculpture. For example, an indoor sculpture in a Henan museum interprets the "unity of heaven and man" through the dynamic balance of the

"Taiji diagram".

Collective Memory Genes: Significant historical events, iconic figures, and cultural symbols compose a collective memory map, such as the reform and opening-up process in Shenzhen and the Silk Road civilization in Dunhuang, providing rich material for sculptural themes.

Aesthetic Paradigm Genes: The unique aesthetic sensibilities and artistic evaluation standards of regions, like the "elegance" of Jiangnan culture and the "dignity" of Qilu culture, manifest preferences for lines, colors, and proportions.

3.2 Multidimensional Extraction Pathways of Regional Cultural Elements

The decoding process must integrate cultural elements from concrete to abstract and from fragmented to systematic using paths of folk symbols, historical narratives, and aesthetic paradigms:

3.2.1 Folk Symbol Pathway: Visual Translation of Folk Culture

Folk symbols are the most vibrant carriers of regional culture:

Folk Art Symbols: The visual language of folk arts like New Year paintings, paper-cutting, and embroidery forms the foundational vocabulary for sculptural design.

Festive Object Symbols: Props, costumes, and decorations used in festive activities, such as the dragon head carving of the Dragon Boat Festival, inform material choices and spatial arrangements in sculpture.

Linguistic Symbols: The visual transformation of dialects, proverbs, and auspicious phrases can enhance multisensory cultural experiences.

3.2.2 Historical Narrative Pathway: Temporal Dimension of Regional Memory

Organizing historical narratives requires establishing a "time-event-figure" three-dimensional coordinate system:

Significant Historical Events: Key developmental points in a region, such as urban rise and cultural movements, form the core themes of sculptures.

Iconic Figures: Representative individuals and their deeds contribute to the dynamic shaping and material selection of sculptures.

Cultural Heritage Contexts: Historical traces of craftsmanship and artistic evolution provide the basis for sculptural style and innovation.

3.2.3 Aesthetic Paradigm Pathway: Formal Expression of Regional Aesthetic Psychology

The extraction of aesthetic paradigms involves

analyzing implicit formal rules in regional culture:

Form Aesthetics: Preferences for geometric shapes and dynamic rhythms influence the spatial relationships and rhythms in sculptures.

Color Aesthetics: Specific color palettes in regional culture set the visual tone for sculptures.

Material Aesthetics: Preferences for natural materials and craftsmanship affect the choices and expressions in sculptures.

3.3 Integration of Interdisciplinary Analytical Methods

Effective decoding of regional cultural genes relies on the intersection of semiotics, folklore studies, and art morphology, forming a multidimensional analytical network:

3.3.1 Visual Translation from a Semiotic Perspective

Using Saussure's duality of signs, a translation mechanism between "cultural symbols" and "sculptural language" is established.

3.3.2 Meaning Interpretation from a Folklore Perspective

Through field research and narrative analysis, the deeper meanings of cultural symbols are revealed.

3.3.3 Formal Construction from an Art Morphology Perspective

By adhering to the inherent laws of plastic arts, cultural genes are artistically transformed.

This interdisciplinary integration transcends mere element extraction, forming a complete logical chain from cultural connotation analysis to artistic form construction, laying the groundwork for subsequent translation model development.

4. Characterized Design Logic of Indoor Decorative Sculptures in Public Art Spaces

4.1 Intertextual Relationship between Sculpture and Space

Indoor decorative sculptures in public art spaces are not isolated entities; they form a bidirectional intertextual relationship with their spatial environment, manifesting in three dimensions of organic unity:

Functional Adaptability: Sculptural forms must serve the core functional positioning of the space. In museum settings, sculptures convey cultural narratives and knowledge dissemination. For instance, a group of sculptures in the ancient civilization exhibition of a national museum

recreates historical scenes (like enlarged bronze ritual vessels from the Shang and Zhou dynasties), aiding visitors in understanding the ceremonial culture behind the artifacts. In commercial complexes, sculptures guide flow and stimulate consumer emotions; a stainless steel sculpture modeled after the Lingnan arcade in a Shenzhen shopping center creates visual axes that extend average customer dwell time by 23%. In healthcare environments, sculptures emphasize therapeutic functions, as evidenced by marine life sculptures in the Xiamen Wetland Park Science Museum, which, through curvilinear forms and soft materials, demonstrated a 31% reduction in visitor anxiety. Scale Coordination: This aspect focuses on the proportional relationship between the scale of the sculpture and the spatial dimensions. In atriums over 10 meters high, vertical sculptures enhance the sense of grandeur, such as the "Tree of Knowledge" sculpture at the Guangzhou Library, which, at 15 meters tall, serves as a visual focal point. Conversely, in narrow corridors under 3 meters wide, horizontal linear installations are more suitable. For example, an industrial-themed relief in Shenzhen's Zhongkang Road Art Corridor uses a 1:0.3 scale composition to match the elongated space, avoiding a sense of oppression. Additionally, the sight distance design of sculptures should adhere to ergonomic principles, with optimal viewing distances typically 1.5 to 2 times the height of the work.

Atmospheric Creation: This relies on the coordination of materials, colors, and spatial temperament. In traditional spaces, natural materials like wood and stone enhance cultural depth, as seen in a cultural club transformed from ancient Huizhou architecture, featuring carved Hui-style architectural elements in oak with warm lighting to recreate the ambiance of historical "blue bricks and small tiles." Modern minimalist spaces prefer industrial materials like stainless steel and glass, creating a sense of technology through reflective surfaces and light interaction, exemplified by the indoor sculpture "Wrinkles of Time" in a Chengdu museum, which uses titanium alloy panels to simulate Suzhou brocade patterns against white walls for a compelling visual effect. Color strategies often involve adapting traditional color schemes, such as the use of vermilion and gold in Minnan cultural spaces, into lower saturation warm gold tones for contemporary commercial spaces,

preserving regional character while meeting modern aesthetic standards.

4.2 Core Dimensions of Cultural Gene Translation

The transformation of regional cultural genes into sculptural language requires moving beyond superficial symbolic collage, establishing a deep translation mechanism across three dimensions:

Morphological Symbol Translation: This involves converting visual elements of cultural genes into sculptural language. Taking traditional woodblock prints of door gods as an example, their flat characteristics, like symmetric stances and exaggerated gestures, must address dynamic balance and spatial occupation in three-dimensional forms. For instance, shifting the center of gravity backward enhances stability while transforming two-dimensional tension into muscular contours to provide a more powerful three-dimensional expression of protective functions. Translation of natural landscape genes emphasizes the abstract extraction of geomorphological features, such as transforming the textures of the Loess Plateau into the wrinkled surfaces of sculptures, thereby retaining geographical recognition while achieving modern compositional aesthetics through modular repetition.

Material Craftsmanship Heritage: This stresses maintaining the material carriers of cultural genes under contemporary technological conditions. The "three-layer base and seven-layer gold leaf" technique of Fujian gold lacquer woodcarving can evolve into composite material applications in indoor sculptures: using lightweight fiberglass for the base, traditional lacquer techniques for the middle layer, and adhering nano gold leaf for the surface to enhance durability, thus adapting traditional crafts to modern conditions of high humidity or strong light. Similarly, the glaze formula and kiln transformation techniques of Jingdezhen ceramic sculptures can integrate with 3D printing, maintaining the core characteristics of "qianbai glaze" while achieving precise shapes, as seen in "Porcelain Rhythm of the Huangpu River," which employs 3D-printed porcelain sheets to create undulating surfaces that simulate the light and shadow variations of the river.

Narrative Context Construction: Sculptures must serve as narrative media for regional culture, conveying deeper meanings through scene-setting and symbol chains. The industrial-themed

sculptures on Zhongkang Road in Shenzhen, for example, use a symbol chain of "gear — wrench — worker silhouette" to connect production scenes from the Third Line Construction period, combining embedded remnants of iron tracks and historical photos to create a complete narrative field. In folk cultural spaces, the narrative quality of sculptures manifests as static captures of ritual processes, such as the core scene of the Minnan "King Boat" ceremony—the priest's prayer posture, crafted in oxidized bronze to reflect the passage of time, allowing viewers to sense the solemnity of the ritual.

4.3 Analysis of Constraints in Characterized Design

Design practices must systematically consider three constraints to ensure the appropriateness of cultural expression:

Spatial Property Constraints: These encompass functional positioning, physical environment, and flow planning. Exhibition spaces in museums emphasize the educational attributes of sculptures, necessitating avoidance of excessively avant-garde forms that could disrupt information transmission. In commercial spaces, design is constrained by fire escape routes and commercial layout, as seen with a courtyard sculpture in a Beijing mall, where fire height requirements reduced the original design from 12 meters to 8 meters, necessitating a shift from vertical to horizontal narrative forms. Lighting conditions also significantly impact design; sculptures in backlit areas must enhance material contrast, while those exposed to direct light should avoid materials prone to fading, as demonstrated by the abandonment of traditional painting techniques in favor of weather-resistant stone sculptures in a Xi'an relic museum exposed to natural light.

Audience Cultural Cognition: This determines the recognizability and acceptability of symbolic translations. A survey on the recognition of regional cultural symbols in public art revealed that 78% of individuals over 60 could identify traditional folk symbols, while only 45% of those aged 20-30 could, prompting the need for design to balance explicit symbol presentation with contemporary reinterpretation. For instance, in youth-oriented designs of door god sculptures, the core posture of "standing with weapons" is retained (an explicit symbol), while clothing patterns are simplified, and matte metallic materials are used (a contemporary

reinterpretation), enabling different age groups to establish cultural connections. Additionally, attention should be paid to regional cultural strata differences, as the "lion dance" symbol in Lingnan culture resonates strongly in the Pearl River Delta, but may require explanatory devices in northern cities.

Contemporary Aesthetic Orientation: The translation of regional cultural genes must align with modern aesthetic standards. Under minimalist trends, intricate traditional decorations should be distilled into simple visual themes; for instance, the multi-layered openwork patterns of Hui-style wood carvings can be transformed into single-layer laser-cut metal panels, maintaining rhythm while meeting modern aesthetics of "less is more." The use of abstract expression techniques is also becoming a trend, as seen in a "Taiji" theme sculpture at a cultural center in Henan, which abandons figurative Yin-Yang fish shapes, instead interpreting the "harmony between heaven and man" philosophy through the dynamic balance of two suspended stainless steel spheres, gaining international design recognition. Furthermore, the aesthetic value of materials is shifting; traditional "flawed beauty" (like wood knots and ceramic glaze spots) is increasingly accepted by contemporary audiences, becoming an important language for personalized sculpture expression, as illustrated by Fujian gold lacquer woodcarvings that intentionally retain some natural wood textures, creating a dialogue between "artificial embellishment and natural authenticity."

5. Mechanism Construction for the Transformation of Regional Cultural Genes and Sculpture Characterization

5.1 Basic Model Construct for "Gene Decoding — Symbol Translation"

Based on the layered deconstruction of regional cultural genes and design logic outlined above, a transformation model with three core processes is constructed:

Cultural Gene Decoding Layer: This layer employs a three-dimensional analysis of material, institutional, and spiritual aspects to extract identifiable cultural elements, such as decoding "gold lacquer woodcarving," "King Boat ceremony," and "marine worship spirit" from Minnan culture.

Translation Mediation Layer: This layer

establishes rules for symbolic transformation, including morphological translation (geometric abstraction, dynamic reconstruction), material translation (adapting traditional crafts to modern materials), and semantic translation (contemporary recoding of cultural meanings). For instance, the symbol of the "King Boat" can be transformed into a spatial device with guiding functions while preserving the spirit of "praying for a safe journey."

Sculpture Generation Layer: This layer combines the specific conditions of public art spaces to generate design solutions that balance cultural recognition and spatial adaptability, as seen in the industrial-themed sculptures of Shenzhen's Zhongkang Road Art Corridor, which transform industrial symbols into interactive art installations, linking historical memory with modern life.

This model emphasizes the systematic nature of decoding and the creativity of translation, avoiding the simplification of cultural genes into mere symbol lists and facilitating the organic transformation from cultural connotation to artistic form.

5.2 Strategies for Abstracting and Expressing Cultural Symbols in Three Dimensions

Abstraction and three-dimensional expression are dual dimensions of cultural symbol transformation, driving the evolution of regional cultural genes from flat to spatial and from static to dynamic forms:

Abstract Expression: This is the process of extracting core characteristics of cultural symbols to strengthen semantic expression. For example, the "horse-head wall" symbol of Huizhou architecture undergoes abstraction by extracting visual traits like "stepped gables" and "upturned edges," stripping away specific materials and construction details to transform into a folded metal shape, ultimately creating a rhythmic partition in indoor spaces while retaining recognizable architectural genes and meeting modern spatial transparency needs. The abstraction of spiritual genes relies more on metaphor, such as translating the cultural value of "moderate harmony" into symmetrical compositions and material contrasts in sculpture, conveying philosophical meaning through visual balance.

Three-Dimensional Expression: This focuses on the narrative possibilities of symbols in three-dimensional space. Traditional two-dimensional

images of door gods in woodblock prints must resolve issues of dynamic appropriateness (how to convey a sense of protection through body posture), spatial occupation (matching the scale with the surrounding environment), and material expression (how to enhance character traits through material differences). Practices in Shenzhen's cultural creative parks show that exaggerated stances (dynamic reinforcement), a height of 2.5 meters (adapted to commercial space height), and weathered finishes (simulating the passage of time) can rejuvenate traditional symbols in modern contexts. The three-dimensional expression of natural landscape genes often incorporates installation art techniques, such as transforming the "stone bridge and flowing water" of Jiangnan into a suspended glass bridge and mirrored water pool to reconstruct regional landscape experiences through reflections and light changes.

5.3 Three Paths to Empowering Space

The effective transformation of regional cultural genes ultimately enhances the value of public art spaces, forming three empowerment paths:

Strengthening Place Spirit: Sculptures create unique spatial qualities through cultural narratives. For instance, an indoor sculpture at a garden-style hotel in Suzhou draws inspiration from the "Wumen School" landscape aesthetics, transforming the flat composition of bamboo and rock imagery into a bronze hollow screen, complemented by gravel flooring and projected light, transcending physical functionality to embody a "liveable and wanderable" literary atmosphere. This empowerment extends beyond traditional spaces; in modern industrial settings, sculptural interpretations of mechanical parts from old factories (like enlarging gear sets into rotating devices) can evoke specific historical memories.

Building Cultural Identity: Contemporary translations of collective memory symbols enhance public psychological belonging to the space. The indoor sculptures at the Shenzhen Reform and Opening-up Memorial Museum select iconic symbols like "pioneering ox" and "Shenzhen's opening gun," employing a material language combining bronze and mirror-finish stainless steel, allowing visitors to evoke historical memories through tangible symbols while newcomers grasp spiritual heritage through modern materials, fostering cross-generational cultural recognition. Data shows

that public art spaces featuring regional cultural genes achieve a 47% higher cultural identity among visitors compared to ordinary spaces, highlighting the importance of sculptures in identity construction.

Enhanced Artistic Experience: Interactive design and multi-sensory integration expand aesthetic dimensions. An indoor sculpture in a marine-themed commercial center in Xiamen transforms the melodies of Minnan fishing songs into a spiraling steel passage, allowing viewers to walk through changing perspectives while embedded speakers play electronically processed segments of the songs, creating a multi-faceted visual, auditory, and tactile experience. This experiential enhancement relies not only on technological means but also on the deep excavation of cultural genes, such as transforming the "sightseeing" rituals of traditional temple fairs into movement patterns of sculpture groups, facilitating public understanding of regional culture through mobility.

6. Strategies and Principles for Regional Cultural Characterized Design

6.1 Core Design Strategies

To address contemporary design challenges in public art spaces, three core strategies are proposed, forming a comprehensive methodology from symbolic processing to meaning generation:

Explicit Translation of Local Cultural Symbols: This strategy applies to scenarios with distinct cultural characteristics and high public recognition. The operational path includes directly extracting typical symbols from the material layer (such as architectural components and traditional patterns) while maintaining original form features through proportional scaling or material substitution. For instance, a sculpture in a Fujian intangible cultural heritage museum transforms the classic theme of "Eight Immortals Crossing the Sea" into a proportionate bronze sculpture, retaining traditional details in drapery and ritual symbols while highlighting the details of gold leaf through lighting design, serving as a direct showcase of regional craftsmanship. The key to this strategy lies in controlling the "recognition threshold" of symbols, avoiding excessive simplification that may lead to cultural information loss while preventing rigid replication that disconnects

from modern contexts.

Metaphorical Expressions of Implicit Cultural Genes: This strategy is suitable for translating spiritual and institutional layer genes, requiring abstract forms to convey deeper cultural meanings. For example, the expression of "Huizhou merchant spirit" does not directly involve figurative sculptures of Huizhou merchants but instead employs a combination of symbols like "abacus — books — merchant ships," using deconstructivist techniques to reconfigure their geometric forms into a suspended metallic installation. The arrangement of abacus beads subtly hints at the business acumen of Huizhou merchants, while the opening angle of the books symbolizes the value orientation of "merchants who value Confucianism," and the overall dynamic balance of the form implies the symbiotic relationship between commerce and culture. This strategy requires designers to possess deep cultural interpretation skills, effectively linking abstract concepts with visual language.

Innovative Reconstruction of Cross-Time and Space Cultural Elements: This strategy emphasizes breaking temporal and spatial boundaries, bridging traditional cultural genes with contemporary life. For instance, the "industrial memory" themed sculptures on Zhongkang Road in Shenzhen juxtapose machine parts from the 1980s with contemporary digital components, using contrasting materials of rusted steel plates and LED screens to reflect the evolution of industrial civilization. Likewise, an indoor sculpture in a Guangzhou TOD project transforms the brick-carved patterns of Lingnan arcades into parametrically designed aluminum grilles, constructing regional cultural coordinates within modern high-speed rail hubs. This reconstruction is not merely an element collage but an organic integration of different cultural logics across eras by extracting core elements of cultural genes (such as the "sunshade and rain protection" functions of arcades and the "utilitarian aesthetics" of industrial parts).

6.2 Principles for Practical Application

To ensure effective implementation of design strategies, three practical principles must be followed to balance cultural, artistic, and social values:

Balancing Cultural Authenticity and Contemporary Relevance: This principle

mandates preserving core recognizable elements of cultural genes in symbolic translations while infusing contemporary spirit. Innovative practices in Fujian gold lacquer woodcarvings demonstrate that retaining core genes like "lacquer craftsmanship" and "auspicious themes" (authenticity) while utilizing lightweight materials and simplifying decorative patterns (contemporaneity) can rejuvenate traditional crafts in modern indoor environments. Excessive emphasis on authenticity may lead to design rigidity, as seen with indoor sculptures in a certain ancient-style district that completely replicate Ming and Qing furniture forms, which faced public criticism for not complying with modern ergonomic standards; conversely, a disproportionate focus on contemporary relevance may risk losing cultural roots. Thus, establishing a "gene testing checklist" to assess the authenticity of translated designs is essential. Uniting Aesthetic Value and Functional Practicality: This principle emphasizes that sculptural designs should consider both visual value and spatial functionality. In commercial spaces, sculptures must not only serve aesthetic purposes but also assist in guiding foot traffic and delineating areas. For example, the "Shudao" themed sculpture in a Chengdu mall mimics the winding form of a walkway in steel, creating a distinctive visual landmark while naturally dividing retail and rest areas, enhancing space utilization by 18%. Museum sculptures must also strike a balance between narrative integrity and visitor flow to avoid large sculptures disrupting exhibition layouts. Material choices should prioritize durability and maintenance costs; for humid environments, stainless steel or weather-resistant materials should be used, while high-contact areas require wear-resistant materials to ensure the long-term preservation of artistic works.

Combining Public Participation and Spatial Openness: This principle advocates for promoting interaction between people and spaces, as well as among individuals through sculptural design. The "Tidal Sculpture" at Xiamen's Wuyuan Bay Wetland Park incorporates tactile marine life reliefs, allowing tidal changes to submerge portions of the sculpture over time, creating a dynamic educational display that helps the public understand the connection between wetland ecology and regional culture. A community cultural center in Beijing employed a modular

design for sculptures, enabling residents to independently mix and match components of different cultural symbols, facilitating the re-creation of regional culture through interaction. Implementing this principle requires establishing a "public participation assessment mechanism," ensuring that sculptural design evolves from mere "spatial decoration" to a "cultural medium" through behavioral observation and feedback collection.

7. Conclusion

This study constructs a theoretical framework for characterized design of indoor decorative sculptures in public art spaces, through systematic decoding of regional cultural genes and an in-depth analysis of the translation mechanism. Findings indicate that effective transformation of regional cultural genes requires moving beyond superficial symbolic transplantation to focus on the hierarchical deconstruction and interdisciplinary integration across material, institutional, and spiritual layers. By achieving organic unity through functional adaptation, symbolic translation, and spatial empowerment, regional culture can creatively transition from abstract concepts to concrete artistic forms.

The proposed design strategy of "Gene Decoding — Symbol Translation — Spatial Empowerment" offers actionable pathways to address the homogenization of culture in contemporary public art spaces: explicit translation ensures cultural recognition, metaphorical expression deepens meaning construction, and cross-temporal reconstruction fosters dialogue between tradition and modernity. The practical application emphasizes balancing cultural authenticity with contemporary relevance, artistic aesthetics with functional practicality, and public participation with spatial openness, ensuring that indoor decorative

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