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Analysing the Language of Environmental Ceramic Art

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Abstract

Drawing upon systemic-functional semiotics and Michael O'Toole's analytical framework for sculpture, this study conducts a multifactorial, systemically oriented investigation of environmental ceramic works. Through detailed multimodal description and comparative case analyses of both Chinese and international pieces, it demonstrates how the ideational, interpersonal and compositional meta-functions of visual grammar can be operationalized to decode spatial scale, material texture, chromatic rhythm, visitor pathways and environmental integration. The empirical results not only confirm the feasibility of applying visual grammar to three-dimensional ceramic installations, but also provide a replicable protocol—comprising phase-by-phase annotation, meta-functional coding and inter-rater reliability checks—that bridges aesthetic interpretation, curatorial practice and pedagogical design.

Keywords

Systemic-Functional semiotic model, Environmental Ceramic Art, Visual Grammar Analysis

1. Introduction

Introduced to Chinese academia at the turn of the twenty-first century, visual grammar analysis quickly became a favored tool across journalism, educational technology, and applied linguistics. Yet the resulting research landscape reveals a pronounced imbalance: "low-threshold" texts—children's drawings, picture books, textbook illustrations, and commercial advertisements—are densely studied,

while high-order artworks, especially three-dimensional forms such as sculpture, installation, and environmental ceramics, remain conspicuously absent. This path dependence stems from an early, oversimplified transplantation of Kress and van Leeuwen's (1996) representational–interactive–compositional model in Reading Images and from a lack of critical reflection on Halliday's (1985) three meta-functions when transposed across modes. Researchers typically treat images as linear sign systems, overlooking the semiotic weight of material texture, embodied perception, and exhibition context, thereby narrowing the theory's explanatory scope.

Running parallel yet long marginalized, The Language of Displayed Art (Michael O'Toole, 1994) took sculpture and exhibition space as its prototype, first importing Hallidayan stratification into the analysis of three-dimensional works and proposing a semiotic continuum of "work–site–viewer". O'Toole's 2011 revision integrates insights from phenomenologies of embodiment, museum narratology, and digital-media studies, embedding haptic, kinaesthetic, and temporal dimensions into the meta-functional matrix and transforming static "visual grammar" into a dynamic multimodal "sensory grammar." This shift widens the analytical remit—from traditional sculpture to sound-light installations and AR-mediated immersive ceramics—while offering quantifiable tools for describing the interplay of image, space, and viewer, such as a 3-D annotation system mapping spatial vectors, sightlines, and dwell-times. Owing to delayed translation and disciplinary silos, however, Chinese art scholarship has scarcely registered O'Toole's paradigm update, further entrenching visual grammar's absence from three-dimensional art research.

Taking environmental ceramics as its point of entry, the present study juxtaposes Kress & van Leeuwen's "visual grammar" with O'Toole's "grammar of displayed art" to construct an analytical framework that simultaneously accommodates the logics of two-dimensional imagery and three-dimensional space. It retains the representational, interactive, and compositional meta-functions to parse glaze coloration, surface texture, and symbolic motifs, while incorporating O'Toole's concepts of modal weighting and perceptual pathways to examine how works couple with terrain, lighting, and visitor flows. Through comparative cases drawn from Taoxichuan (Jingdezhen, China), the Mino International Ceramics Festival (Japan), and the EKWC residency (the Netherlands), the paper seeks to bridge the long-standing rift between "flat text studies" and "spatial art studies," offering a replicable operational paradigm for professionalizing and dimensionalizing visual grammar.

Rudolf Arnheim's visual-perception theory, presented in his writings, regards perceptual concepts in visual art as the fundamental source of both creation and appreciation. Visual-grammar analysis, deeply influenced by systemic-functional linguistics and semiotics, is therefore designated systemic-functional semiotics; systemic-functional linguistics itself can be seen as one branch of systemic-functional semiotics.

Over the past four decades, public buildings and leisure squares in cities worldwide have seen a growing number of contemporary environmental artworks that use ceramics as their primary medium, including ceramic sculptures and architectural murals. Countries such as Japan have produced a large

cohort of ceramic artists renowned for creating environmental ceramic works. With China's rapid economic growth and its cities' increasing emphasis on image and environment, environmental ceramic works have mushroomed in public areas—parks, plazas, stations, streets, alleys, and campuses—across cities large and small.

But so far, analyses of environmental ceramic works at home and abroad have varied widely and reached no consensus. This paper argues that the multimodal research of systemic functional linguistics—particularly its visual grammar analysis—offers new perspectives and methods for analyzing and evaluating environmental ceramic works.

2. The Three Functions of Visual Grammar

Visual grammar analysis inherits the metafunction hypothesis from systemic functional linguistics, asserting that visual discourse—like discourse composed solely of linguistic signs—is a source of meaning and is inherently multifunctional. Social semiotics encompasses both the subject matter of a culture and the modes and types of expression that culture employs. Susanne Langer's semiotic aesthetics holds that art is "the creation of symbolic forms of human feeling" and that "artistic symbols are non-linguistic presentational symbols," and thus emphasizes the importance of appearance and the system of meaning within symbols.

According to Halliday's (1985) three meta-functions of language—ideational, interpersonal, and textual—Michael O'Toole divides the meaning system of visual art into three corresponding types: representational meaning, modal meaning, and compositional meaning. He labels the semiotic codes of various art forms—painting, sculpture, architecture, and so on—so that these codes still denote similar functions or types of meaning relations, though the labels differ across art forms. This paper adopts O'Toole's methodology for analyzing sculpture to examine environmental ceramic art (see Table 1).

Table 1. Functions and Systems in Sculpture

Function / Unit	REPRESENTATIONAL	MODAL	COMPOSITIONAL
WORK	Process(action/event/existence/relation) Theme(religious/magic/civic/political) Peripeteia(narrative turning-point)	Scale(to human) Mass Equilibrium Palpability 'Address' Modality Message	Volume(relation to space) Proportion(relation to setting) Independence Openness/Closure Fixed/Mobile Cohesion Material

FIGURE	Participants (agents/patients/existents) Body (anthropmorphic/zoomorphic/biomorphic/inorganic) Act Movement/Stasis Position	Scale Mass Equilibrium Address Line Solidity Relation to light Characterization Expressiveness Vitality	Relative position to Gestalt Parallelism Static/Dynamic Fixed/Mobile Rhythm Material
MEMBER	Basic Physical Forms(parts of the body/objects/natural forms/machine parts/geometric forms) Drapery	Fullness of Realization(detailed/stylized/attenuated/abstract) Raw/Polished Stress Factors	Texture Rhythmic Relations Material Qualities

“A picture is worth a thousand words” bluntly encapsulates the relationship between image and language. People are accustomed to, or even unthinkingly, look at images and grasp their meaning, which is why images are so vital and compelling. Systemic-functional semiotics holds that its three meta-functions—representational, modal, and compositional—are all meaningful provided they are activated or realized within a text, even in non-linear, simultaneously occurring structures such as pictures. Although the systemic or paradigmatic choices of an image can be realized in manifold forms, their purpose is always to actualize the image’s own meanings, including representational, modal, and compositional meanings.

Representational meaning denotes the way a picture or sculpture stands for real figures, objects, places, or events; whether historical or contemporary, they share the enigmatic aura of Classical or Renaissance works. Michael O’Toole regards the representational function as the most salient.

Modal meaning refers to how an image or sculpture adjusts the viewer’s gaze or posture through angle and, by highlighting and framing specific compositional devices, draws the eye into its world. O’Toole argues that many features distinguishing sculpture from other art forms stem from the modal system—scale, mass, balance, tactility, and address.

Compositional meaning concerns how an image or sculpture achieves equilibrium within its structure or on its plinth by employing geometric principles of verticals, horizontals, and diagonals, as well as internal balances and intersecting oppositions. The compositional function of sculpture encompasses not only textual, cohesive, and contextual features—paralleling Halliday’s textual metafunction—but

also compositional proportions, correspondences, and oppositions found in painting. Notably, the deliberate dissonance of sculptural form and the foregrounding of material properties—hardness, weight, color, reflectivity, and tactility—are emphasized.

3. Visual Grammar and Environmental Ceramics

Environmental ceramic works were selected for analysis chiefly because they possess three characteristics. First, vitality: like Classical and Renaissance sculpture, many environmental ceramics evoke living matter such as the human body. Second, three-dimensionality: viewers can approach them from any angle and relate them to familiar figures or settings, aligning with systemic and systemic-functional perspectives on the world. Third, affective appeal: standing before them, viewers are drawn in and moved by the radiance and beauty they emit. The most context-dependent examples—ceramic installations created to ornament a building façade or to dominate a public square—radiate their presence anew for different passers-by every day.

As a visual-language art form, environmental ceramics possess a distinctive aesthetic value and set of features, continually gaining cultural attention under the influence of today's visual culture, and their aesthetic qualities display the semantic traits of the image era. These works are the purposeful creations of designers who respond to the demands of specific environments and the aesthetic needs of their users. They differ both from studio ceramics produced in free creation and from museum objects. The design of environmental ceramics is intimately tied to the site and to the psychology of the people within it, a relationship that fully embodies the modal function of visual grammar. All of this is closely connected to the representational, modal, and compositional meanings of systemic-functional semiotics.

The formal language comprises form, color, texture, and modes of presentation; by combining these with the unique semiotic resources of clay, glaze, and fire, one can analyze the aesthetic qualities and advantages that distinguish ceramics from other environmental art materials and forms. As formal language, ceramics situated in a given environment first deliver a sensory experience. The medium's professional expertise, technical demands, material specificity, and long historical lineage all elicit distinctive aesthetic responses in the viewer. Every feature of this formal language begins with perception triggered by vision.

4. Case Studies

This paper undertakes a semiotic reading of contemporary environmental ceramics by drawing on the three functions and row-and-column sub-headings set out in Table 1.

The very process of building clay models establishes the compositional function of the work's surface; it also fixes, within the compositional tags, how dynamic balance and relational intensifications or attenuations are inscribed. These tags address the viewer directly, soliciting bodily recognition, and the same building process thereby shapes the modal function of environmental ceramics. The viewer's act

of deciphering the work—visually and spiritually—ultimately realizes its representational function.

4.1 The Language of Material Texture

The most distinctive feature of the compositional function is its reflection through material, evident in the roles of diagrams, graphics, and member units. The visual, tactile, and perceptual sensations arising from a material's properties express its texture. Within the member units of the compositional function are items such as material variety. The beauty of clay material is an immediate manifestation of the earth's own texture. In terms of ceramic bodies, porcelain clays are categorized as coarse or fine; pottery clays include coarse, fine, and refined earthenware, as well as stoneware—an intermediate body whose recipe lies between porcelain and pottery. Porcelain clay is fine and gentle, its color often white and warm, whereas earthenware clay is more granular and loosely textured, better suited to conveying rugged, primitive, or rustic natural beauty. Because of the rich diversity of clay materials, even without glaze decoration, environmental ceramic works can still present the beauty of tactile texture (see Figure 1).

Figure 1. Ceramic Mural in the Corridor of the Korean Maekli Music Hall, by Zhu Legeng

Zhu Legeng's large ceramic mural for the Korean Maekli Music Hall offers an exemplary case for exploring the central notion in Systemic Functional Linguistics (SFL) that language is a social semiotic system. SFL posits that any semiotic practice—whether linguistic, imagistic, or spatial—engages in meaning-making. Through the material practice of "rolling thin clay strips into trumpet-like forms and densely embedding them at varying heights," the mural re-classifies and integrates the experiential domain of ceramic art with that of concert-hall architecture. Instead of merely depicting music, it

metaphorically reconstructs the experience of music through the physical properties of ceramic: the trumpet shapes evoke sound production and transmission, the undulating texture suggests rhythm and tempo, and the white porcelain embodies a pure musical passage. This reconstruction transcends visual representation to become a multisensory integration of experience.

Within the work, the logical relations manifest as a part–whole hierarchy (innumerable trumpets forming an overall texture) and a causal chain (the hollow trumpets and gentle undulations → echo and absorption effects). In SFL terms, this causal chain parallels the logico-semantic relation of enhancement within clause complexes: acoustic principles (circumstantial elements) expand the meaning of visual beauty (the dominant clause). The ceramic's physical characteristics—porosity, surface curvature—function as logical connectors that bind the semantic domains of art and function into an indivisible whole.

Through functional intervention (echo and absorption), the mural directly participates in the hall's acoustic practice, acting as a "collaborator" in listeners' musical perception. In SFL, this intervention can be viewed as an exchange structure: the work is not a static giver of information but dynamically negotiates with the listener's auditory experience via physical effects such as echo delay and frequency absorption. Listeners need no understanding of ceramic craft; their bodies immediately sense how "the space gently handles sound," constituting a non-verbal interaction between artwork and audience.

The evaluative metaphor "the white porcelain is translucent and clean like a pure musical passage" conveys the creator's stance toward the aesthetic value of purity through the system of Appreciation. Within SFL, Appreciation is subdivided into reaction, composition, and valuation. Here, "translucent and clean" is a reaction to the compositional quality of the ceramic, while "pure musical passage" elevates its value into an isomorph of musical aesthetics. This evaluation is not imposed; rather, it is naturalized through the environmental cohesion of the music hall—the seamless coordination of white ceramic and spatial ambience—allowing viewers to readily align with the creator's aesthetic position.

Under the expanded visual aesthetics of modern ceramic art, contemporary ceramists harness the inherent beauty of clay, generating varied textures through pressing, incising, tearing, and pinching while manipulating moisture and force. These textures encompass both the clay's natural grain and the procedural marks born of human making; their rhythms, continuities, overlaps, thicknesses, densities, crossings, and entanglements—together with the resulting tactile and spatial associations of weight, tempo, and softness or hardness—constitute the artist's creative orchestration of the material's language in response to the work and its environment. Imprints left by natural gestures reveal a primal sensuous beauty, whereas mechanically ground or pressed hard edges express a rational, ordered beauty; all stem from the physical plasticity of the material and the visual experiences it affords (see Figure 2).

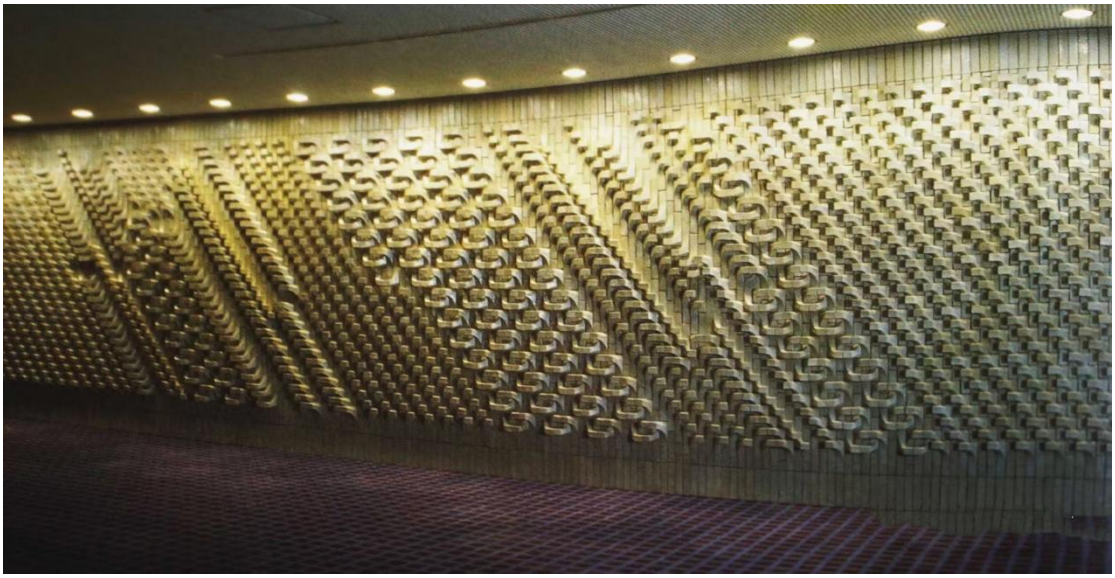

Figure 2. Tasao Company Communication Center Lobby Ceramic Art Wall

The quality of texture expression directly determines the manifestation of formal beauty in environmental ceramics. Within a certain scope, texture acts immediately on visual perception; rather than an outer garment of form, it is an expressive component of the composition, its emotive character evoking imagination and association during aesthetic engagement and embodying part of the work's spiritual quality. When employed with precision, texture endows environmental ceramics with rich visual tactility and an enhanced aesthetic experience.Within O'Toole's framework, Tide Sound (see Figure 3) deploys the "swirling crack" as the dominant representational vector, guiding the viewer's gaze along a spiral trajectory. The vortex's "end point" is deliberately dissolved, the fissures extending to the edges of the wall to suggest the endless cycle of tides. Micro-textures—algae, pebbles, bubbles—function as "environmental participants," sharing the same clay substrate as the cracks to forge an integrated "undersea world." Rendering high natural modality situates the spectator in the subject position of a "coastal dweller," while the compositional strategy of frameless overflow and spiral rhythm transforms the public hall into an "internalized shore," completing a multi-dimensional narrative of vision, touch, and emotion.

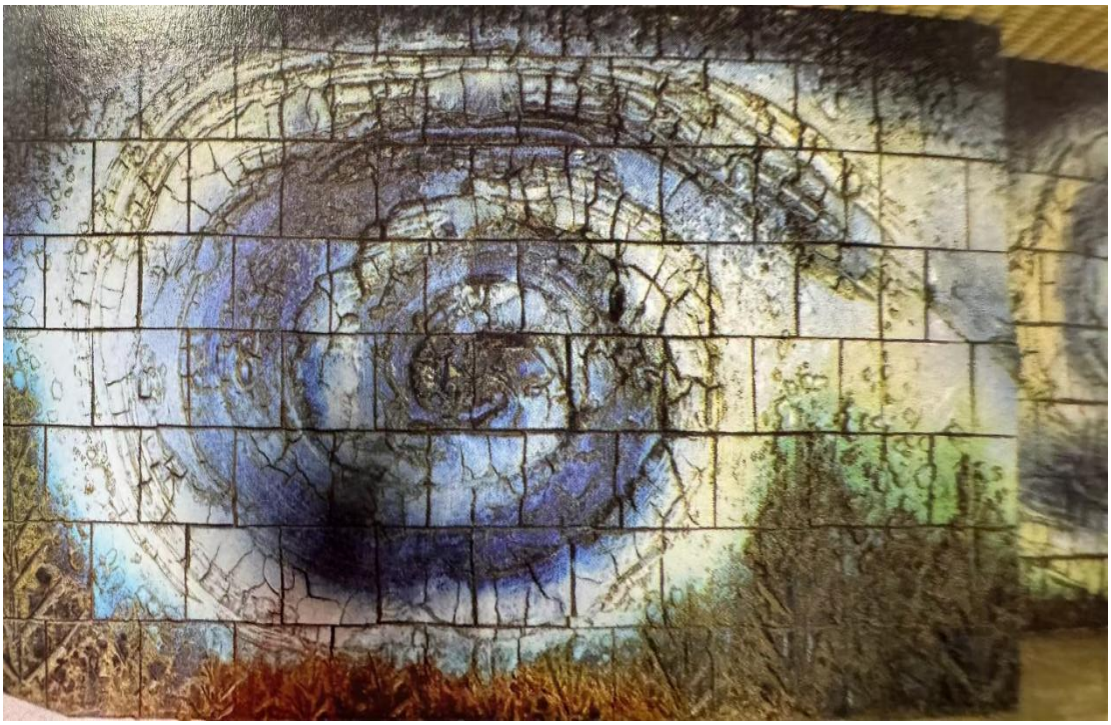

Figure 3. Tide Sound-Work by Kato Togoro

4.2 The Language of Glaze

Within the compositional function of visual grammar, color operates as a decisive unit of work. It is the most dynamic element of visual language, capable of delivering the strongest perceptual impact while fully conveying human psychology and emotion—thereby embodying the modal function of visual grammar. Glazes offer an extensive palette and serve as the ceramic artist's primary chromatic language beyond the clay's inherent hues. Unlike other pigments, glaze must be fired at high temperatures to fuse with the ceramic surface; it is impermeable, easy to clean, and durable. Crackle glazes, matte glazes, and other textures, combined with over- and under-glaze colorants, allow environmental ceramics to radiate with brilliance. More importantly, variables such as firing temperature, kiln placement, and uneven glaze thickness subtly shift the final visual outcome. These delicate chromatic variations—symbolic, affective, and perceptual—evoke imaginings ranging from opulent to reserved, from minimalist to complex, and trigger emotions as varied as tension, ease, excitement, and calm. Cool and warm tones, for instance, create sensations of expansion or contraction, advance or retreat. Variations in lightness and saturation evoke associations ranging from exuberant splendor to reserved depth or unadorned naturalness. The messages conveyed by these colors are vital to visual design, instantly capturing viewers' attention and resonating with their aesthetic emotions.

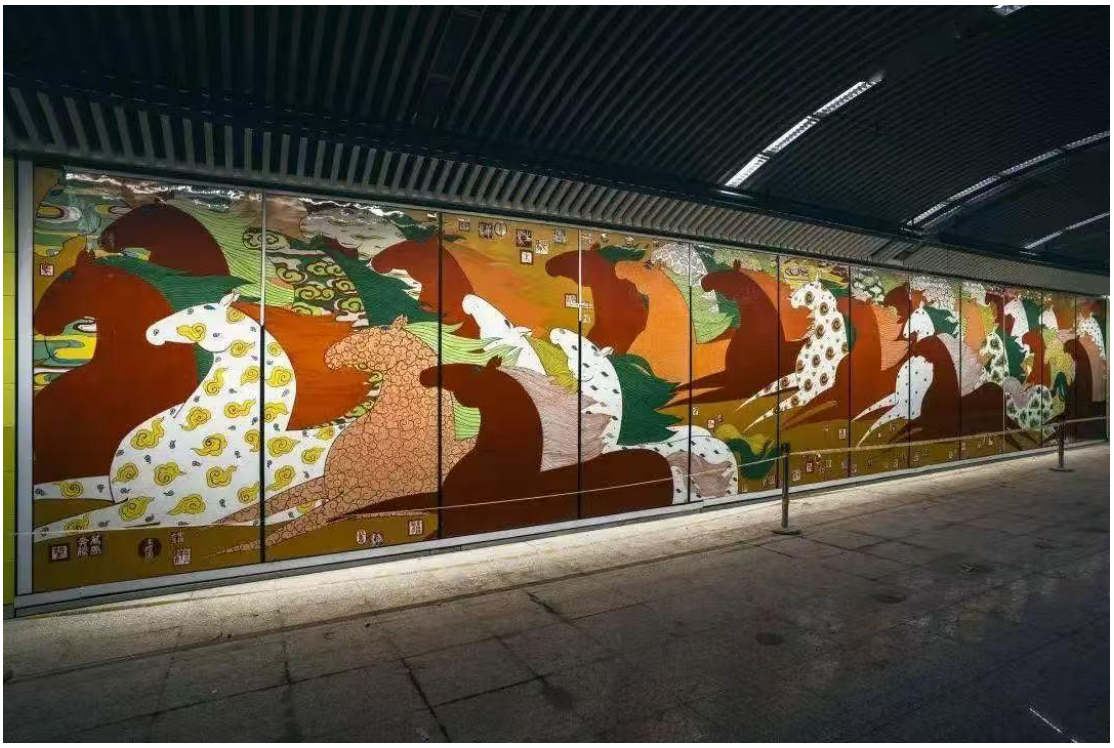

Figure 4. "Ten Thousand Galloping Horses," 18.4 × 3.2 m, 2018, located at Muxi Yuan Qiao Nan Station, Beijing

Beyond its monumental scale, the work (see Figure 4) unleashes the full chromatic range of glaze. Bold, contrasting colour blocks and graphic motifs alternate in sweeping gestures, while the vivid hues and the subtle sheen of the glaze invest the piece with warmth and vitality, yielding striking visual impact. The work also intimates that, in large-scale environmental ceramics, the artist's meticulous handling of glaze detail and the overall orchestration of colour are decisive for achieving aesthetic coherence. As society evolves and new consumer desires continually emerge, contemporary artists keenly detect and seize nascent needs and popular elements, integrating them through innovation to transform traditional art into fashionable applied art, thereby rekindling its vigorous life-force.

In his analysis of the modal function of sculpture, Michael O'Toole lists "mass" under both work and graphic units and proposes his own system (see Table 2).

Mass	centre of gravity
	solidity/penetrability
	interplay with space
	Line/relief
	Plasticity

Table 2. Mass as a System

The modality of mass in environmental ceramics manifests in three ways: first, the work's central gravity and its relationship to the horizontal plane; second, its hardness and impenetrability (a scalar quality); third, the manner in which it interacts with the surrounding environment—broad, sweeping arcs imply greater mass than sharp or angular ones.

Like traditional sculpture, many environmental ceramic pieces stage human actions or memorable individual traits, such as lovers kissing or a figure howling at the sky. Across art history, sculpture has favoured abstract, allegorical themes more than painting—love, health, war, victory in Greco-Roman antiquity, for example. Contemporary environmental ceramics increasingly stress symbolic significance, evident in the selection of the work's subject within the graphic unit of the representational function. In analysing this graphic unit, Michael O'Toole proposes a system for the sculptural subject (see Table 3).

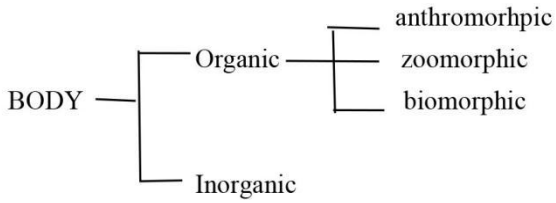

Table 3. Body as a System

As shown in the Table, Michael O'Toole divides subjects into organic and inorganic; organic subjects are further categorized as human-related, animal-related, or biological. For instance, ancient China employed the dragon—an animal-related emblem—as a totemic symbol, with nine dragons signifying the "supremacy of the ninth-five" (see Figure 5).

Figure 5. Nine-dragon Wall

5. Conclusion

As a branch of multimodal research, the visual-grammar analysis of systemic-functional semiotics has evolved for more than thirty years, yielding new concepts, perspectives, and methods. Michael O'Toole's system of visual meaning—encompassing representational meaning, modal meaning, and compositional meaning—together with other modalities such as touch and sound, allows artworks to be deconstructed and analysed through functional and semiotic lenses (form, colour, texture, image, etc.). This offers entirely fresh vistas and tools for interpreting specialized works such as environmental ceramics. Although the multimodal reading of these works ultimately takes a subjective form, it is grounded in a wealth of objective factors and systematic choices; consequently, its analytical insights possess a significant degree of universality.

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