A Comparative Evaluation Study of Macau's Old and New Eight Scenic Spots Guided by the Triadic Theory of Human Settlements

Zhihui Guo, Kuo-Hsun Wen

School of Humanities and Arts, Macau University of Science and Technology, Macau, China
2School of Art and Design, Shanghai Jianqiao University, Shanghai, China

Background

1、 The "Eight Scenic Spots" tradition, originating in China, represents a shared "landscape narrative" paradigm within the East Asian cultural sphere, serving aesthetic, emotional, and place-identity functions.

2、 While Macao announced its "Old Eight Scenic Spots" in 1992 and "New Eight Scenic Spots" in 2022, its urban space has transformed from a low-density fishing village into one of the world's most densely populated cities, leading to fundamental changes in landscape perception and eco-socio-spatial coupling mechanisms.

3、 Existing research remains largely confined to historical -literary description or tourism promotion, lacking systematic and quantifiable comparative evaluation of the "Eight Scenic Spots" as integral human settlement units.

Problem

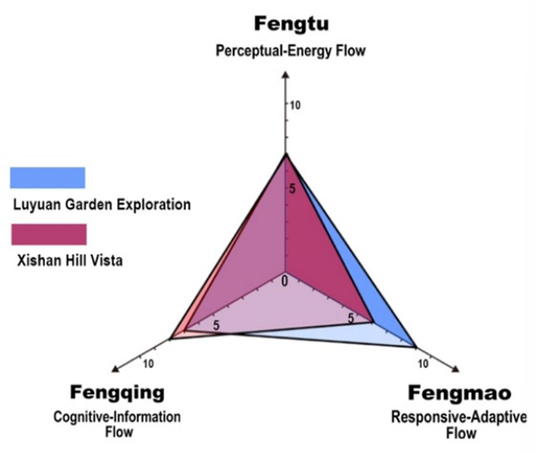
1、 A comparative analysis of Macao's Old and New Eight Scenic Spots under high-density urbanization across three dimensions:

① natural ecological carrying capacity,
② socio-cultural vitality, and
③ physical spatial quality.

2、 How can an integrated subjective-objective model be employed to reveal the Perception-Cognition-Response mechanism underlying these differences and inform sustainable human settlement strategies for cultural heritage cities?

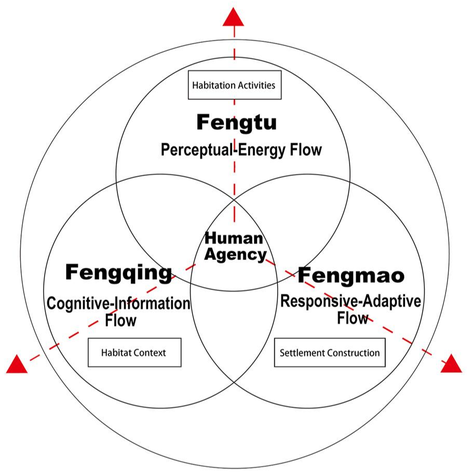
Quantitative Analysis

Luyuan Garden Exploration						Xishan Hill Vista					
Each indicator Score			Evaluation dimension score	Attribute score	Overall score	Each indicator Score			Evaluation dimension score	Attribute score	Overall score
4.8	7	5.6	6			6	5	7	6		
7	8	6	7	6		7	7.5	6	7	6	
7	5.5	4.6	6			4	3	5	4		
6	5	3	5			8	6	8	7		
9	6	8	8	6	7	8.5	7	9	8	7	7
4	5	6	5			6	8	8	7		
6	5	7.6	6			7	7	8	7		
7	8	5	7	7		7.8	5	6	6	7	
9	7	8	8			8	8	7.5	8		
6	5	3.5	5			8	7	8.5	8		
7	8	7	7	5		9	8	7	8	8	
2.5	3	2	3			8	8	7	8		
8	9	7	8			9	10	8	9		
7.5	8	6.5	7	8	7	9	8	7.5	8	8	8
7	9	8	8			7	8	9	8		
8	8	7	8	8		6	9	8	8		
9	7.5	8	8			9	7	8	8	8	
8	7	9	8			7	8	9	8		
7.5	7	8	8			7	6	6	6		
8	7.5	7	8	8		8	8	6	7	6	
7	7	6	7			7	5	7	7		
7	6	5.4	9			9	7	7.5	8		
9	8	8	9	9	9	7.5	7	8	8	8	6
8	7.5	9	8			9	7	8	8		
9	8	7	8			6	5.4	6	6		
8.5	8	9	9	9		4	4	3	4	5	
8	9	10	9			5.5	5	6	5.5		

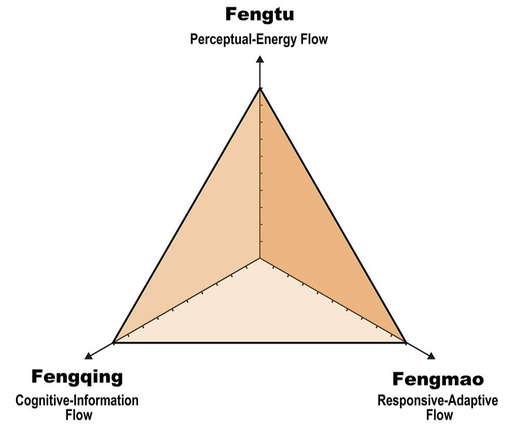


A quantitative analysis comparing the performance of the old and new Eight Scenic Spots of Macau across three dimensions revealed that "Lu Garden Exploration" (one of the old Eight Scenic Spots) scored highest in the "Style and Appearance" metric, indicating a significant impact of its residential space on people's daily lives and a high level of identification. The other two scores were relatively low. "Xishan Wangyang" (one of the new Eight Scenic Spots) scored highest in the "Character and Custom" metric, indicating active participation in residential activities and a positive dynamic relationship with cultural heritage.

Method



Triadic Model Framework under the Guidance of the Triadic Theory of Human Settlements



Three-dimensional Coordinate Model for the Triadic Evaluation of Macau's Old and New Eight Scenic Spots

Evaluation index system of local customs, customs and features under the guidance of the Tri-element Theory

The evaluation index system of local conditions, customs and features under the guidance of the trinity theory									
Ternary type	Attribute	Evaluation dimension		Classification of evaluation indicators	Each indicator Score	Evaluation dimension score	Attribute score	Overall score	
A Fengtu (Sensory-Energy Flow)	A1 Placeness	A1a	Geographical Location	Clarity、Compactness、Accessibility					
		A1b	Topography and Landforms	Gradient Ratio、Relief Intensity、Openness					
		A1c	Ambient Environment	Density Dispersion、Balance、Spatial Depth					
	A2 Ecological Character	A2a	Flora and Fauna	Quantitative Presence、Richness、Aesthetic Quality					
		A2b	Demographic Profile	Quantitative Presence、Compositional Integrity、Intensity of Concentration					
		A2c	Climate, Hydrology, and Soil	Scale and Massing、Intensity of Concentration、Utilization Rate					
	A3 Resource Potential	A3a	Anthropogenic Resources	Quantitative Presence、Functional Efficacy、Value					
		A3b	Natural Resources	Scale and Massing、Utilization Rate、Renewability					
		A3c	Cultural Resources	Regional Specificity、Scarcity、Utilization Rate					
B Fengqing (Cognitive-Information Flow)	B1 Cultural Identity	B1a	Customs and Practices	Audience Reach、Ritualistic Atmosphere、Prevalence					
		B1b	Historical Transformation	Traceability to Origin、Degree of Transformation、Dissemination Level					
		B1c	Cultural Leadership	Richness、Promotional Intensity、Allusive Depth					
	B2 Emotional Resonance	B2a	Somatic Sensation	Safety Level、Healthfulness、Stimulatory Level					
		B2b	Psychological Perception	Perceptibility、Inspirational Capacity、Empathic Engagement					
		B2c	Social Identification	Satisfaction Level、Leadership in Influence、Well-being					
	B3 Participatory Nature	B3a	Itinerant Viewing	Sense of Familiarity、Visitability、Chromacity / Colorfulness					
		B3b	Embodied Participation	Identification Level、Dissemination Level、Public Rating					
		B3c	Communication and Social Interaction	Communicability、Interactivity、Experiential Quality					
C Fengmao (Adaptive-Response Flow)	C1 Spatiality	C1a	Spatial Elements	Richness、Soundness、Proportional Weight					
		C1b	Spatial Morphology	Sense of Familiarity、Richness、Harmony					
		C1c	Spatial Relationship	Articulateness、Responsiveness、Equilibrium					
	C2 Inscriptive Capacity	C2a	Local Transportation System	Convenience、Accessibility、Sense of Distance					
		C2b	Memory Projection	Symbolic Weight、Promotional Intensity、Retrospective Depth					
		C2c	Physical and Mental Immersion	Power of Evocation、Resonance、Immersiveness					
	C3 Timelessness	C3a	Historical Identification	Traceability to Origin、Degree of Preservation、Identification Level					
		C3b	Inspiration and Legacy	Inspirational Capacity、Inheritance and Transmission、Promotional Reach					
		C3c	Pilgrimage and Spiritual Yearning	Degree of Emotional Attachment、Sense of Awe、Sanctity					

Implications

This study constructs a triadic evaluation indicator system for the three dimensions of natural ecology, socio-culture, and physical space of Macau's human settlements, expanding the theoretical framework and application scenarios of the Triadic Theory of Human Settlements. Through this evaluation method, it can not only better protect and utilize the valuable cultural asset of Macau's Eight Scenic Spots but also provide evaluation data support and practical guidance for the sustainable development of human settlements in Macau and similar cultural heritage cities globally.