

# Implementation of design tools for relational thinking in design for social innovation - a pluralistic perspective from Weitou Village's oyster reef restoration project.

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## Abstract

When faced with an increasingly complex environmental crisis, the topic of an ontological transition from the current dualistic-driven ontology to a relational one is gaining importance in multidisciplinary discussions. Modern design has been considered as an essential part of the responsibility for the current crisis, and transformation is imminent (Fry, T., 2019; Fry, T., & Tlostanova, M., 2020). Moreover, a key research direction is emerging: to open up design ontology discussions by incorporating pluralistic cultural perspectives. Service design has grown dramatically in China in recent years (ArtTech innozone&CSDC,2020). On one hand, its development has included many Western-centered design paradigms and methods to establish disciplinary standards. On the other hand, Chinese service designers have gradually begun to reflect on their cultural roots and the complexities of the domestic situation, ultimately developing localized solutions. In 2022, Upbeing and Chinese Service Design Community (CSDC) organized a summer school in Quanzhou, Fujian Province with four tailor-made themes according to the local context. And they hope to use those themes to explore localized transformation and adaptive design development to achieve social innovation amidst China's diverse geography.

In this article, the author describes a theme project developing process about marine conservation formulated according to a set of design tools inspired by "More than Human (MtH)" theories from philosophy and sociology, combined with the traditional Chinese five elements theory as structured to help designers with discover local connections between human and non-human actors that modernism has obscured. Afterward, the project group translates them into design opportunities to stimulate the new values and potential of the enriched and historically long-lasting local cultural scene.

Keywords: Design Driven for Social Innovation, Service Design, More-than Human, Design for Pluriverse.

## Introduction

How can we think beyond the confines of anthropocentrism to create real space for including nonhumans in design? How will relational ontology affect how we think about and incorporate MtH actors in design? How will a pluralistic culture based on a relational ontology address our relationship with the world around us and thus shape design action in a different light? Those questions are being discussed rapidly around the topics that aim to explore how design could go beyond human-centered. The author re-examined human-nonhuman relationships by considering the ontological lens of traditional Chinese culture to implement new possibilities for design thinking and action and to stimulate a pluralistic understanding of human-nonhuman relationships and how these can help design practitioners overcome modernism's monolithic perspective by intervening in the local network.

This research is under the background that service design has developed extensively in China in recent years, with a significant amount of growth in the number of universities, educators, and non-governmental organizations (NGOs). And this situation has created a new paradigm for local social innovation initiatives based on service design and product service design, particularly in collaborative projects aiming to foster the community, expand the commons, and achieve sustainable social transformation. As a result, new paradigms for local development have emerged. Under China's unique historical and social context, it is impossible to avoid the intersection of these practices with traditional Chinese culture, which is deeply rooted in the relationship with nature (Lu,2010). This intersection creates a demand for a modern translation of ancestral voices. It provides an opportunity for gaining a renewed understanding of traditional Chinese culture, thereby creating chances to enhance its new vitality based on renewed intersections with daily life.

This article based on a design for social innovation oriented and project-based summer school during August 2022 in Quanzhou. Four themes proposed by this event aim to apply service design to create innovative solutions for several crucial issues in the 'local community ecosystem' by exploring Quanzhou's unique historical and cultural resources to improve the current status of rural development. The author-led team examined Quanzhou's maritime culture and heritage conservation as potential research topics to test the tools in the MtH magnifier (the author's final Ph.D. research outcome). These tools correspond to the goals and tasks of each stage of the design process for this outcome. This experiment examined from a relational ontological perspective based on the Five Elements theory (a vital theory that connects Chinese



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cosmology theory and everyday practice), the quadruple object model in Graham Harman's object-oriented ontology, and a summary of other MtH theories. The group implemented tools to discover and expand latent connections into a concrete project.

## Introduction of Weitou Village, Quanzhou

This summer school project is located in Weitou Village, Quanzhou City, Fujian Province, China. At the beginning of the Maritime Silk Road, Quanzhou is an important hub of trade in East Asia and an important channel for the interactions and exchanges of Eastern and Western civilizations. For more than 1,300 years, Quanzhou has been a place where multiple cultures coexisted and integrated, creating Southern Fujian (Chinese: 闽南, pīnyīn: Mǐnnán) 's unique cultural heritage, especially its religious diversity (Figure 1). As one of Quanzhou's four ancient ports, Weitou is known as 'the first village in the Taiwan Strait. This region's diverse culture has likely contributed to its unique local beliefs, such as polytheism and animism, which are deeply embedded in this village's folk customs (Fan,2019).

However, as a negative result of China's recent rapid economic development and accelerated industrialization, many of Weitou's traditional economic models, historical buildings, intangible cultural heritage sites, and environmental features face unprecedented challenges. For example, traditional handicrafts and local food supply chain, rural cultural life, historic building protection in southern Fujian, Nanyin (a performing art from Southeast China's Fujian Province involving five different musical instruments), and marine ecosystems are facing decline, putting them in urgent need of adequate protection and cultural inheritance. When faced with these dilemmas, the Chinese Service Design Community (CSDC) and Upbeing jointly launched a summer school.

From a service design perspective, this summer school aims to protect, maintain, and revitalize Weitou's local natural, social, economic, cultural, and other resources. In combination with Weitou's rural development planning, this school focuses on the four major issues of local rural women's economic empowerment, rural library revitalization, strengthening Quanzhou's spiritual culture, as well as marine and nonhuman protection, its goal is to build a 'sustainable community ecosystem' in collaboration with local stakeholders to create innovative solutions.



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Figure 1. Collage of diverse local cultures in Southern Fujian, illustrated by the author.

## A Paradigm Shifting: Quick Glance of Mth Thinking from Multiple Aspects

In the past few decades, a group of scholars that disagree with continental philosophy brought their academics' attention to "returned to the object" (Gannon et.al, 2015) in the humanities and social sciences fields, which greatly influenced design exploration, transferring the emphasis of design research and practice from Human to Mth actors in recent years (Clarke et al,2019; Huybrechts et al, 2022; Tassinari & Manzini, 2023). These theories of objects or things shared a common ground in critiquing the dualistic and anthropocentric ideas postulated by Descartes and Kant, emphasizing a monistic flat-grid theory and admitting that non-human agents have agencies and can become influential through expanding connections. All those points consider Mth actors are positive players in shaping our daily life. These philosophical and sociological ideas developed by Michel Serres, Alfred North Whitehead, and Martin Heidegger to Bruno Latour's (2004;2018) landmark involvement in ecopolitics gave numerous guiding theoretical models for design. Following Latour, Graham Harman investigated understanding objects from a speculative realism perspective-which he called object-oriented ontology (2018), and Timothy Morton (2016) further developed these relational philosophies in developing ecological awareness and aesthetics. Jane Bennett (2010) and Donna Haraway (2015) further expand theories on the dynamical nature of Mth actors and theories about building kinship from a feminist perspective. At the same time, discussions on indigenous culture have further broken down the divide



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between the pre-modern and the modern, incorporating "pluriverse" (Escobar,2018) in a variety of ways that contribute to the shaping of a new politics, culture, and infrastructure of care and kinship for the planet and all "earth-being." (De la Cadena, 2015; Haraway,2015)

This thesis aims to fill the research gap in design that cross-field with the disciplines mentioned above. On the one hand, the current academic debate around going beyond human-centered design expects answers from different cultures' perspectives. Discussion from a Chinese cultural perspective is very few and scattered. On the other hand, almost all of these theories, especially the 'materialistic' view rooted in Western philosophy, have always struggled to break away from dualistic thinking when it comes to deeper thinking. This has an impact on the design's fundamental logic. Dualistic thinking is still frequently introduced in many design studies when analyzing non-humans and discovering design opportunities through systematic design or strategy design. For example, horizon scanning as an analytical tool involves six categories. However, the values underlying these six categories are human-centered. Even the category 'environment' appears to be a discussion of nature but presupposes an a priori context of separation between people and nature. In addition, it is indisputable that many of the theories mentioned above have core connotations that align with Asian philosophy. As a Chinese cultural background, the author's first thought when considering this issue is the traditional Chinese relational ontology represented by the Five Elements theory that emphasizes multiple interactions. The Five Elements bridge the gap between humans and nature by uniting them into one system of ongoing interaction and eradicating the distinction between object and subject. As a result, the author makes an effort to incorporate this thinking into designing the tools to determine whether this strategy can help develop relational knowledge in design and produce more localized design practice solutions.

## **A Paradigm Shifting: Quick Glance of Mth Thinking from Traditional Chinese Cosmology and the Five Elements**

Akama et al. (2019) state that "designing among Indigenous and non-Indigenous people is turbulent because we all work within differing legacies of colonialism and entrenched systems of 'othering.'" Based on Akama et al. (2019) 's perspective, 'Western-centric' design with its solid industrial origins emphasizes problem-solving, replicable methods, outcomes, a pursuit of simplicity and efficiency, and detaching knowledge, people, and relationality from the sites of design's embodiment. This 'risks perpetuating acts of colonialism, inadvertently displacing Indigenous practices, knowledge, and world views. The author intends to respond to this problem by developing and testing tools that reflect the wisdom of traditional Chinese relational ontology, notably the Five Elements theory. It is a long-standing Chinese way of



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understanding the world, human and non-human relations, and constantly orienting one's course of action in a fluid and changing environment. This theory has been involved in shaping Chinese civilization. And core concepts of those object-oriented philosophies share similarities with traditional Chinese relational philosophy.

Traditional Chinese ontology contains a relational ontology behind the understanding of humans and nature relationship, reflecting the definition of human. The term 'human' (Chinese: 人; pīnyīn: rén) defines as follows: *The Interpretation of 'Terms'* (Chinese: 释名; pīnyīn: shì míng) indicates that the definition of '人' is equal to benevolence (Chinese: 仁; pīnyīn: rén), while benevolence is the fundamental relationship that unites all creatures (Liu, 2020). The chapter *Conveyance of Rites* in the ancient Chinese text *The Book of Rites* (Chinese: 礼·礼运; pīnyīn: lǐ·lǐ yùn) explains that '人' combines the virtues of heaven and earth, is the intersection of Yin and Yang, as well as the essence Qi of the Five Elements (Chinese: 气; pīnyīn: qì) (Hu, 2016). These definitions mainly embody two critical points in traditional Chinese culture: Human existence relies on caring and deferential relationships with nature, and humans are responsible for ensuring the well-being of Mth actors. Traditional Chinese culture regards humans and nature as inseparable and connected entities: All creatures are composed of five elements. The interactions of these elements endow these creatures with their agency.

The Five Elements have always been at an intermediate level that links metaphysics (Chinese: 形而上道; pīnyīn: xíng ér shàng dào) and physics (Chinese: 形而下器; pīnyīn: xíng ér xià qì) in Chinese cosmology (Li, 2017). They are the mechanism that creates Qi and reflects the rule of the Dào (Chinese: 道; pīnyīn: dào) (Figure 2).

Chinese people have applied their understanding of this relationship to construct every aspect of their life, which ranges from material to spiritual. Qi and Dào are interdependent and influence all things that belong to different creatures' categories and phenomena. Thus, all things essentially have everything in common and are interpenetrating.



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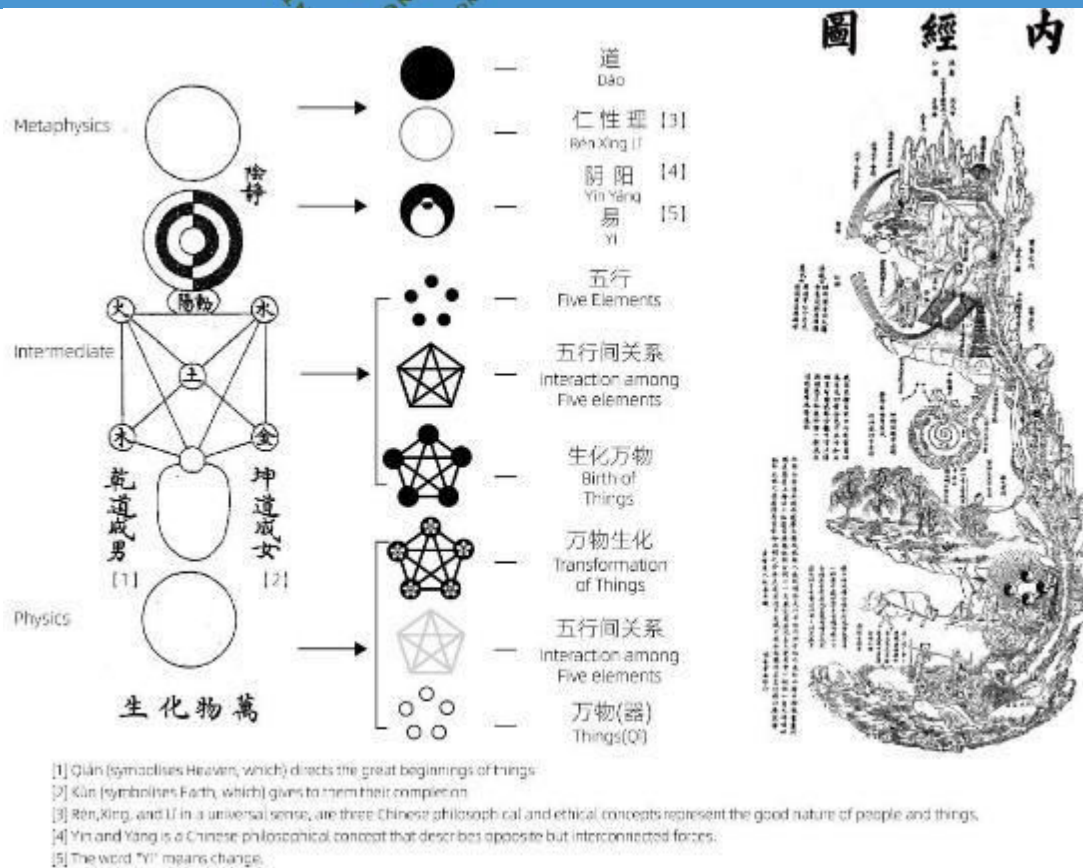


Figure 2(left). Analysis of the components and relationships of Chinese cosmology  
 Figure 3(right). The internal meridian diagram, a model for establishing a connection between nature and the human body

For instance, traditional Chinese medicine (TCM) (Unschuld, P. U.,2003; Zhang et al., 2007) considers this theory to view humans in their natural environment as a complete and indivisible system (Figure 3). This also guides the healthcare and everyday practice of Taoists, who aim to achieve the oneness of heaven and humanity (Ji,1993). Moreover, the concept of the Five Elements is atheistic. It is also a sophisticated epistemology that relies on long-term observations of surrounding phenomena to summarize the laws of nature (Li, 2022). Furthermore, this concept embodies the characteristics of all existence and summarizes it into an algorithmic system that can be assumed and predicted to assess the development of things (Shen,2011).

Meanwhile, it guides, standardizes, and suggests that specific human actions can adapt to natural changes (Sun, 2012). This is one of the most idealist traditional Chinese cultural concepts for explaining the overall viewpoint of the relationship between humans, nature, and society (Shen, 2011). This theory argues that humans should let nature take its course and strive to achieve harmony with nature, which is humans' highest goal and source of agency, as well as the most important relationship between man and nature in ancient China (He, 2011). The Five Elements theory is



based on traditional Chinese relational philosophy, which differs significantly from Western reductionist tradition (Herfel & Gao, 2007).

The author found that compared with Western philosophy, assemblage theory could be compared to understand the concept of the 'element' (Chinese: 行, pīnyīn: xíng) and that they could refer to complex systemic dynamics to understand how the Five Elements theory functions. Assemblage theory (Deleuze & Guattari, 1980) frames social complexity by emphasizing fluidity, exchangeability, and multiple functions by examining the entities that create their connectivity. DeLanda (2016; 2019) proposed a way to conceptualize the formative processes associated with complicated phenomena that can lead to a renewed sense of what and how we might design. The specific composition of these assemblages varies in each situation. Every assemblage can combine or interact with other assemblages to form larger-scale assemblages.

These concepts are consistent with the Five Elements theory, except that in the Five Elements theory, the assemblages are summarized and dispersed into five distinct dynamic assemblages: Metal, Wood, Water, Fire, and Earth. Each assemblage contains subjects and objects with similar traits but takes on entirely distinct forms. This classification blurs the subject-object distinction; everything in it is summarized as a harmonious and unified law of operation (Sun, 2012).

However, the interactions that ancient Chinese people observed and summarized when these elements coupled and oscillated in different systems are more important than each element's dynamic characteristics. When viewed from the perspective of the complex dynamic, the most fundamental and general set of interactions is regarded as driving and damping, respectively. This is interpreted in ancient Chinese cosmology as '生,' which means 'producing, creating, or promoting' (Chinese: 生, pīnyīn: shēng) - A relationship constituted by a set of driving forces, as well as '生,' which means 'restraining, destroying, or inhibiting' (Chinese: 克, pīnyīn: kè) - A relationship constituted by a set of damping forces. When considering the opposite side of the 'shēng' and 'kè' relationship, it contains the character for a 'drain' (Chinese: 泄, pīnyīn: xiè) and 'consume' (Chinese: 耗, pīnyīn: hào) relationship (Herfel & Gao, 2007). This implies that when the being shēng side is too strong, it signifies that it xiè the shēng side. When xiè is overactive, the shēng relationship is transformed into a kè relationship between two elements. In the same way, the being kè side consumes the kè side, and when too much of the kè side is consumed, it is insulted (Chinese: 侮, pīnyīn: wǔ) by the being kè side (Figure 4).

The relationship between the Five Elements constantly changes, and it lacks absolute or stable relationships. In addition to these relationships, the the Five Elements relationship also includes other relationships such as overacting (Chinese: 乘, pīnyīn: shèng), revenge (Chinese: 复, pīnyīn: fù), help (Chinese: 帮, pīnyīn: bā ng), and support (Chinese: 扶, pīnyīn: fú). Shèng represents the moment that when the shēng



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side is too strong, it Shèng the being shēng side, which makes it difficult for the being shēng side to grow. The fù relationship is when the being kè side is too weak, and the kè side is too strong. This creates an imbalance among the Five Elements. As a result, the shēng side of the being kè side helps the being kè side to seek revenge on the overpowering kè side, thus helping the system to restore its balance. Bāng and fú relationships emphasize that when faced with imbalances, the kè side could bāng (help) the being kè side, and the shēng side could fú (support) the being shēng side in order to restore a systemic balance. In general, these relationships are based on the understanding that the Five Elements dynamically balance each other (Liu, 2000; Chen, 2013). Aggregating these relations helps one interpret it from a variable and relational perspective without being limited to absolute opposites, which maintains the system's dynamic balance. The Five Elements appear to have a simple pattern. However, the handling and judging its relationships require people to develop practice and an understanding of the dynamic balance between and interconnectedness of human beings and other creatures. This aims to judge how to maintain the balance of the world in which they live to coordinate human and non-human agencies. An imbalance leads to destruction, which is profoundly reflected in TCM (Deng & Zheng, 2008), numerology, feng shui (traditional Chinese geomancy) (Shen, 2011; Sun, 2012), and politics (Fang, 2003). On this basis, every phenomenon can be incorporated into this system's operation to make predictions.

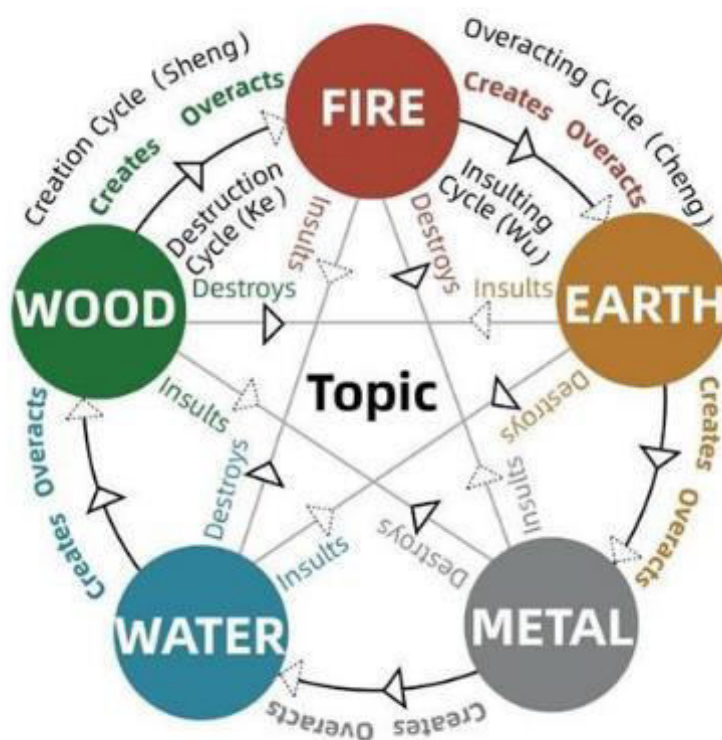


Figure 4. Five elements relationship diagram

## Introduction of ‘MtH Magnifier’ and Tool Design

‘MtH magnifier’ is a metaphor for the author’s research output outcome throughout his Ph.D. program. Moreover, it is a design framework derived from a rooted theoretical analysis of multiple cases. This framework aims to apply a design process that helps designer practitioners to transform their mindsets step by step to avoid a human-centered focus. In addition, it includes a design guideline known as a ‘user manual’ that contains key elements for incorporating non-human participation, including support tools that this article tested. The cases are drawn from participatory observations in project-based studios focused on design for ‘collaborative cities’ and semi-structured interviews with design practitioners in those studios and at different universities worldwide. This framework’s core goal is to help designers shift their design mindset from human-centered to beyond human-centered. While they shift away from an anthropocentric perspective, the subject of this toolkit is facilitating design practitioners to discover frequently hidden connections (human and nonhuman, non-human and non-human) and stimulate these connections through design.

Tools 1-3 are coherently guiding the designer in discovering these hidden relationships and uncovering the dynamics of multiple actors by combining relational thinking with qualitative and quantitative research at the three stages of divergence and convergence. Each stage considers the Five Elements perspective, derived from the principle that these five elements are mutual hide( Chinese: 五行互藏, pīnyīn: wǔ xíng hù cáng) (Yin & Wei,2022).

Tool 1 (Macro level) (Figure 5) combines Gigamap, which is commonly used in Systems Oriented Design (SOD) (Sevaldson, B. 2010, 2018), horizon scanning, and the the Five Elements theory. Its components are composed of three dimensions: an individual, local, and international scale, as well as the characteristics of the Five Elements. This tool is intended to map the actors collected during fieldwork, categorize them according to their characteristics, and examine the problems and potential relationships by applying the the Five Elements relationships. The results will select key ‘assemblages’ with the most noticeable impact on their relevant elements and generate preliminary insights.



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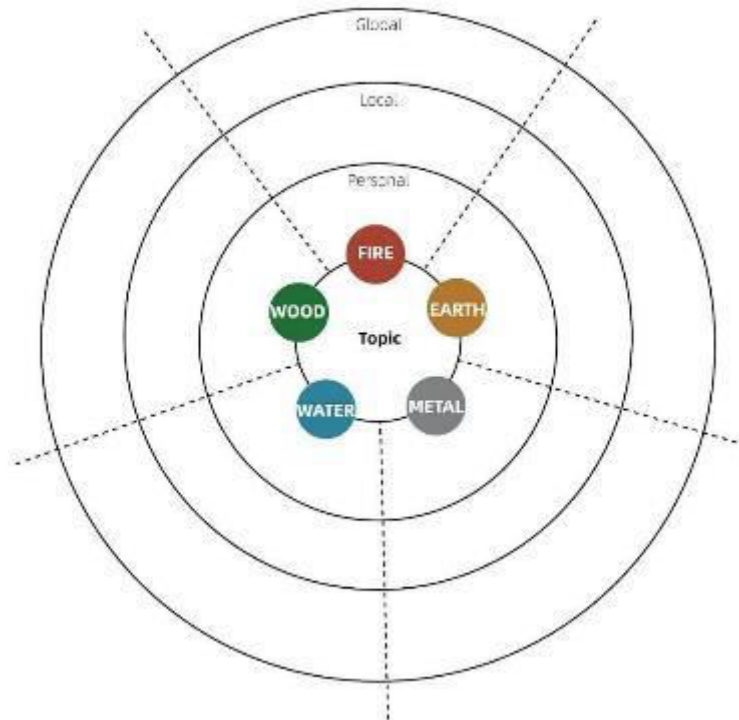


Figure 5. Tool 1: Relational Positioning Map

Tool 2 (Meso level) (Figure 6) will investigate the assemblages selected based on Tool 1. This tool was developed by combining Harman's quadruple object model (Harman, G., 2010, 2011, 2013; Weir, S. 2020) with the Five Elements theory. The author translated the three components of quadruple objects into three ways of understanding the Mth actors (according to Harman, the real object is Unknowable). These three components were: 'Real Quality' as explored in scientific research reports, 'Sensual Quality' collected during interviews and questionnaires, and 'Sensual Objects' obtained during data analysis. The analyzed output will be distributed amongst each element based on their characteristics. The designer practitioner needs to investigate how to apply design to balance the Five Elements while considering the current situation. Additionally, the encounters between these research actions create questions for designers to investigate further. The results of Tool 2 will define certain core actors and specific concepts.



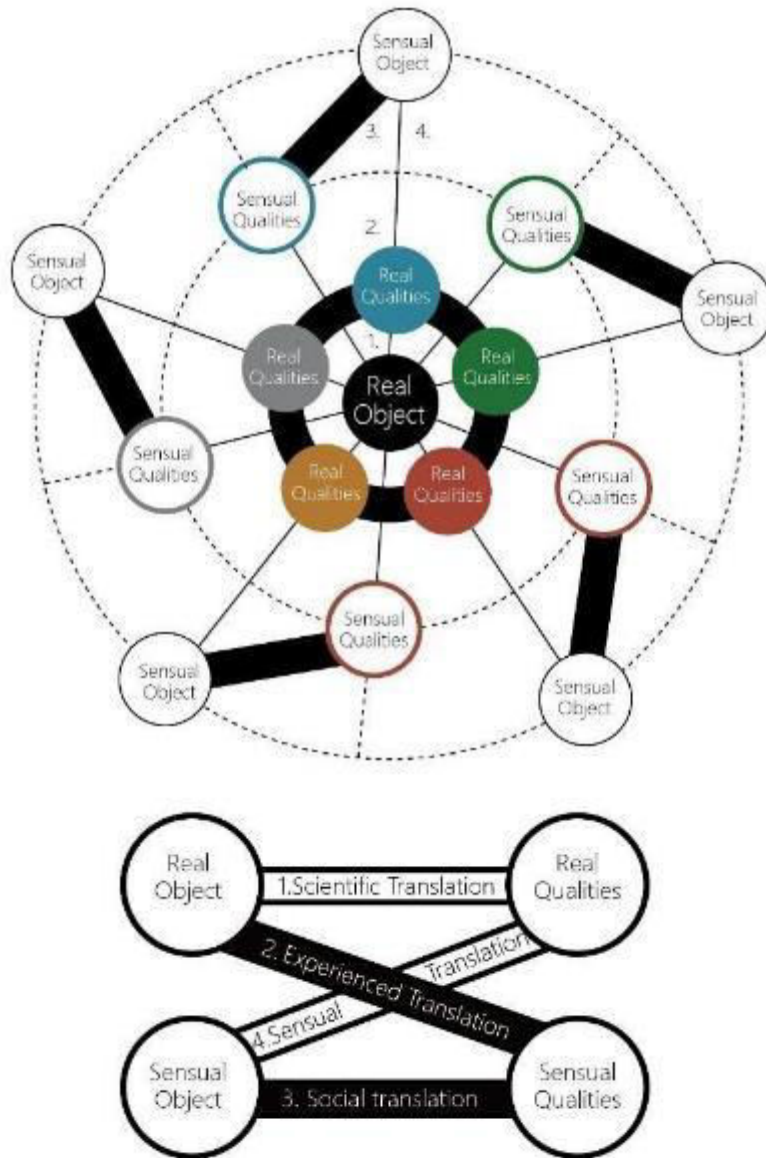


Figure 6. Tool 2: The Quadruple Object Persona

Tool 3 (Micro level) (Figure 7) establishes the distribution of the tools' content by summarizing the scientific research content related to non-humans. This content includes the positive and negative manifestations of non-human individual and group agencies, along with the impact and manifestations of these agencies on their internal and external systems acting on the touch points. A simplified version of this tool was designed for the next level of actors. The Five Elements will help designer practitioners further investigate the non-human actors' agency and enable them to establish touchpoint-based connections with other actors and their agencies. These elements will also aid them with refining these concepts' specific design content.



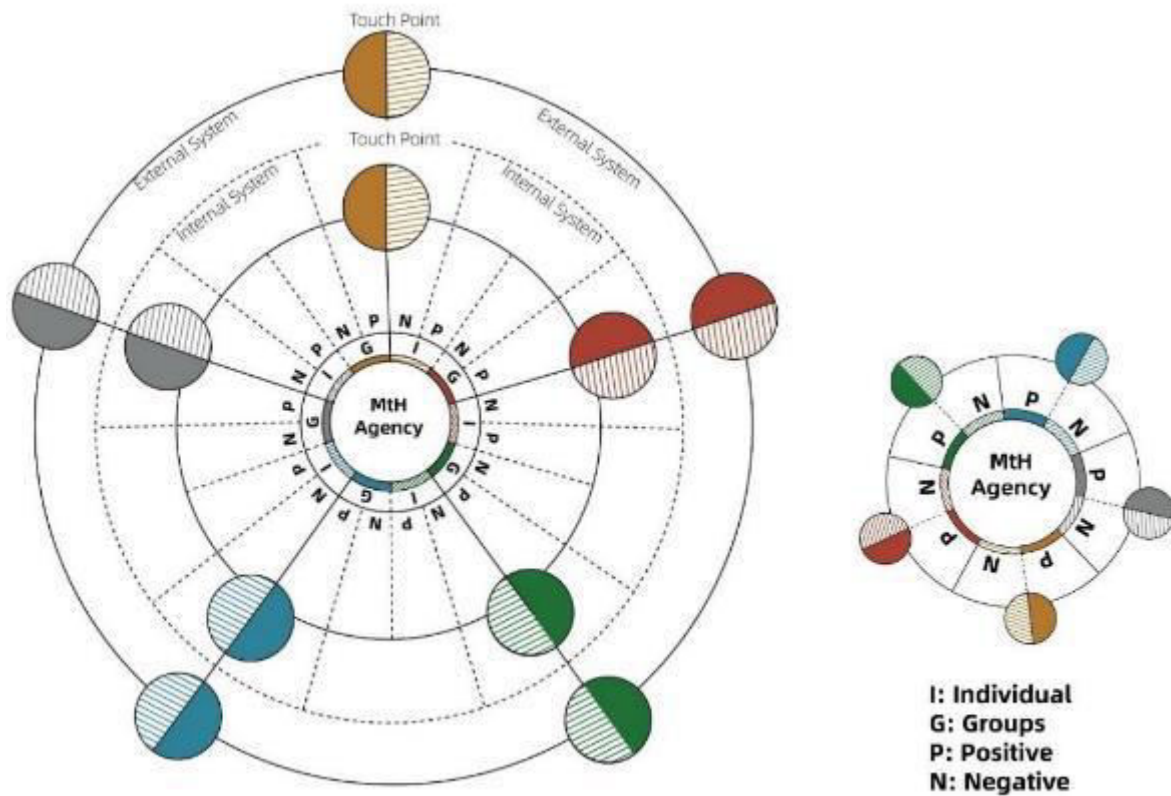


Figure 7. Tool 3: 'Mth' Agency Wheel

## Use of Tools

### Tool 1

The team first learned about the local situation by implementing field research. The primary method was to conduct villager interviews, supplemented with desk research on global trends. Afterward, the team transformed the collected data and accumulated materials by labeling them. During several brainstorming sessions, the team pasted these 'labels' into the Tool 1 map according to the Five Elements and three dimensions. Throughout this process, the team adjusted the five definitions based on the field research to define the Five Elements so the team would fit the local context.

When arranging Tool 1, the team identified the core actors among each attribute of the Five Elements. In addition, the team explored and mined the potential relationships



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among actors with different characteristics to form several major assemblages based on holistic thinking. This included different actors as well as their agencies. It also included phenomena that demonstrated the same tendency. The team applied this as a base for obtaining insights by analyzing the relationships between the Five Elements.

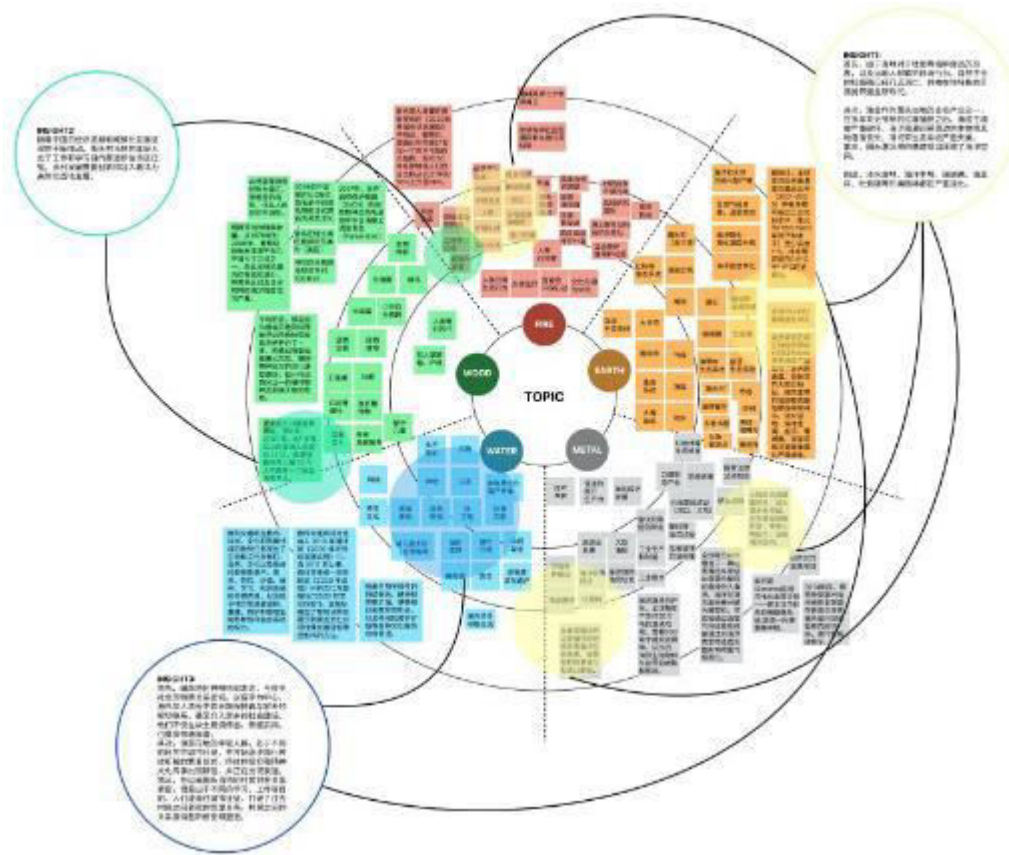


Figure 8. The Test Output of Tool 1



Established Characteristic	Characteristic Given by the Group	Current Local Status	Performance
 Metal is the working of change (change, depuration, astringency)	Science, technology, methods, tools and artefacts	Too strong	Unsuitable development of local offshore fishing, coastal tourism, shellfish farming, manufacturing and other pillar industries
 Wood is the bending and straightening (growth, development and free activity)	Human and non-human life forms	Too weak	The destruction of biodiversity around the intertidal zone and the phenomenon of empty
 Water is the moistening and flowing downward (cold, coolness, closure, storage)	The spiritual, conceptual and cultural heritage that can be passed on and flow, encompassing pluralistic beliefs, clan concepts, dialects, tangible and intangible cultural heritage, etc.	Too weak	The function of marine culture as spiritual sustenance, nourishment and bonding is fractured
 Fire is the flaming up (warmth, heat, ascending, brightness)	Human agency with fire properties, e.g. Consumption Migration Large energy-consuming movements	Too strong	Frequent and uncontrolled local human consumption activities and behaviour in Weitou village
 Earth is the sowing and reaping (reception, cultivation, transformation)	The bearers of life, including natural factors such as the sea, climate, temperature and intertidal ecosystems, as well as man-made factors such as the Weitou villages and traditional architecture	Too weak	The intertidal ecosystem is destroying, and natural resources in Weitou Village is depleting

Figure 9. Analysis of the current status of the Five Elements relationship in Weitou Village

## Main Problem

Fire and Metal are too strong, and the other elements are too weak. Therefore, although the Earth relies on Fire to create it, Earth will be damaged if Fire overacts. Moreover, as Earth can produce Metal, if Metal overacts, this will weaken Earth. In addition, Fire and Metal severely restrain Earth, creating pollution such as ghost gear and ocean garbage. At the same time, Fire and Metal consume the Earth, producing environmental problems such as destroying marine and other habitats and degrading intertidal ecosystems (wild oyster reefs, seagrass beds, coral reefs), acidification and eutrophication of seawater, and global warming. This leads to the destruction of Wood, and non-humans will ultimately be unable to survive.

## Opportunity

While analyzing the Five Elements theory, the team found that Water is the key to balancing the other elements. In terms of Water, Weitou's people have lived by the sea for more than 1,300 years. Furthermore, marine culture and faith provide the local people with spiritual support. When overseas Chinese rely on local faith traditions and the concept of their clan, they maintain their long-term ties with their hometown and help promote its construction. However, Fire shows that As China has recently undergone rapid urbanization, many village youths have migrated to urban areas. This has led to the current situation in Wood, which involves villages primarily populated by empty nesters. Moreover, it has affected Water, which has resulted in the decline of



local cultural heritage, such as faith traditions, maritime culture, and languages, as well as tangible and intangible heritage.

Based on the insights gained from Tool 1's output combined with the analysis of the Five Elements' laws, the group proposed several options for design interventions.

In the relationship map around Weitou, Earth, as the symbol of life, and Wood representing the living human body, are closely related and also need to help and support each other. Additionally, the overly powerful Fire and Metal restrain them. Therefore, the dynamic human action in Fire and the industrial development in Metal, whose highest priority is to pursue efficiency, must be weakened or transformed by draining and consuming them.

Water is the element involved in the interactive balance of all elements (Water consumes Metal, Water produces Wood, Water helps Earth, Water restrains Fire). It can nourish, feed, and bridge the other five elements' core actors. In particular, it can help regulate and guide the behavior and consciousness of human actors to move in a positive direction, making it the catalyst for promoting systemic problem-solving.

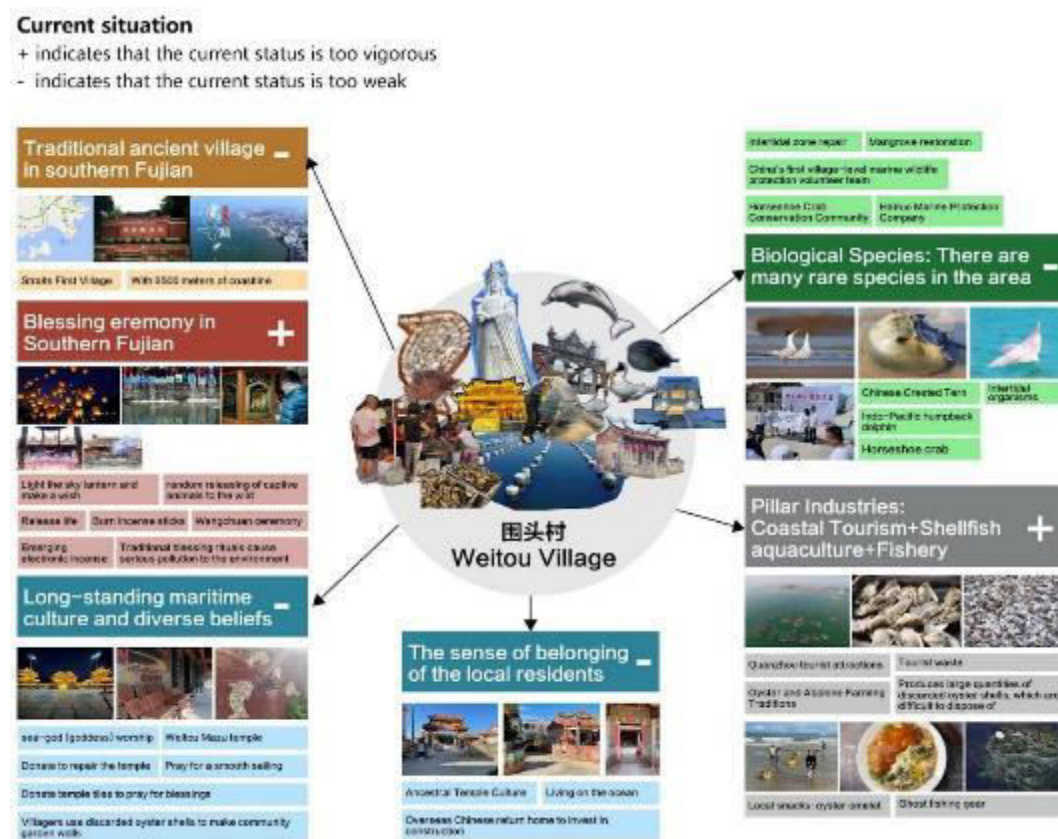


Figure 10. diagnosis of the current status of the Five Elements in Weitou Village





## Tool 2

Based on the directions generated by Tool 1, the team members focused on the core phenomena that led to imbalances in each attribute, which was considered as the ‘assemblage’ comprising each actor and their dynamics. As the project had time constraints, the team selected the core phenomena for Tool 2 by considering three attributes:

1. Severe intertidal degradation on Earth
2. Lack of scientific and environmental knowledge and awareness among local human actors in Fire
3. Faulted cultural transmission in Water

The team analyzed these from multiple perspectives by applying Tool 2. Their analysis methods included continuous in-depth offline research, literature research, and expert interviews with scientists specializing in marine environmental protection.

This team organized their content according to the quadruplet definition in Tool 2.

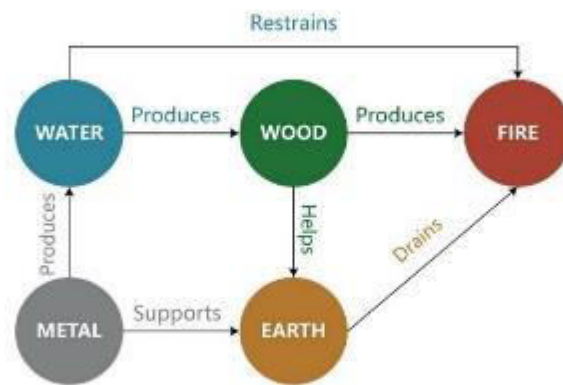
This helped designers gain insights and discover potential energies and relationships between the explicit and implicit actors involved in the phenomenon. These concepts help align the Five Elements within the ‘assemblage’ and thereby contribute to ensuring the balance of their external system.



Figure 11. The Test Output of Tool 2



## Concept 1 Analysis

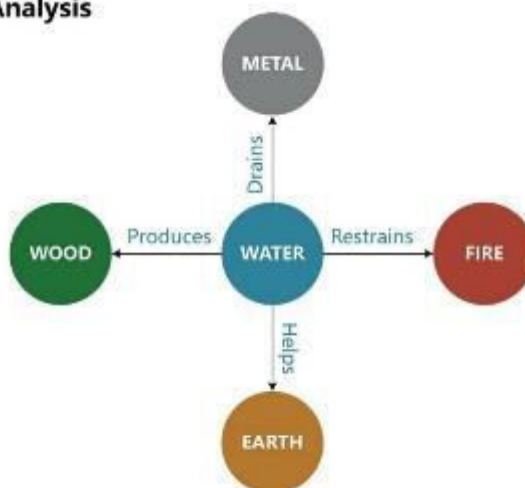


This helps the selected weak core phenomenon of Fire to balance the overall macro-level over-exuberance of Fire.

Figure 12. obtained Concept 1 based on insights related to within the selected key Fire‘assemblage’

Concept 1 (Figure 12) proposes creating a cultural marine eco-village in Weitou’s intertidal zone as a basis (Earth) and restoring diverse ecological habitats with human intervention (Metal). This can be achieved by installing devices around its artificial natural landscape to enhance visitors’ experience of multiple cultures and observing organisms. In addition, in Metal, a community platform in Weitou for local villagers and foreign visitors that emphasized interaction and playfulness was developed to suit local marine beliefs and culture.

## Concept 2 Analysis



To promote the balance and overall power within Water, thus promoting the macro-level balance of the five elements.



Figure 13. obtained Concept 2 based on insights related to within the selected key Water 'assemblage'

Concept 2 (Figure 13) applies new media technology, augmented reality, and virtual reality (Metal) to develop local maritime culture and pluralistic beliefs (Water) as well as to prompt community creation (Wood) by providing innovative services and enhancing the value of village activity spaces (Earth) such as temples, ancestral halls, villagers' activity centers, and seafood restaurants in Weitou that are decrepit and disused.

### Concept 3 Analysis

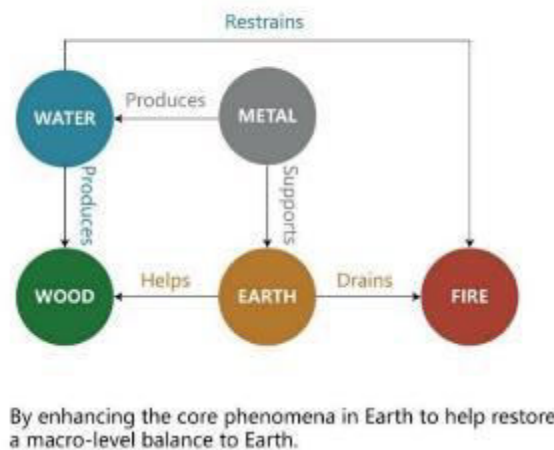


Figure 14. obtained Concept 3 based on insights related to within the selected key Earth 'assemblage'

Concept 3 (Figure 14), in the Earth element, an ecological restoration project (Wood) based on Weitou (Earth) that citizens (Fire) could participate in, was combined with material science and synthetic biology (Metal). It also involved developing an innovative artificial reef body that allowed local villagers and foreign visitors (Fire) to collaborate to assemble this reef body and place it near the intertidal zone as a substrate for the growth of intertidal periphyton populations (Wood) and to provide non-human spawning grounds and habitats (Earth)(TNC, 2020). Underwater monitoring equipment was used to create a real-time record of the ecological restoration status during this body's formation. In addition, short videos and live content were occasionally sent to participants (Metal), while a non-human real-time monitoring image meditation space was installed around the perimeter for these villagers and tourists to experience.

### Conceptual Integration

The team comprehensively assessed the three concepts regarding feasibility, participation, research interest, and development limitations; the team selected and



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integrated the three concepts to obtain the final concepts and identified the core and sub-level actors.

The long-term goal of the final concepts is to transform the in-site cultural experience (Water) by implementing interactive and ecological restoration techniques (Metal), promoting channel visitor consumption (Fire) into activities that can contribute to cocreating the Weitou intertidal (Wood) marine cultural eco-village (Earth). This can promote the sustainable transformation of offshore fisheries and coastal tourism (Metal) by implementing consumption upgrading and transfer. It can also explore the potential of shellfish aquaculture to promote the potential of the ecosystem's virtuous cycle. It can enhance the construction of a new eco-cultural village development model by restoring and balancing the local ecosystem. The immediate goal is to start with rural revitalization and co-create a local natural and humanistic landscape featuring oyster reefs (Figure 15)

Tool 3 further conducts a multifaceted study on the key actors in conceiving Tool 2 outputs. It aims to uncover these actors' potential value and hidden agencies and connect them by implementing design interventions intended to change the existing relational grid. Therefore, three specific design solutions are proposed based on three core insights.

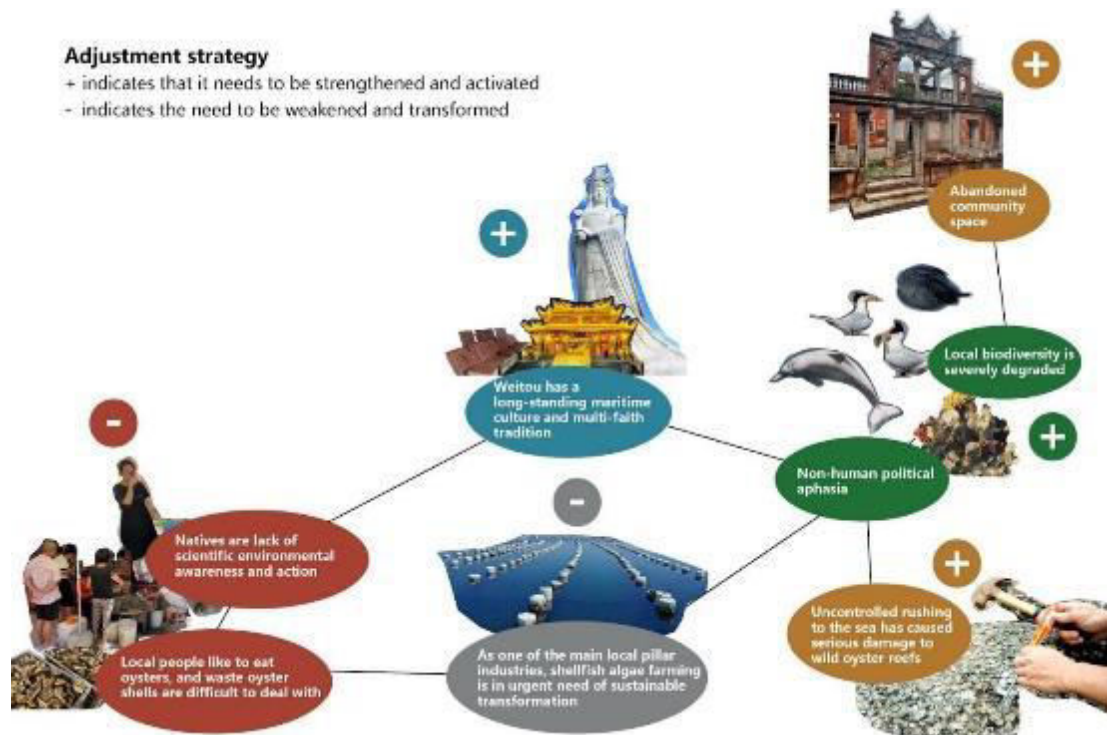


Figure 15. Weitou village five elements relationship adjustment scheme

## Tool 3



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## Insight I

Transitional local consumption of oysters and massive aquaculture exports have led farmers to increase aquaculture densities significantly (Metal is too strong), which has crowded marine space and adversely affected non-human habitats (Wood and Earth are weak). In addition, local aquaculture urgently needs sustainable transformation (transformation of Metal). Transitional exploitation of wild oyster reefs (Fire consumes Earth) and residents discarding oyster shells has destroyed and polluted the village's natural habitat. However, oyster shells are rich in calcium carbonate and can be reused. Literature research and expert interviews enabled the team to identify the overlooked ecological and social value of oysters and oyster reefs, including their ability to purify seawater, sequester carbon, consolidate shorelines, and promote ecological diversity (activate Earth and Wood). These energy sources help promote new businesses such as local recreational fisheries, nature education-based tourism, and citizen-led science education (Earth drains Fire). Currently, human activity has severely degraded global oyster reefs: It is indispensable to restore them (CBCGDF, 2020; Stéphane, Carole, Elodie, & Franck, 2021)

### Design Opportunity 1

The restoration of oyster reefs aligns with the aim of building a 'beautiful bay' (Ministry of Ecology and Environment of the People's Republic of China, 2021) in Weitou (Earth). Moreover, 3D printing technology is applied to create artificial oyster reef modules based on new environmentally friendly materials developed from oyster shells collected in the village (Metal). This module is implemented as a medium to allow visitors to participate in constructing the artificial oyster reef (transform Fire). At the same time, villagers receive training to participate in oyster reef module placement and maintenance (Metal helps Earth). After 1 to 3 years, a self-circulating ecosystem can be formed, and significant ecological restoration outcomes can occur. Throughout this process, participants can apply technical and experiential methods to track the oyster reef ecosystem's restoration process in real-time and maintain longterm interactions with them to promote the spiritual connection between humans and non-humans (Metal creates Water, and Water destroys Fire).

## Insight II

Local pluralistic beliefs and ocean worship (Water) have profoundly shaped the spiritual traditions of local communities (Water creates Wood). However, traditional beliefs still have untapped potential for promoting environmental protection. The government's environmental initiatives' public participation and communication effectiveness are meager, making it difficult to increase popular awareness of environmental issues. Villagers and visitors also need more channels to participate in environmental initiatives. Meanwhile, local traditional blessing rituals have created many safety hazards, such as fires resulting from burning incense or incidents



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involving accidental releases of invasive species, exacerbating the local ecological crisis. In addition, the human-centered development mindset has caused local industries to demonstrate a short-sighted approach that has undermined their respect for nature (Li, 2010; Wang,2022; Eckberg, Lee & Blocker,1989; Greeley, Andrew,1993; Li Wanxian,2017).

### **Design Opportunity 2**

Consider the role of local religious beliefs when developing a sense of belonging to the community, focus on enhancing residents' awareness of the need to protect the environment, and emphasize the driving force behind 'Ecological Progress' (China Council for International Cooperation on Environment and Development, 2013), primarily related to the respect and care for nature embodied in local animistic beliefs. This guides residents to connect their interests with non-human ones while promoting awareness and action for residents' and tourists' participation. It also further adjusts the local industrial development model (Water weakens and converts Metal).

### **Insight III**

The traditional method of verbal and physical cultural transmission and cumbersome prayers are unpopular with young people. Electronic incense, online lotteries, and other emerging methods of modernizing religious blessings can add interactive content and immersive experiences to address uninteresting traditions that lack a sense of ritual and immersion (Metal needs to be more robust). At the same time, Weitou has many abandoned public spaces that must be revitalized and reused (Earth is too weak).

### **Design Opportunity 3**

It is feasible to transform the village's public spaces, especially its palace, and temples, which are the long-term center of community memory, by combining them with immersive new media and other technologies. Another method is to endow ecological projects and local culture with new connotations while providing experiential methods. These can encourage people to establish new emotional links with their local ecology. Furthermore, regularly organizing marine culture-themed festivals can give actors opportunities to interact with each other. This can reduce cultural differences by creating a new human ecological landscape for Weitou (Metal creates Water).

The group applied these insights to generate design specifics for design interventions that they translated into design prototypes. Subsequently, they hosted three additional co-design sessions with experts, residents, and visitors to iterate their design further.



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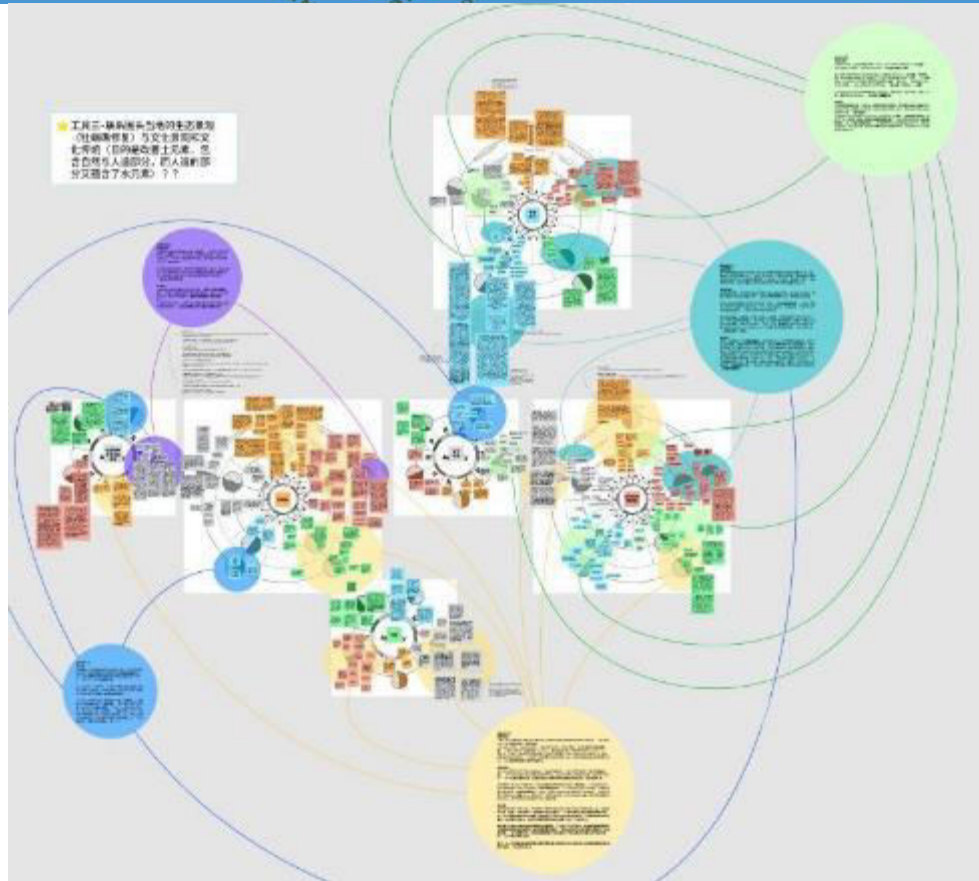


Figure 16. The Test Output of Tool 3



## Concept Storyboard

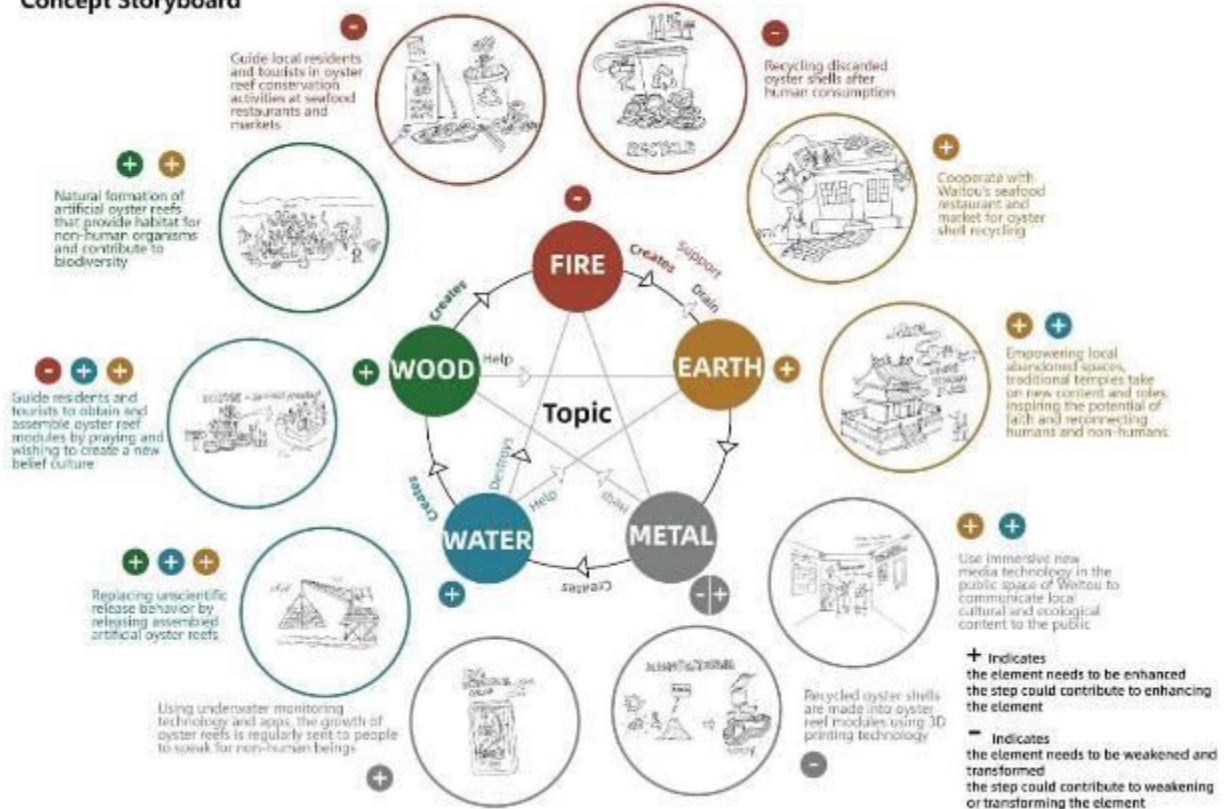


Figure 17. Weitou Village Five Elements Design Intervention Draft

## Conclusion

Design is usually regarded as work that surrounds humans. Non-humans who participate in design have long been viewed as passive objects fulfilling the role of human resources or human welfare. This long-term shaping and universal design thinking is an integral part of the design for social innovation. This paper tests three tools to help the author move away from human-centered linear thinking in the design process by implementing a localized practical experiment in Quanzhou, Fujian. These tools are designed to examine one aspect of the world's pluralistic culture - the Five Elements theory, an example of traditional Chinese relational ontology - to shift design thinking from duality to relationality. Overall, these tests give an answer to the questions the author mentioned at the beginning. He believes that understanding and translating the ancient Chinese relational philosophy represented by the Five Elements theory can help designer practitioners escape the limitations of anthropocentrism. A rigorous and detailed design process for concept development can be produced. Traditional Chinese cosmology can contribute to developing design theories and practices for social innovation, but this experimentation needs further exploration.





However, there are two limitations; the first one is that researching Chinese relational philosophy and trying to move into the deep sea challenged the author's knowledge background and capability of engaging in transdisciplinary research; even though he is from China, modern Chinese culture was strongly influenced by Western values, which made a big gap between him and the ancient Chinese culture. He only incorporated the most fundamental aspects of the Five Elements theory and that its more in-depth parts - suitable for addressing more complex situations - must be further developed, specifically by studying subjects such as TCM and numerology. The second one is a design thinking shift takes time and requires gradual progress and training. It is time-consuming to produce a more coherent, clearly structured, and universal theory to implement efficient changes for the design practitioner's mindset. Additionally, the team members are all from Chinese cultural backgrounds. Training based on the thinking embodied in its tools might have been more challenging if it considered cross-cultural aspects.

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