| **RESEARCH ARTICLE**

A Comparative Study of Media Symbols from the Perspective of Visual Grammar: A Case Study of Marine Ecological Protection Posters in China and Western Countries

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| **ABSTRACT**

Social developments are bringing about changes in how we communicate and represent ideas. With the tendency of globalisation, marine ecosystems are facing threats such as overfishing, pollution, and climate change, and marine ecological protection has become a focus of attention for all countries. This paper adopts Kress and van Leeuwen's framework of visual grammar analysis to compare and analyse the use of symbols in Chinese and Western marine ecological protection posters from the perspectives of representational meaning, interactive meaning, and compositional meaning. Qualitative and quantitative analyses of 100 Chinese posters and 100 Western posters reveal similarities and differences in symbol selection, cultural context, and compositional approach. Results show that Chinese posters tend to integrate traditional cultural elements and natural symbols to convey the concept of environmental protection in a harmonious and warm way, such as the use of ink painting style and paper-cutting art to represent marine organisms, while Western posters focus on directly displaying the hazards of marine pollution by means of strong visual contrasts and modern design elements to stimulate the audience's sense of urgency and responsibility, such as the display of marine animals trapped by plastic rubbish. This research not only deepens the understanding of the theory of visual grammar but also provides valuable references for the design of future environmental posters, emphasising the importance of using visual symbols and communication strategies in different cultural contexts in order to convey environmental messages more effectively and to promote the development of global marine conservation.

| **KEYWORDS**

Visual Grammar, Marine Ecological Protection, Media Symbols, Poster Design, Cultural Context, Environmental Conservation Promotion.

| **ARTICLE INFORMATION**

1. Introduction

In the current background of globalisation, marine ecosystems are becoming increasingly vital. The oceans are not only the largest ecosystem on Earth but also the key to regulating the global climate and maintaining biodiversity. However, in recent years, the global marine ecosystem has faced unprecedented threats due to overfishing, pollution, climate change, and other factors. In response, different countries and regions have initiated various marine ecological protection actions, and have taken their own measures in marine ecological protection, as well as formed different symbol systems and communication strategies in media publicity. As a unique visual language, posters convey complex information and emotions through images, colours, layouts, and other elements.

"We live in an age in which a new round of competition is unfolding over the means of communication, i.e., language as a writing instrument or images as a writing instrument" (Kress, in Cobley 2001: 72). The use of visual symbols in media is a complex and diverse field. In terms of multimodal discourse analysis, Barthes was the first to focus on multimodal discourse in which visual signs

interact with verbal signs to produce meaning (Barthes, 1977: 334-350). Barthes (1977) explored the interaction between images and language in terms of expressive meaning. Kennedy (1982: 589) stated, "Pictures can be literal or metaphoric." The historical evolution of media symbols reveals how human societies have conveyed information through images and visual elements, and visual symbols have been changing and evolving. Each stage of evolution reflects the technological advances and cultural context of the society at the time.

Halliday (1978: 39) holds that language as a social semiotic is essentially a system of 'meaning potential,' and grammar is not a set of rules for reference but a source for 'meaning-making.' Based on the theory of Systemic Functional Linguistics, some scholars have carried out research on graphic relations in multimodal discourse at the micro level: Schriver proposed five patterns of graphic relations from an informational perspective (Schriver, 1997: 365); Researchers (Carney & Levin, 2002; Marsh & White, 2003) categorised the picture functions of multimodal discourse from a functional perspective; Martinec and Salway proposed graphic interaction relations on the basis of Barthes' theory (Martinec & Salway, 2005). By introducing the multimodal analysis method, scholars have enriched the research content and application fields of visual grammar, expanding the scope of research into diverse contexts. These research results further deepen the understanding of visual symbol systems and provide new perspectives and methods for the development of visual grammar theory.

Based on Kress and van Leeuwen's framework of visual grammar analysis, this paper compares and analyses the use of symbols in Chinese and Western marine ecological protection posters and analyses how Chinese and Western marine ecological protection posters construct meanings from three perspectives of representational meaning, interactive meaning, and compositional meaning by means of both qualitative and quantitative methods, in order to attract the audience's attention and thus achieve the effect of publicity and calling for the protection of the oceans. The effect of promoting and calling for the protection of the oceans is better achieved by attracting the attention of the audience. By comparing the media symbols in Chinese and Western posters, this study highlights the differences and connections between countries in their awareness of and strategies for marine ecological protection, which is crucial for enhancing global cooperation in marine protection.

2. Research Design
2.1 Data Collection
In this research, 200 samples were carefully selected to ensure that the findings and conclusions were objective and credible. The selection process considered two main criteria: geographic location and material sources. To minimize cultural bias, samples were chosen from five representative countries—China, the United States, Australia, the United Kingdom, and Canada. The sources of the materials included official government websites, social media platforms like YouTube, Facebook, and Instagram, as well as newspapers and websites related to marine conservation.

The analysis of these 200 samples was carried out using both qualitative and quantitative methods. Initially, the study will explain how meanings are constructed within the Visual Grammar framework, supported by examples. These meanings will then be categorized into three groups. Subsequently, the distribution and frequency of different elements in the posters will be analyzed. This data will be used to highlight key features of marine ecological protection posters from various perspectives. Finally, the mechanisms of meaning construction within each metafunction will be discussed in detail.

2.2 Theoretical Framework
In Systemic Functional Grammar, language is divided into three major metafunctions, namely Ideational function, Interpersonal function, and Textual function (Halliday, 2004). Refaie (2003) explored the "grammar" of visual metaphor. Influenced by Halliday's three linguistic metafunctions, Kress and van Leeuwen (1996, 2006, 2021) systematically analysed various visual products such as graphics, images, and symbols, and proposed the concept of visual grammar in their book Reading Images: The Grammar of Visual Design. In this book, they introduced the concept of visual grammar to analyse visual image modality. In Kress and van Leeuwen's study, grammar is extended to include visual patterns, and they argue that "just as the grammar of a language determines how words form clauses, sentences, and discourses, visual grammar will depict how the people, places, and things depicted make up 'representations' of visions of varying degrees of complexity." (Kress & Leeuwen, 1996: 1) They proposed that images can also be divided into three major metafunctions: representational meaning, interactive meaning, and compositional meaning. In the visual grammar framework, Representational meaning corresponds to Ideational function, Interactive meaning corresponds to Interpersonal function, Compositional meaning corresponds to Ideational function, and Compositional meaning corresponds to Ideational function. Interactive meaning corresponds to Interpersonal function; Compositional meaning corresponds to Textual function. This framework is named Visual Grammar and is illustrated in Fig. 1.
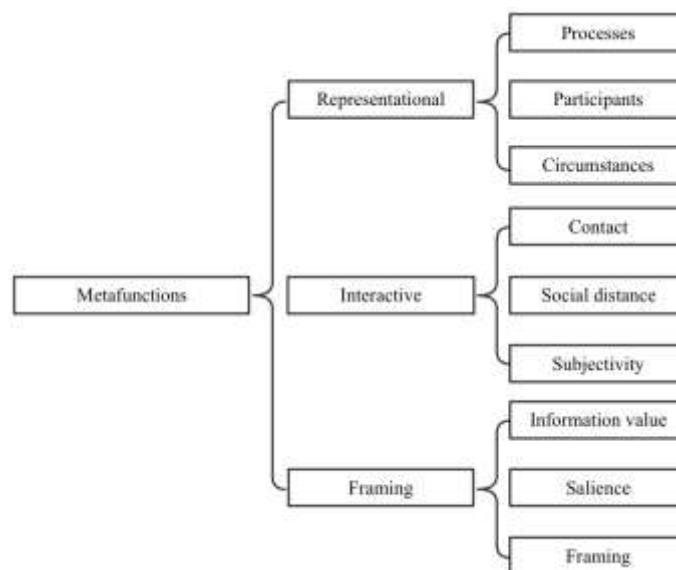
Fig. 1 Metafunctional Framework (Based on Kress & van Leeuwen, 2006)

Representational meaning refers to the way in which an image characterises or reproduces the relationships between people, places, and events in it (Kress & van Leeuwen 2006: 114). The representational metafunction is revealed in the represented participants, that is, in the people, objects, and landscape depicted (Guijarro & Sanz, 2008: 1601-1619). The reproduction of meaning in images can be categorised into the Narrative process and Conceptual process. The Narrative process involves showing actions and events, focusing on dynamic changes and interactions between participants, often using vectors—diagonal lines that connect elements in the image to indicate movement or action. Generally, the narrative representational meaning in Visual Grammar classifies four processes: The action process, the reactional process, the mental and verbal process. The Conceptual process, on the other hand, focuses on static, categorical, or interpretive relationships; it includes three constituent elements, namely, classification, analytical, and symbolic structures and does not include vectors. The representational meaning described above can be summarized and illustrated in Fig. 2.
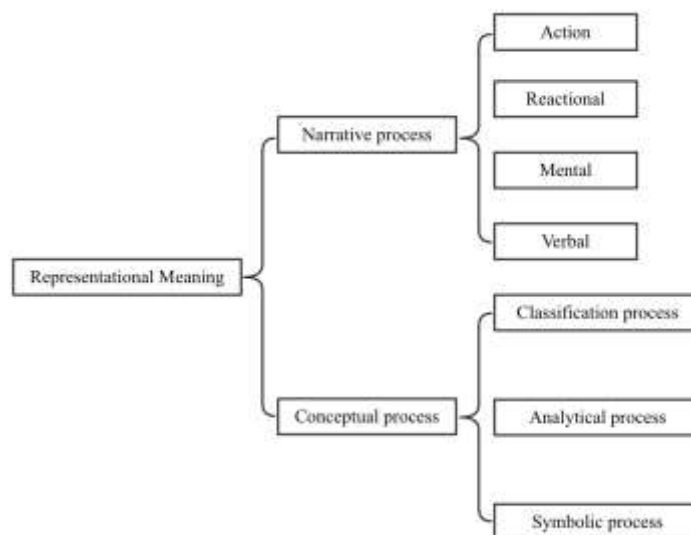

Fig. 2 Representational Meaning (Based on Kress & van Leeuwen, 2006)

As for the interpersonal features of multimodal texts, the relationships between the visual, the producer, and the viewer are to be considered, together with the analysis of the intersemiotic mood in both verbal and visual modes (Unsworth & Wheeler, 2002: 69-70; Unsworth, 2008). Interactive meaning in an image shows the relationship between the viewer and the world depicted. It involves three key elements: contact, social distance, and attitude. First, contact refers to the connection between the participant in the image and the viewer, often through eye contact. Eye contact can convey two types of messages: "demand" and "offer". "Demand"

refers to the direct communication between the audience and the elements in the context, while "offer" refers to the fact that the elements in the context have their own "eye receiver" or focus rather than the audience outside the context. Secondly, social distance is shown through the choice of shot size, like close, medium, or long shots. The shot size reflects the relationship between the characters in the image and the viewer, implying different levels of closeness or distance. Finally, attitude is frequently used to convey a power dynamic, and this is typically achieved through the use of perspective and angle. Perspective establishes an immersive connection and can be categorised into horizontal and vertical angles. The horizontal angle generally includes oblique and frontal views, where the oblique angle suggests a sense of detachment, while the frontal angle indicates involvement. The vertical angle is divided into looking up, eye-level, and looking down perspectives. From a vertical perspective, because people generally look up to taller people in life, the perspective of looking up generally alludes to the higher status of the person being looked up to (Messaris, 1994: 9). Interactive meaning described above can be summarized and illustrated by Fig. 3.
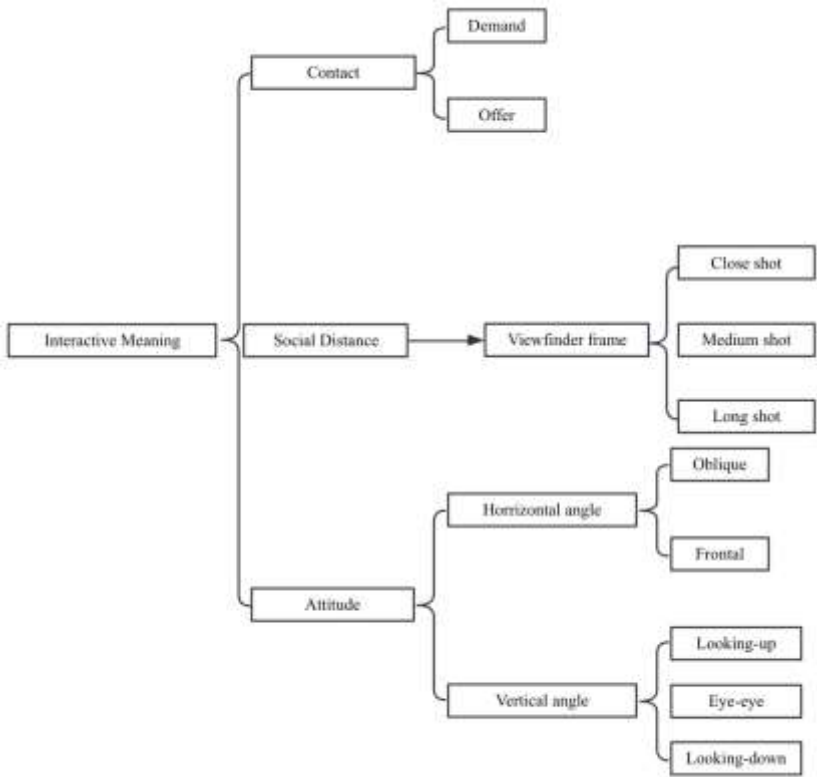

Fig. 3 Interactive Meaning (Based on Kress & van Leeuwen, 2006)

In addition to the analysis of the visual in relation to the verbal elements, the intersemiosis in compositional terms also involves the study of the visuals in relation to each other through the main principles of composition, that is, the distribution of the information value, visual salience (size, colour, focus, etc.) and visual framing (Kress & van Leeuwen, 2006 [1996, 2021]; Unsworth, 2008). Compositional meaning includes three elements: information value, salience, and framing. In Visual Grammar, it is believed that the arrangement of elements within an image conveys specific information. Typically, new information is positioned on the right, while familiar or known information is placed on the left. Similarly, according to conventional wisdom, ideal elements—those that are beautiful and appealing—are often located at the top, symbolizing the challenge of achieving ideals. In contrast, more realistic elements are positioned at the bottom, reflecting their grounded nature. Salience in compositional meaning refers to how much an element captures the viewer's attention. Some elements stand out by being placed in the foreground, while others remain subtle in the background. Factors like size, color, and sharpness also influence the level of salience. The third parameter, framing, determines whether elements are connected or separated. This can be achieved through a dividing line or the actual frame line within the image. The compositional meaning described above can be summarized and illustrated in Fig. 4.
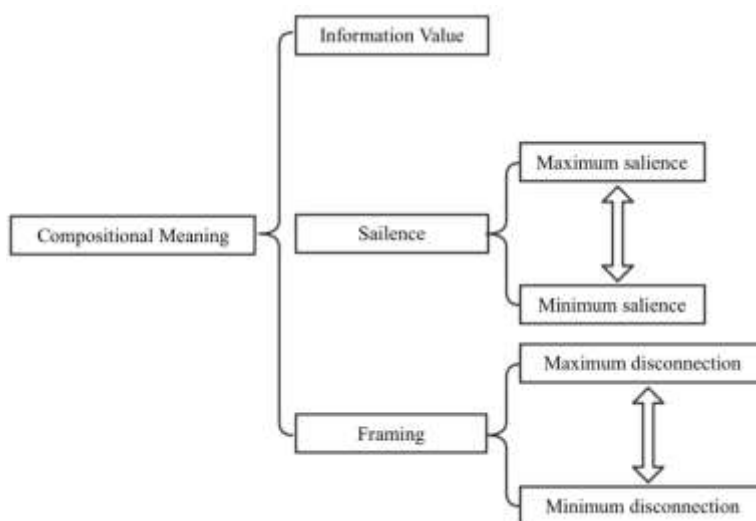
Fig. 4 Compositional Meaning (Based on Kress & van Leeuwen, 2006)

3. Multimodal Discourse Analysis of Chinese and Western Posters on Marine Ecological Protection

3.1 Comparison of Visual Symbols

Vision is like an invisible 'finger,' and using such an invisible finger, we move through the space around us, we go out for good distances to places where we can find all sorts of things, we touch them, we capture them, we scan their surfaces, we look for their boundaries, we explore their textures. Vision is thus a highly active form of sensation (Arnheim, 1997).

Systemic Functional Grammar conceptualizes language as a collection of interconnected systems of choices that are organized metafunctionally. Kress and van Leeuwen's approach is rooted in Systemic Linguistics, but they extend this framework to images, viewing them as a means of representation. They argue that images, along with their visual elements such as colors, music, and typography, function similarly to language, capable of simultaneously fulfilling the three metafunctions of language. Social semioticians also argue that principles in SFL are applicable to non-linguistic resources as well, resulting in the development of metafunctional frameworks for semiotic resources such as images, architecture, and mathematical symbols (e.g., O'Toole, 1994; O'Halloran, 2006, Kress & van Leeuwen, 2006).

In order to study the use of visual symbols in Chinese and Western marine ecological conservation posters, posters from both cultural backgrounds were first systematically categorised and counted. By meticulously analysing each poster, visual symbols can be classified into the following three categories: marine animals, pollutants, and other elements. The visual symbols in 100 Chinese posters and 100 Western posters were recorded and counted in detail.

The frequency of the three types of visual symbols in Chinese and Western posters was firstly counted (Tab.1). The results (Fig.5) show that marine animals are more common in both types of posters, while pollutants appear almost the same in both Western posters and Chinese posters. In contrast, other elements such as ships, cars and some abstract elements appeared more frequently in Western posters.

Tab. 1 Frequency of Visual Symbols

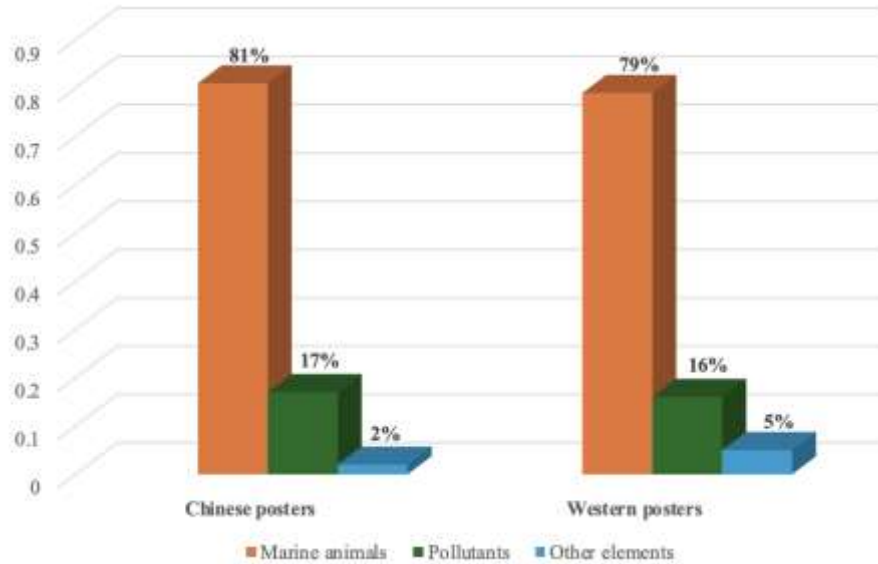| Type of symbol	Chinese posters	Western posters
Marine animals	81	79
Pollutants	17	16
Other elements	2	5
Total	100	100

Fig. 5 The Distribution of Visual Symbols

Common visual symbols in Chinese marine ecological protection posters mainly include marine animals, natural landscapes, and traditional cultural elements. Marine animals, such as dolphins, whales, and sea turtles, usually symbolise the biodiversity of the ocean and the health of the ecosystem. By showing cute marine animals, these posters evoke feelings of empathy and love from the audience. Natural landscapes, including coral reefs, seaweeds, and blue oceans, symbolise the beauty and fragility of the oceans and remind people to cherish and protect them by displaying beautiful marine landscapes. In addition, Chinese posters often incorporate traditional cultural elements, such as Chinese calligraphy and classical motifs, which give the posters a strong cultural flavour, conveying the idea that environmental protection is not only a modern concept but also one that is integrated with traditional culture.

Common visual symbols in Western marine ecological protection posters include marine pollution, endangered animals, and modern design elements. Marine pollution, such as plastic bags, plastic bottles, and other rubbish, visually demonstrates the current state of marine pollution and emphasises the urgency and importance of environmental protection. Endangered animals, such as seabirds trapped in plastic waste and sea turtles caught in fishing nets, etc. Showing the animals in distress triggers the audience's sympathy and sense of responsibility and calls on the public to take action to protect marine life. Modern design elements, such as minimalist style and abstract art, give the posters a sense of modernity and fashion, drawing viewers' attention and deep thoughts through visual impact.

Despite the differences in cultural characteristics between Chinese and Western posters, there are many similarities in their use of visual symbols. The common goal of both Chinese and Western posters is to convey the importance of protecting marine ecology through visual symbols and to arouse the public's awareness of environmental protection and their ability to take action. These posters are both dedicated to directing the audience's attention to marine ecological issues and encouraging them to take practical action through intuitive and easy-to-understand visual language. In addition, both the Chinese and Western posters use a large number of visual symbols, such as marine animals, natural landscapes, and pollutants, which can quickly convey the environmental message and trigger the audience's empathy and thinking. In terms of colour and composition, both Chinese and Western posters focus on the contrast of colours and the beauty of the composition, enhancing the visual appeal and message conveyance of the posters through vivid colours and careful layout.

3.2 Compositional Analysis

When studying the compositional elements of Chinese and Western marine ecological protection posters, it can be found that there are obvious differences and similarities in the types of composition, layout, and visual presentation. When it is analyzed in terms of the shooting distance, the emotional distance among people is in direct proportion to the physical distance. (Hall, 1969: 113-129) These compositional features not only reflect the design styles and concepts of different cultures but also the different strategies and methods of conveying environmental protection messages.

Salience can attach importance and conspicuousness to elements in visual communication. The salience of elements in images derives from many factors, such as the size of the element. sharpness of focus, tonal contrast, color contrast, placement in the visual field, perspective, and some cultural factors. In the following part, how elements are given salience and what elements are given salience will be given further elaboration. In the total 200 samples, it is found that the methods poster producers employ to attach salience to elements can be categorized into three types, as shown in the chart below (Tab. 2).

Tab. 2 Frequency of the Methods

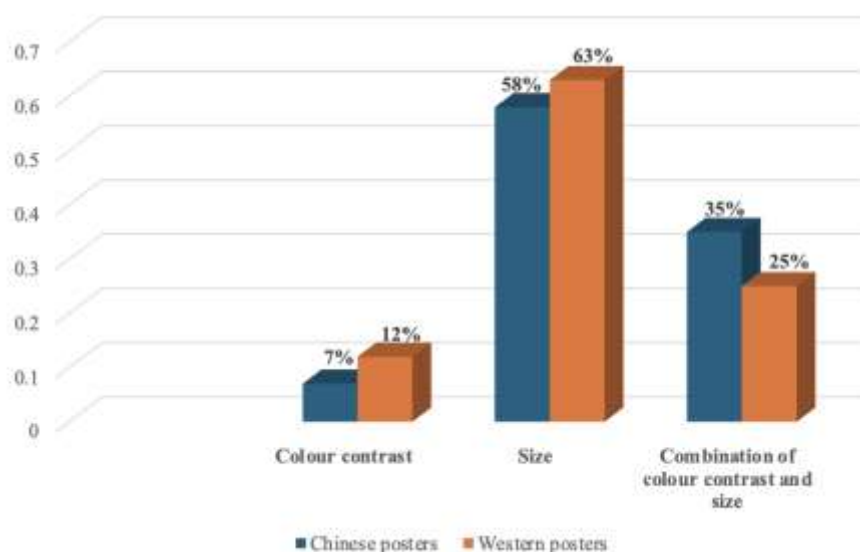| Type of method	Chinese posters	Western posters
Colour contrast	7	12
Size	58	63
Combination of colour contrast and size	35	25
Total	100	100

Fig. 6 The Distribution of the Methods

From Fig. 6, it is evident that over half of the emphasis in the posters is achieved through size, with the combination of color contrast and size being the next most common method. This can be attributed to two main factors. Firstly, larger elements naturally capture the viewer's attention more easily, leading them to perceive these elements as more significant. Secondly, increasing size is both the simplest and most effective way to enhance prominence compared to other techniques.

Common compositional elements in Chinese marine ecological protection posters mainly include symmetrical composition and central composition. This type of composition emphasises a sense of balance and harmony, in line with the pursuit of symmetrical aesthetics in traditional Chinese culture. For example, a poster may feature a sea turtle at the centre surrounded by coral and seaweed, creating a visual balance. In terms of layout, Chinese posters usually place the main visual elements in the centre, supplemented by textual descriptions. This layout not only highlights the main visual symbols but also enhances the message. For example, a poster might have a striking earth motif in the centre, surrounded by relevant environmental slogans. In terms of visual elements, Chinese posters often use symbolic natural elements, such as marine animals, coral, and seaweed, which are not only aesthetically pleasing but also effective in conveying the importance and urgency of marine conservation.

Western marine ecological protection posters are more diversified in terms of composition types, commonly including diagonal composition, asymmetrical composition, and trichotomy composition. These composition types emphasise the sense of dynamics and visual impact, which are in line with the aesthetic trend of modern design. For example, a poster may divide the picture into two parts by diagonal lines, one part showing the clean ocean and the other part showing the polluted ocean, forming a strong contrast. In terms of layout, Western posters are more flexible, with images and text elements interspersed, adding visual hierarchy

and interest. For example, a poster may place a large visual element, such as a whale, in the upper left corner, while relevant environmental slogans and messages are placed in the lower right corner. In terms of visual elements, Western posters often use modern design elements and abstract art, such as minimalist styles and abstract patterns, which not only attract the attention of the audience but also enhance the effect and artistic sense of information conveyance.

Although there are differences between Chinese and Western posters in terms of compositional elements, they are also similar in some aspects. Both Chinese and Western posters pay attention to the aesthetics of the composition and enhance the visual appeal and message conveyance of the posters through sharp colour contrasts and careful layout. For example, both Chinese and Western posters use bright blue and green colours to symbolise a clean marine environment. In addition, both Chinese and Western posters endeavour to guide the audience to pay attention to marine ecological issues and encourage them to take practical actions through a visual language that is intuitive and easy to understand. Compositions highlight key visual symbols, such as marine animals and pollutants, to quickly convey the environmental message.

However, the differences in composition between Chinese and Western posters also reflect the different cultural backgrounds and design concepts behind them. The compositions of Chinese posters tend to be more balanced and symmetrical, reflecting the middle way and harmonious aesthetics of Chinese culture. For example, Chinese posters may place more emphasis on symmetry in their composition to convey a sense of harmony and stability. In contrast, Western posters place more emphasis on a sense of dynamism and visual impact, reflecting the innovation and diversity of modern design. For example, Western posters may add a sense of dynamism and visual impact through asymmetrical compositions. In addition, the layout of Chinese posters is usually more fixed, with the main visual elements placed in the centre and text descriptions surrounding them, emphasising the central visual focus. On the other hand, the layout of Western posters is more flexible, with images and text elements interlaced, enhancing the sense of visual hierarchy and interest. For example, a Chinese poster may place a striking visual element, such as a turtle, in the centre, while a Western poster may have a diagonal layout, with the main visual elements and textual information distributed in different areas of the picture.

By comparing and analysing the compositional elements of Chinese and Western marine ecological protection posters, it can be found that there are obvious differences between the two in terms of cultural background, design style, and expression. However, they share the common goal of arousing public attention to marine environmental protection and motivating them to take action. These findings not only help us better understand the application of visual grammar in different cultural contexts but also provide valuable lessons and references for future visual design. The compositional similarities and differences between Chinese and Western marine ecological conservation posters not only enrich the means of visual communication but also contribute a unique strength to the cause of global marine conservation. Chinese posters convey a warm and harmonious concept of environmental protection through balanced and symmetrical compositions, while Western posters emphasise the urgency and importance of environmental protection through diverse and innovative compositions. The combination and contrast between the two not only demonstrate the design wisdom of different cultures but also provides a rich visual resource and source of inspiration for the global cause of marine conservation.

3.3 Multimodal Discourse Analysis

In the context of the all-media era, visual symbols have become the norm for information transmission in daily life. People receive a large amount of visual symbol input through social media, advertisements, propaganda posters, and other forms. This phenomenon not only affects the way people receive information but also changes their aesthetic habits and cultural identity. In the collection of 100 posters on marine ecological protection from China and abroad, the colours, images, layouts, and thematic contents of each poster are different. The posters contain a wealth of visual elements in order to protect the marine theme in a detailed and accurate way, and attract the attention of the audience. In this paper, one representative Western poster (Fig. 7) and a group of Chinese posters (4 posters, Fig. 8) are selected from a large number of thematic posters to analyse and compare how the thematic posters are constructed and convey meanings in the light of the theoretical framework of Visual Grammar.

Fig. 7 Western Marine Ecological Protection Poster

Fig. 8 Chinese Marine Ecological Protection Poster

3.3.1 Representational Meaning

The prominent role of marine ecological protection posters in discourse is an illustration of marine conservation, truth-telling evidence of the event and an evaluation with emotional appeal (Bednarek & Caple, 2012). Representational meaning refers to how images convey information and meaning by reproducing real-world elements. By analysing the representational elements in Chinese and Western posters, it is possible to see the different strategies used by the two in conveying marine conservation messages. Commonly representational elements in Chinese marine protection posters include marine animals, natural landscapes, and traditional cultural symbols. Jakobson (1971) puts forwards that metaphors are realized through paradigmatic relations; namely, the paradigmatic selection or substitution of certain elements in the grammatical structure is an important form for the existence of metaphors. Whittock (1990: 54) also believes that metaphor shows in the form of semantic substitution in a fixed syntactic structure. For example, the first poster reproduces a dolphin's tail fin in a paper-cut art style, with a blue background symbolising the clear ocean and conveying the care and protection of marine life. The dolphin's tail fin is designed to resemble traditional Chinese art, which not only enhances the visual aesthetics but also adds a cultural element so that viewers can appreciate the image as well as feel the charm of traditional culture. The fish silhouette in the second poster also adopts the traditional art style. The green background symbolises ecological balance and conveys the importance of protecting the ocean. The fusion of the fish image and the background colours gives a fresh and natural feeling, calling attention to the ecological environment and the

protection of marine resources. The third poster shows the silhouette of a shrimp with a yellow background symbolising the beach, conveying the abundance of marine resources and the complexity of the ecosystem. The combination of the shrimp silhouette and the background presents a vivid image that demonstrates the diversity of marine life and the complexity of the ecosystem. The fourth poster emphasises the urgency and importance of marine conservation through the silhouettes of fish on a red background. The red colour symbolises warning and a sense of urgency, and the fish silhouettes are designed to make people aware of the importance of marine conservation and to inspire the viewer to be aware of conservation.

Western marine protection posters convey the dangers of marine pollution through intuitive visual comparisons. For example, this poster shows a whale whose body is made up of various kinds of plastic rubbish, highlighting the serious threat posed by plastic pollution to marine life. The dark blue background symbolises the polluted marine environment, and the text further reinforces the theme of opposing the use of plastic. Through this direct visual impact, the poster effectively conveys the seriousness and urgency of plastic pollution. The whale, as a representative of marine life, has its body filled with plastic rubbish, creating a strong visual contrast that makes it impossible for viewers to ignore the problem. The textual description uses simple and powerful language to further emphasise the need to protect the ocean. The analysis of the representational meaning shows that the Chinese poster pays more attention to the combination of traditional culture and natural elements and conveys the idea of protecting the ocean through warm and harmonious images, while the Western posters directly show the harm of pollution through strong visual contrasts in order to inspire the audience's sense of urgency and responsibility.

3.3.2 Interactive Meaning
In a narrative text, the roles, relationships, and affects realised through the interpersonal metafunction are not just those set up between reader and writer/image-maker on the one hand and those between the characters themselves on the other, but also (crucially) involve those in play between the reader and the narrative characters (Painter, C. & Martin, J.R. & Unsworth, L., 2012: 15). Interactive meaning involves the relationship between the image and the viewer, and how the image interacts with the viewer by means of perspective, distance and gaze. Chinese marine conservation posters usually interact with the viewer through gentle means to establish a harmonious and intimate relationship. Color is fundamental to life and art yet so diverse that it has seldom been studied in a comprehensive way (Gage, 1993). For example, the silhouette of the dolphin's tail fin in the first poster maintains a distance from the viewer, conveying a calm and harmonious atmosphere. The abstract treatment of the dolphin image enables the audience to appreciate and understand the significance of marine conservation from an aesthetic point of view rather than shocking the audience through shocking images. The silhouette of the fish in the second poster is combined with the green background to create the tranquillity and harmony of nature and inspire them to care for and protect the ecological environment. Green, as a symbolic colour of ecology and nature, can give viewers a visual feeling of freshness and calmness, thus making it easier for them to accept the concept of environmental protection. The shrimp silhouette in the third poster is enhanced by the warm yellow background, which enhances the affinity and makes it easier for the audience to accept and understand the importance of marine conservation. The yellow background symbolises sunshine and warmth, making the image more relatable and attractive. The fourth poster draws the viewer's attention to the urgency of marine conservation through the silhouette of a fish on a red background. Red is not only a strong, visually stimulating colour but also resonates with the audience's emotions, making them aware of the importance of marine conservation.

In contrast, Western posters interact with viewers through strong visual impact. For example, this poster directly interacts with the audience through the combination of a whale and plastic waste. The image of the whale is presented in an impactful way, making it impossible for the audience to ignore the dangers of plastic pollution. The text description also uses direct and powerful statements to further enhance the interactive effect. As a huge marine creature, the image of a whale filled with plastic rubbish creates a strong visual impact, making the audience feel the seriousness and urgency of pollution. The text description adopts simple and clear language, directly pointing out the problem and calling the audience to take action. In an interactive sense, the Chinese posters establish a harmonious and intimate relationship with the audience through a gentle approach, emphasising the combination of culture and nature, while the Western posters urge the audience to take immediate action through a strong visual impact and direct message.

3.3.3 Compositional Meaning
Compositional meaning analyses the layout of the image, the position and relative relationship of the elements, and how to convey information and emotions through visual design. Chinese marine conservation posters usually focus on symmetry and balance in their composition, conveying a sense of harmony and beauty. For example, in the first poster, the dolphin's tail fin is centred and symmetrical, and the blue wave pattern in the background echoes the main body, forming a harmonious and beautiful composition. The text descriptions are arranged from top to bottom, enhancing the visual fluidity and sense of wholeness. The symmetrical composition makes the picture look orderly and gives a sense of calmness and harmony. The silhouette of the fish in the second poster is also centred, with the green background and the image of the fish reflecting each other, and the overall

composition is simple and generous. The text description is arranged along the arc of the fish, adding a sense of dynamism and hierarchy to the image. The centred composition and the text arranged in an arc make the picture look natural and smooth, and the visual effect is richer. In the third poster, the shrimp silhouette is on the right side of the picture, and the white part on the left side creates a contrast and enhances the sense of visual balance. The yellow ripples in the background echo the image of the shrimp, forming a unified visual effect. The silhouette of the shrimp on the right contrasts with the white space on the left, making the image more vivid and interesting. The fourth poster's fish silhouette is centred and symmetrical, and the composition is simple but powerful. The text description is arranged along the arc of the fish, making the image richer and more layered. The centred composition and the text arranged along the curved lines make the image look natural and smooth, and the visual effect is richer.

Western marine protection posters use asymmetrical composition and strong contrast effects to highlight the theme and enhance the visual impact and message conveyance. For example, this poster forms a strong visual contrast through the combination of whales and plastic rubbish. The image of the whale and the arrangement of the plastic rubbish form a strong contrast, making the picture full of tension and impact. The text description is located in the upper left of the picture, echoing the main image, and the overall layout is compact and powerful, enhancing the effect of the message conveyed. The position and arrangement of the text description make the picture look orderly and, at the same time, enhance the sense of visual hierarchy and richness. Through the analysis of compositional meaning, it can be seen that Chinese posters pay more attention to symmetrical and balanced compositional methods, conveying a sense of harmonious aesthetics and cultural flavour, while Western posters highlight the theme and enhance the visual impact and information conveying effect through asymmetrical composition and strong contrast effect.

Comprehensive analyses of representational meaning, interaction meaning, and compositional meaning reveal significant differences in the visual grammar of Chinese and Western marine ecological protection posters. By integrating traditional cultural elements and natural symbols, the Chinese poster conveys the importance of marine protection in a harmonious and warm way, emphasising the harmonious coexistence of man and nature. The composition focuses on symmetry and balance, which enhances the beauty and cultural connotation of the image. By reproducing traditional cultural elements and natural landscapes, the Chinese poster not only conveys the message of environmental protection but also demonstrates a deep cultural heritage. Western posters, on the other hand, directly demonstrate the harm of marine pollution through intuitive visual contrast and impact in order to stimulate the audience's sense of urgency and responsibility. Asymmetry and contrast effects are used in the composition to enhance the strength and visual appeal of the message. Through strong visual contrast and direct message delivery, the Western posters effectively draw the audience's attention and reflection.

These two different visual expressions reflect the differences between Chinese and Western cultures in environmental protection publicity and also provide us with rich material for visual grammar research. Understanding these differences will not only help us better understand visual communication strategies in different cultural contexts but also provide diversified means of communication and sources of inspiration for the global marine conservation cause. By combining traditional culture and modern design techniques, we can create more influential and artistic environmental posters to further promote the awareness and implementation of marine conservation. Future research can further explore how to combine different cultural elements more effectively in visual communication and how to enhance the effectiveness of environmental protection promotion through innovative visual design. Through cross-cultural visual grammar research, we can not only enhance the effectiveness of visual communication but also contribute new perspectives and methods to the cause of global environmental protection.

4. Influence of Cultural Context on Visual Symbols
Since the rise of visual images, the role of images has been greatly enhanced; it is widely emphasised that "image is information" (Rodriguez & Dimitrova, 2019: 22); images began to break free from the shackles of the text, a leap to become the main body of information expression. The differences in visual symbols in different cultures are also very significant. In Western cultures, visual symbols tend to pursue realism and fine detail in order to accurately convey a message, while in Eastern cultures, visual symbols place more emphasis on mood and symbolism. For example, Chinese ink painting focuses on expressing the charm of nature and the author's emotions rather than merely reproducing objective reality. Then again, geometric patterns and calligraphy in Islamic art are not only decorative elements but also carry deep religious and cultural significance.

The cultural background has a profound influence on the selection and use of visual symbols, and visual symbols in different cultural backgrounds not only reflect their respective cultural characteristics but also influence the effect of information conveyance. The differences between Chinese and Western cultures are especially obvious in the selection and use of visual symbols, and these differences are fully reflected in the design of environmental posters.

In the context of Chinese culture, the choice of visual symbols is often closely linked to traditional philosophy and art. Chinese culture focuses on mood and symbolism, and visual symbols often convey messages through delicate strokes and subtle

expressions. For example, Chinese environmental posters often use marine creatures and natural landscapes in the style of ink paintings, which are not only aesthetically pleasing but also contain rich cultural meanings. The white space and clean lines in ink paintings give people a space for tranquillity and contemplation, enabling viewers to accept the concept of environmental protection in a subtle way. The traditional Chinese aesthetics of harmony emphasises the symbiosis between nature and mankind, which is expressed in the symmetrical composition and balanced layout of the poster design, giving the poster a sense of visual stability and peace of mind, thus enhancing the acceptance of the environmental message.

In contrast, the choice and use of visual symbols in Western culture tends to be more intuitive and figurative. Western design concepts emphasise the direct transmission of information through visual impact. Common symbols in environmental posters include polluted oceans, trapped animals, and plastic waste. Through strong visual contrasts and vivid details, these symbols make viewers immediately realise the seriousness and urgency of environmental problems. The individualistic tendency of Western culture is also reflected in the poster design, which often inspires a sense of responsibility and action by highlighting the impact of individual behaviour on the environment. For example, the image of plastic bottles trapping marine life is not only an intuitive impact but also a direct appeal to the audience's personal behaviour, emphasising the important role of each individual in environmental protection.

Comparison of the communication effects of posters in different cultural backgrounds shows that the differences in the selection and use of symbols in Chinese and Western posters lead to different communication effects. Chinese posters convey the environmental protection message in a gentle and harmonious way, which enhances the sense of cultural identity and the audience's empathy and makes people naturally become aware of the protection of marine ecology while enjoying the posters. Western posters, on the other hand, through strong visual impact and direct message delivery, quickly capture the audience's attention, stimulate their sense of urgency and responsibility, and motivate them to take practical action to protect the oceans.
In addition, cultural background not only influences the choice of visual symbols, but also the way the symbols are interpreted. Chinese audiences may be more receptive to implicit and symbolic expressions, while Western audiences prefer intuitive and direct visual messages. Such differences are particularly important in cross-cultural communication and need to be fully considered by designers during the creative process to ensure that environmental messages can be effectively conveyed in different cultural contexts. By understanding and respecting the visual expressions of different cultures, we can design environmental posters with more cross-cultural appeal and impact and promote the cause of environmental protection on a global scale.

5. Conclusion
5.1 Major Findings and Implications
The study conducted in this paper provides a comprehensive comparison of Chinese and Western marine ecological protection posters using Kress and van Leeuwen's visual grammar framework, and this paper analyses in detail the use of symbols in Chinese and Western posters and the cultural differences and commonalities behind them from the perspectives of representational, interactive, and compositional meanings through qualitative and quantitative methods. The study reveals that Chinese posters typically incorporate traditional cultural elements and natural symbols, conveying environmental protection messages in a harmonious and aesthetically pleasing manner. In contrast, Western posters are more direct and impactful, often employing strong visual contrasts and modern design elements to highlight the dangers of marine pollution. This approach is intended to provoke a sense of urgency and responsibility among the audience. The findings demonstrate that while both Chinese and Western posters aim to raise awareness about marine conservation, they do so through distinctly different visual strategies rooted in their respective cultural contexts. Chinese posters lean towards a symbolic and harmonious presentation, whereas Western posters favor a more immediate and forceful visual communication.

The research in this paper not only enhances the understanding of visual grammar theory, helping us understand visual communication strategies in different cultural contexts but also provides valuable references for future visual design. By combining traditional culture and modern design techniques, more influential and artistic environmental posters can be created to promote marine conservation awareness and concrete actions. Future research should further explore how to integrate different cultural elements more effectively in visual communication and enhance the effect of environmental protection promotion through innovative visual design. Cross-cultural visual grammar research can not only improve the effectiveness of visual communication but also provide new perspectives and methods for the cause of global environmental protection and promote international environmental co-operation and exchange. Through these efforts, we can better understand and protect the Earth's marine ecosystems and jointly address global environmental challenges.

In addition, future research can also consider taking a more diversified perspective to explore in depth the application of visual symbols in different media and their effects. For example, visual symbols in emerging media such as video, animation, and interactive media can be studied to analyse how these media can enhance the effect of environmental protection promotion

through moving images and interactive design. At the same time, interdisciplinary perspectives, such as psychology and sociology, can be combined to explore the audience's psychological responses and behavioural changes to different types of visual symbols so as to provide a more scientific basis for visual communication strategies.

5.2 Limitations and Suggestions for Further Studies

Limitations and suggestions for further studies are put forward in this section.

First of all, in this study, although a comparison between Chinese and Western poster design was made by analyzing 200 marine ecological protection posters, the limitations of the sample size may affect the generalisability and representativeness of the findings. Analysing only 200 posters may not be sufficient to fully capture all the differences and commonalities between China and the West in poster design. The suggestions for this issue are as follows: First, expand the coverage of the study by increasing the number of posters. This could include more posters from different time periods, different regions, and diverse design styles, thus enhancing the generalisability and representativeness of the findings. Expanding the sample size can better reflect the differences and commonalities between Chinese and Western poster design. Second, obtain data from a variety of visual media, not only posters, but also other forms of visual communication such as video advertisements and social media images. Through the comparative analysis of multiple media, the manifestations of marine ecological conservation in different cultural contexts of China and the West can be captured more comprehensively, supplementing the inadequacy of poster analysis.

Secondly, this study mainly compares China with Western countries. Although this comparison can reveal the main differences in the use of visual symbols in Chinese and Western cultural contexts, the categorisation of cultural contexts is relatively simple and fails to adequately take into account the diversity and complexity of cultures on a global scale. The suggestion for solving this limitation is by expanding the scope of research on cultural context. Therefore, a more comprehensive understanding of the diversity of visual symbols in global poster design can be achieved, enriching the theoretical study of visual grammar while providing a more comprehensive design reference for cross-cultural communication.

In conclusion, this study reveals the characteristics and application of visual grammar in different cultural contexts by comparing and analysing the visual symbols and communication strategies of Chinese and Western marine ecological protection posters. These research results not only provide new ideas and methods for visual design but also contribute valuable theoretical foundations and practical experience to the cause of global marine conservation. Future research should continue to explore the application of visual grammar in different cultures and media and further promote the development of global environmental protection through innovative design and scientific analysis. Only through international co-operation and exchanges can we work together to meet the global environmental challenges, protect the marine ecosystems on which we depend, and create a better future for future generations.

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