Analysis of Environmental KOL Communication Strategies Based on Framing Theory—A Case Study of Wu Qiong Xiao Liangs Weibo Content

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Abstract. Taking Entman's framework theory as the basis, this essay uses representative video works released by Wu Qiong Xiao Liang, a famous scientific communicator on the Weibo platform and director of the New Media Center of National Geography in China as the analysis example. The case theme is ecological observation and protection field. Through the four-step qualitative text analysis method , this essay finds that the creator uses clear topic positioning to highlight the interest and scientific value of the text, and actively avoid political controversial information, and then uses humorous expression and visual annotation and other interpretation methods to construct two kinds of communication frames: "Science in Daily Life", "Exploring Secrets and Refuting Rumors". These two frames have played a vital role in promoting the efficient transmission of scientific knowledge.

Keywords: Framing Theory, Environmental KOL, Science Communication

1. Introduction

As ecological issues are constantly promoted in the global context and the "dual carbon" goal is gradually implemented, efficient environmental communication plays an important role in promoting public participation and building ecological civilization [1]. However, there has been a core contradiction for a long time: Due to its complex and abstract characteristics, professional and standardized environmental knowledge is often difficult to understand in mass communication, and it is difficult to transform into the actual cognition and willingness to act of the public. This "knowledge gap" poses a serious challenge to the traditional "one-way" science popularization model.

At the same time, the emergence of social media has also changed the previous pattern of knowledge dissemination. Key opinion leaders (KOLs) in the environment field emerged as "scientific translators". They provide new possibilities for narrowing the above-mentioned gap with their professional judgment, personalized expression and community connection [2]. Take Wu Qiong Xiao Liang, director of the New Media Center of National Geography of China as an example. He has a solid academic background and is an authoritative figure in itself. In addition, he has attracted a large number of attention and public opinion on the Internet platforms such as Weibo.

The popular science videos he produces in terms of biodiversity protection, identification of environmental rumors, etc. have shown that it has very high public access efficiency and recognition. He has 6.83 million followers on Weibo, with a total of 37.506 million likes, comments, and reposts. His posts receive over 1 million daily views, and his videos have accumulated 341 million plays.

Figure 1. Wu Qiong Xiao Liang's Weibo profile

The existing research on environmental communication mostly focuses on the analysis of media effects at the macro level or the communication strategies at the institutional level [3]. There is still a lack of systematic doctrinal analysis of individual practitioners such as Wu Qiong Xiao Lian in the construction of micro text and the narrative logic behind it. His success is not accidental, and his content production must have followed an effective framework strategy. How this strategy is systematically organized and presented is the starting point of this research.

Based on this, this essay use Entman's framework theory to carry out the text analysis of Wu Qiong Xiao Lian's microblog content, and try to answer the following issues:

1) How does he set public agenda by the screening and construction of environmental issues?

2) What means are used in the narrative to display the core scientific information and exclude the complexity and controversy will have an impact on communication effect?

3) How does he explain with the help of language, images and interaction to enhance the attractiveness, persuasiveness and community cohesion of communication framework?

Through the hierarchical analysis of above problems, this article not only try to decode the communication logic of a successful communication practitioner, but also try to refine the migrable environmental communication paradigm, and hope to provide the practical theoretical reference and method for relevant institutions and individuals to connect the science, environment and public more effectively in public communication practice.

2. Literature review

2.1. Overview of framing theory

Framing theory was first proposed by Bateson and later developed by scholars such as Goffman and Tuchman. In 1993, Robert Entman systematized the four main functions of news frames: defining problems, diagnosing causes, making moral judgments, and suggesting solutions [4]. He pointed out that the core mechanism of framing involves selection and salience (making some aspects more noticeable), exclusion, and elaboration. The theory emphasizes that communicators guide the audience's construction of meaning and behavioral tendencies by selecting and emphasizing certain aspects of information, making specific attributes more prominent in the audience's perception [5].

Through a systematic literature review and conceptual comparison, Scheufele and Tewksbury demonstrate the similarities and differences between frameworks, agenda setting, and priming effects in terms of theoretical origin, research focus, and mechanism explanation, and propose an integrated conceptual framework that aims to provide a more coherent theoretical basis and direction for subsequent empirical exploration of media effects research [6].

2.2. Application of framing theory in science communication

In recent years, framing theory has been widely used to analyze science news, public issues, and social media content. Research shows that science communication can significantly enhance audience cognitive and emotional engagement if the topic selection is close to the audience's life and the information presentation balances interest and rigor. Especially in the new media environment, visual elements (images, memes) and colloquial language have become key means of elaborating frames. Myers, Nisbet et al. found that using the "public health" framework to discuss climate change stimulated positive emotions such as "hope" and increased the willingness to participate more than using the "environmental" or "national security" framework [7]. Nisbet expands framework theory from journalism to the full chain of public engagement on climate change, stating that "framework is meaning" is the key to inspiring public action [8].

2.3. Communication characteristics of environmental KOLs

Domestic and international research on environmental KOLs indicates that successful science communicators often possess the following characteristics: 1) Topics are close to daily life (e.g., urban common animals, seasonal edible mushrooms); 2) Use of humorous, colloquial language; 3) Strong visual impact (comparison images, annotated circles); 4) Active debunking of rumors to build credibility. These characteristics highly align with the four operational steps of framing theory, providing an empirical entry point for this study [9].

3. Theoretical framework and analysis methods

3.1. Theoretical framework

The main purpose of this study is to explore the construction logic of environmental communication content. To achieve this purpose, this study uses Robert Entman's framing theory as analytical framework. Entman believed that the essence of framing is to select certain aspects of a perceived reality and put them in a more prominent position in a communicating text through emphasis, exclusion, and elaboration, so as to promote the problem definition, causal interpretation, moral evaluation and treatment recommendation of a certain kind of perceived reality [4].

Based on the above theoretical framework, this study will use systematic four-step analysis process to carry out the in-depth qualitative text analysis of selected sample content: 1) selection: clarify the entry point of communication. This stage is to determine which focuses the author select as the entry point of communication from various environmental and scientific focuses.2) Highlight: strengthen the core of information. This stage uses the analysis of which contents in the text intentionally strengthened to display the core information the author want audience to focus on.3) exclusion: examination the dimension of silence. The construction of the framework also cannot ignore the screening of information and ignore. This stage will analyze reversely which possible related contents the author intentionally excluded in order to maintain the narrative focus and enhance the communication efficiency. 4) elaboration: build the texture of expression. This stage is

to summarize how the specific rhetoric and formal means used by the author, such as language style, visual elements, etc., can enhance the vividness and credibility of the framework, so as to improve the infectiousness and persuasiveness of the content [4,5].

3.2. Case selection and sample description

This study uses the method of purposeful sampling, and takes two highly representative videos from the official Sina Weibo account of "Infinity" as the objects of in-depth analysis. The reasons for choosing these two works are as follows: First, the two works are marine and desert ecosystems respectively. They are not only the hot spots of public concern, but also the main contents of China's ecological protection plan. Second, it is based on the "phenomenonal observation-scientific explanation-conceptual guidance" main link of communicator [10].

In terms of communication effect, the number of plays of the video about Chinese Horseshoe Crab is 1.33 times ten thousand, and the video of ecological content of Taklamakan Desert has been played 770,000 times. The two videos have triggered extensive interaction from the public. Its actual communication effect provides empirical basis for this study.

Case 1: Chinese Horseshoe Crab

The requirement of this case study is to produce a video report on the endangered species of Chinese Horseshoe Crab .

At the beginning of program (00:00-00:56), the traditional artifact "magpie" is used as the starting point. Based on the process principle of using Horseshoe Crab shell, the physiological structure of the species is demonstrated vividly. Then the narrative tone of "contrast between the past and present" is triggered. (00:56-01:53) Then the camera moved to the Beihai area of Guangxi. The video displayed the memory of "piling up like a mountain of Horseshoe Crab shells" in the past but now only a status ban could be seen. It reflected the sharp decrease of the population; at the same time, the artificial breeding situation of Beibuwan University was introduced objectively. It also stated that the long growth period and the survival rate of release limited the protection problem. The video focused on the ecological mixed breeding model of "snail-snails" (01:53-03:00). It explained in detail how the habit of snails turning sand promoted the snails' foraging. It also explained in detail how the supporting role of its short-term economic benefits promoted the long-term protection. Then the sustainable protection way was predicted. (03:00-04:05) Later, the content extended to the local aquaculture. With the help of the food culture of common species such as bulletfish, a connection with the regional life was established. The middle narrative (04:05-06:26) focused on the natural habitat of the Horseshoe Crab . Under the guidance of the staff of the Hepu Dugong Protection Area, the filming team went to the intertidal zone on the spot. The footprints of "catfish road" were recorded. The traditional understanding of "cat sail" was clarified scientifically. In the face of the threat of fishing net to life, the situation of protected area staff removing illegal fishing net was predicted. The part (06:26-08:50) at the end raised the view to the ecosystem level. By explaining the damage of the collection of sandworm to the sea grass bed, the habitat with key position as the "natural breeding ground" of the marine life, the video made a clear argument that protecting Chinese Horseshoe Crab was not an isolated thing. It was related to macro-ecological issues such as maintaining the overallity of the tidal flat and the health of the sea grass bed. Then the audience could be guided to establish a system [11].

Case 2: So Many Strange Things in the Desert

This case selects the video footage of taking a look at the ecology of Taklamakan Desert.

At the beginning of the program (00:00), there were strange animal footprints appeared. They seemed like "flowing clouds", then, it led to the observation of the biodiversity in the desert. Then

(00:27), the camera switched to the scene that the team was surrounded by mosquitoes in the desert, and explained why there were so many mosquitoes. The rare flood happened in Rob village of Yuli County became the temporary habitat for the mosquito's explosive reproduction. The video captured the biological features of mosquitoes such as "easy to kill" and "the lumps appeared late after being bitten". It enhanced the audience's sense of scene and cognitive impression through detailed description. The key part (01:03-01:42) explained the survival wisdom of poplar, which is the typical plant of the desert. It explained in detail why the new leaf was willow-shaped but it could reduce water evaporation, and the old leaf was developed into a circle so that it could carry out photosynthesis; At the same time, it was also explained that it was discharged by secreting "poplar tears", the physiological process of salt in human body, and applied as natural edible alkali by local people, reflecting the ecological wisdom of "doing their best". Then, the narrative further expanded the perspective to the macro ecosystem and explained that it was seasonal flood of Tarim River that nourished the poplar forest oasis in the desert and formed the temporary pond. It broke the stereotype that desert was "completely without water" in public's mind. After that (03:58-05:17), the narrative extended to more links of ecological chain of the desert: first, it introduced the drought-resistant plant red willow and its role in Xinjiang food culture (red willow barbecue), and then connected scientific nature with regional culture; After that, it explained the micro-ecological link between red willow carrying coriander and other insects (cleverly borrowed from Lu Xun's From Baicaoyuan to Sanwei Bookstore, the "spotted slugs" stimulated audience's collective cultural memory); Finally, it showed that the outbreak of locust in desert grassland in Xinjiang to attract pink magpies, and the local people took the initiative to pile up stones as nest for birds, forming a classic case of "human-bird cooperation" biological prevention and control. It outlined the whole picture from plants to insects, and then to the synergistic network between birds and humans [12].

4. Result

Case 1: How Framing Strategies Shape "Science of Protection" and "Empathetic Ecology"

The strategy of construction content framework of the video about Chinese Horseshoe Crab has distinct features: the narrative starts from cultural memory, it is supported by scientific practice, and then it guides ecological community identification [13].

At the beginning of the video, it's really quite smart to choose the historical artifact of "fish" as the starting point, which makes the species "Chinese Horseshoe Crab " jump out of the biology textbooks instantly and settle in the historical context of people's relationship with nature. Through the comparison of the past and present of "in the past, the shells piled up like a mountain" and "today's extremely rare and have become a national second-level protected animal", the survival of species has been upgraded to a public issue related to the rupture of cultural memory and ecological balance, and the popular science knowledge has been endowed with a profound humanistic background.

In the process of cognition, the work balances the severity of the crisis and the possibility of action very well [14]. It is very clear that the crisis of "rapid extinction" of Horseshoe Crab population and its immediate threats (fishing net trap) have appeared in the narration, but the protection of practice is still the innovation and complexity. For example, the film introduces in detail the ecological mixed breeding model of "eel-snail ecological mixed breeding" [11]. Not only does it follow the ecological law of snail turning sand to promote snail foraging, but it also considers the immediate economic benefits. At the same time, the framework has always maintained a constructive narrative tone. This is not to avoid problems, but in order to transfer the public's attention from "responsibility attribution" to "solutions", so as to avoid the audience forming

communication block due to powerlessness and build an active actor framework of "seeking a wise way out in difficulties".

In order to realize this framework, a series of exquisite interpretation techniques have been widely used. The creators enter the protected area themselves and participate in the action, which becomes the basis of credibility. Following the protection staff to remove the fishing nets and observe the "Little Fish Road" and other documentary images, the video establishes an irrefutable sense of authenticity and authority. At the linguistic level, vivid metaphors (such as "contradictory complex"), systematic perspectives (seagrass bed as "natural breeding fields") and ingenious associations with folk wisdom (mudskipper has a symbolic meaning) together constitute a set of effective meaning translation systems [15].

In the end, the video is concluded with an image of a vibrant ecosystem. This is the key leap from factual statement to value resonance. This visual strategy is not only a poetic summary of the scientific content and practical efforts, but also a powerful emotional mobilization and community call [15]. It cleverly condenses scientists, farmers, protection personnel and other specific actors that the audience identifies with in front of the screen into an invisible "ecological guardian alliance".

Case 2: How Framing Strategies Shape the Perception of the "Living Desert"

In this case, the ecology of the Taklamakan Desert was interpreted by "Infinite Light". This is a very common template to look at how to build a popular science communication framework [16]. Unlike using the grand narrative, he found a series of micro-specific and dramatic ecological phenomena as the fulcrum of narration--whether it is rare desert floods, a team of mosquitoes, or leaves of poplar of different shapes. The spectacle attributes of those things themselves become the hooks of communication, capturing people's attention immediately, turning the faraway desert into a mysterious exploration site with puzzles to be solved, and turning professional environmental knowledge into media events with public concern [13].

In the process of cognition, he balanced the authority and readability of science popularization well. He emphasized a core fact--that the desert is an intelligent living system interconnected and integrated. The survival way of Hu Yang and the red willow that gives birth to insects in people's thoughts have been woven together as a logical story network, forming a web of professional credibility of the content silently [12]. While building the framework, he consciously excluded all kinds of complicated professional data and ecological pessimism that would make people anxious. He even avoided all sensitive policy disputes. This silence is not an omission, but to keep the professional logic of the content always to be the magic and resilience of the ecology, to keep the purity of the content and the effectiveness of communication. Finally, he reached a balance--its authority lies in its profound insight and image evidence of ecological logic, and its readability lies in its consciousness of removing all technical factors consciously.

Moreover, a series of delicate interpretation techniques injected the soul into this scientific framework, making it become popular among people and community-based [9]. He connected "Hongliu" with the popular food "Hongliu Barbecue", so that the insect "coriander" and Lu Xun's "spotted slug" became to interchange--this kind of cultural translation technique reduced the audience's unfamiliarity of professional knowledge significantly [12]. While using life metaphors like "One slap will die" and "The package is like a chess piece" makes the content easily to be included in the audience's experience. Those techniques work together to not only create a light and humorous atmosphere of narration, but also to build a common cultural code between the creator and the audience and the audience [8]. When the fans smile at the literary plot and marvel at the visual discovery, what they get is not only a knowledge point, but also the community belonging and intellectual pleasure brought by common knowledge.

In short, by using the strategy of "filtering-selection-highlight-interpreting", "Infinity Light" has turned the "lifeless desert" into a "thriving system of life". Besides delivering information, "Infinity Light" is also guiding the public to shift their perspectives - to observe the natural environment on which we live as if they were associations to appreciate and curious about. This is what makes its popular science practice worthy of study.

5. Conclusion

Through the application of two basic communication frameworks, this study found that professional environmental knowledge has been successfully transformed into topics of public concern. In different situations, these two cases also present different patterns of construction and dissemination.

In the case of protection of endangered species, its content adopts a narrative way in which, cutting in from cultural memory, it gradually shows protection problems and innovative plans, and finally connects a single species with the overall ecological health. Such a way of narrative not only delivers knowledge, but also constructs an "ecological protection community" by showing specific roles such as scientific researchers and conservation workers [15]. This makes the public not only aware of the issue, but also enhances their sense of identity and willingness to act.

In facing the environmental issues of public cognitive bias, its content chooses to present narrative micro-phenomena as its starting point, and connects scattered ecological elements into an organic whole. This way not only breaks the stereotype of "lifeless land", but also helps to form a scientific cognitive framework of "unique and fragile ecological system".

The success of the above two communication frameworks lies in the ingenious use of strategy of "prominent" and "screening". The content shows ecological wonders and protect wisdom, and filters professional data and disputes about policies that may hinder understanding. Such a strategy not only ensures the professionalism and constructiveness of content, but also ensures the popularity and attractiveness of narrative, and finally achieves the dual goal of dissemination of knowledge and mobilization of the public.

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