

The Influence Mechanism of Bullet Comments on the Breadth and Depth of Video Dissemination

Qiannuo Wang

*Zhejiang University of Water Resources and Electric Power, Hangzhou, China
WQN18838091381@outlook.com*

Abstract. This study focuses on the rise of Danmaku (bullet comments) in the era of interactive videos, which have evolved from a niche function into a core interactive element shaping the viewing experience. The study aims to systematically explore how the multidimensional characteristics of bullet comments affect the breadth and depth of video dissemination. To this end, Bilibili (B-site) was selected as a case study, employing a combination of content analysis and in-depth interviews: the bullet comments of 90 sample videos were quantitatively coded to analyze their characteristic distribution; and 15 senior creators and highly active viewers were interviewed to delve into their behavioral motivations and psychological experiences. The results show that, in terms of dissemination breadth, bullet comments drive cross-platform video diffusion by transforming into "social currenc" and stimulating collective emotional peaks; in terms of dissemination depth, its influence is context-dependent, with explanatory bullet comments aiding cognition, while emotionally resonant bullet comments significantly enhance immersion and memory, but information overload can also be disruptive. Furthermore, as a continuous interactive ritual, bullet comments are a key arena for constructing community identity and cultural reproduction. This study concludes that bullet comments have transcended simple comments and become a complex layer integrating dissemination promotion, emotional reinforcement, and cultural construction, providing an integrated analytical framework for understanding the interaction mechanism of new media.

Keywords: Bullet screen, video dissemination, social presence, interactive ritual, Bilibili

1. Introduction

The paper under discussion is devoted to the discussion of viewing experience evolution in the age of interactive video. Bullet screen as a real-time, overlaid entity, has developed out of an adjunctive feature, to be one of the essential components forming the viewing experience [1]. This research has immense importance to the concept of the audience participation mechanism, logic of spreading video playbacks, and the building of the culture of online community within the new media space. The present study is primarily concerned with the parameters of the influence that the multidimensional nature of the bullet screen itself (its density, emotion, content type, etc.) has on the extent of dissemination of a video. Literature analysis technique takes place with the purpose to sort out, systematizing, the theoretical and empirical studies. The benefit of this approach is that it is

potentially able to compile the available research, determine the gaps and give the theoretical foundation on which an analytical model is built [2]. Based on this, this research is a combination of the content analysis and an in-depth interview. It demonstrates the internal trajectory of bullet screens in mediating the impact of dissemination by coding the bullet screens in 90 different video samples on the Bilibili and in two interviews to key players of the issues on YouTube platforms. The final research aim of this project is to develop an analytical model that theoretically describes how the complex properties of bullet screens are related to the dissemination effects. To attain the objective, the multidimensional extraction of features, typological construction and empirical data validation took place.

2. Theoretical basis and literature review

2.1. Literature review

The current age is an interactive video age and the audience no longer has the freedom to make boring comments after viewing. One of them, in particular, the bullet comment, a type of comment that is presented real-time on the video screen and scrolls, has matured during the early days as a curious feature of a subculture and nowadays it is a fundamental interactive emotional aspect driving the modern video watching experience. The central question that emerges in this shift is that, how does the active, manifold, and real-time exhibition of Danmaku (bullet comments) not only extend the reach of the video dissemination, but also extend the reach of understanding, memory, experience, and even the absorption of the community culture?

To find answers to this question, it is necessary to identify the nature of bullet comments first. The available literature concentrates on the synchronous social properties of bullet comments and assumes that they can instill a sense or feeling of presence even when one is alone viewing alone because it forms a virtual collective space, a viewing place [1]. It is on these grounds that researchers have initiated into the relationship between the bullet comments and the influence of the dissemination of videos. It has been discovered that bullet comments can provide a great sense of participation and engagement to the audience. To take the case of educational videos, suitable bullet comment can maximize the memory and learning of learners [2,3]. There are however negative aspects of bullet comments. Their cluttered information or non-core information may at times disrupt the digestion of important information [4]. Besides, there are studies that have been dedicated to the influence of bullet comments in a particular genre of content, like documentaries and live events [5].

An examination of literature shows that there is such a gap: most studies consider bullet comments as a single phenomenon, either in the present or not and examine only their one-dimensional property, including emotional inclination, without an analytical framework to describe such a complex and multidimensional phenomenon. Moreover, studies tend to focus on just one dimension of the dissemination effect in terms of cognitive understanding or emotional attitude without addressing explicitly the scope and intensity of dissemination within a similar framework. This research will attempt to bridge this gap by developing the analytical model. The main idea of working this model is to carefully examine interactions of density, speed, emotional tone, timing of posting, and content type of the bullet comments with the video content as the last one systematically affecting such a process of turning to the superficial view to a deep engagement with the audience.

2.2. Theoretical basis

In order to justify the above integrated analytical framework, this paper primarily draws on two theoretical approach interrelated, including social presence and interactive rituals. They put these two facts collectively together to help comprehend how the bullet comments can go far beyond the role of commenting and become a remarkably influential social and cultural tool.

The concept of social presence is used to describe how the media can be used to create the impression of face-to-face communication. The ever-twitching comments designed by the virtual space of the bullet comments, which are perceived as the continual talk of other viewers in the spot, severely undermine the physical isolation as well as produce a strong feeling of shared presence. The social presence seen in this context is the psychological theory behind emotional resonance stimulation, sense of increased immersion in watching, and eventually belongingness to a community [2]. Consequently, the most important technical interface of establishing a video social atmosphere is a bullet commenting.

The rituals of interaction, also make it clear how this phenomenon of shared presence is converted into community behavior and culture. According to Collins, the interactive rituals need to be successful and this is only when there is a shared focus, emotional state, group barriers, and physical coordination, although it is a virtual one. The perception of the comments appearing as bullets is an ideal fit in this model: video content is the usual point of focus; the emotionally sharing feature of the comment bullet comments appearing simultaneously achieves this activity; the use of preferential language that is the bullet comments, i.e. some popular internet memes and codes creates a group barrier between the so-called insiders and so-called outsiders. This perpetual interaction based on rituals not only enables them to receive emotional energy, but also jointly create and enhance the symbolic capital of the community, which may consequently cement in group solidarity [6,7]. Bullet comments therefore are a cultural practice that is dynamic and ritualized.

In short, this paper describes bullet comments as a ritualized social text layer in video content and achieved through the real-time text overlay. Not only is a channel of self exploration and catharsis, but it is also a valuable area of group meaning creation, cultural identification and reproduction of the community.

2.3. Dimensional attributes and typo characterization of bullet comments

To convert the theory given above into a working study of an empirical research, there is a need to unravel the given phenomenon of multiple dimensions of bullet comments. This paper studies and studies the presentation nature of the bullet comments through the use of the following three intersecting dimensions:

The first one is the visual and temporal dimension. It is the most intuitive trait of the bullet comments. It contains their color, screen posture and movement path as well as whether the time of key posting is accurately synchronized with the key plot, lines or the musical climax of the video. Timing synchronisation forms the technical basis of building a synchric experience and feel of ritual.

Secondly comes the content and emotional dimension. It is the essence of the message that is depicted in bullet comments. We even roughly categorize their textual contents as: informational explanation type, that is, supplementing knowledge and explaining background; emotional expression type, that is, admiration, resonance, tease (tu cao, meaning to criticize or complain); interactive type, such as playing with memes, chaining and creating internal jokes and ritualistic symbol type, such as uniformly formatted check-ins, commemorations and slogans. The types of communication have divergent communication functions.

Third is the interaction dimension. This is an indicator of the interactive ecosystem that is employed by bullet comments. It comprises the linkage of the reply and referral among the bullet comments, the likes, and the existence of the well-planned advanced bullet comments. These properties distinguish the level of interaction and the stock of bullets comments.

With these dimensional characteristics and projected effects of dissemination, this study defines the four ideal types of bullet comments to inform future empirical research: First, the type of explanatory supplement, the primary role of which is to help thinking and comprehension, so the impact on cognitive depth of dissemination; second, the type of emotional resonance, the core of which is to provoke and strengthen the emotional attitudes, the promotion of strong emotional investment, and the possibility of provoking the effect of spreading word of mouth; third, the type of atmosphere-creating, and its objective is to build a sense of ritual; fourth, the interactive carnival type, which drives real-time, high-frequency interaction and the impromptu creation of "meme" culture, and is the main force for igniting topics, driving secondary creation, and cross-platform dissemination.

3. Research design and methods

This study primarily uses case study to empirically investigate the role of the multidimensional features of the bullet comments in influencing the breadth and depth of video dissemination using the above theoretical processes.

On the choice of cases, this case study selected the core case platform, i.e. Bilibili. Bilibili is not merely the coradion and epicenter of Chinaman Danmaku (bullet comment) culture, but its full-fledged subsistence of a mature ecosystem of Danmaku, its sections and its user base of the largest volume offers the most excellent place to see the full spectrum of the Danmaku phenomenon. In order to obtain the needed perspective and scope of theoretical discussion, this paper will briefly mention the contrasts between Danmaku on Douyin (TikTok) and YouTube and Bilibili: two incredibly dissimilar interaction paradigms, Douyin concentrated on full-screen immersive short videos and the lightweight and instant interactive features including likes and short comments, and YouTube has developed a deep model of interactive dialogue based on traditional conservative comment boxes to be supplemented with subtitle functions, and its interaction is more delay and reflective. This paper will seek to explain the uniqueness of Bilibili interaction mode with more specificity to the paradigms of screen and bullet screen interaction, and thus have an opportunity to examine the universalities behind it by comparison with both paradigms.

Regarding the research methods, the strategy followed in the present study is content analysis as well as in-depth interviews, which will be combined in order to gain mutual verification of the data, considering the macro-level repeats of phenomena and the micro-level experiences of the individual.

The overview of this topic will be conducted through the following research methods in this study. The initial one is content analysis. The approach employs the systematic disclosure of the macroscopic association between the barrage properties and video propagation impacts. The research intends to sample three content areas in Bilibili, including knowledge science popularization area, film and television drama area, and life and entertainment area. Based on each of the partitions, 30 video samples were released within the last year and the number of barrages is large and the popularity is high, and the choice was made, a total of 90 videos. The barrage of sample video will be sampled and coded where the coding scheme would be much similar to the aforementioned multi-dimensional feature like indicators like the density of barrage per hour, maximum interval, emotional tendency, and the types like positive, neutral, negative, and content. By the quantitative analysis of the coded information, in the current paper, we seek to provide the

distribution of barrage features within various contexts of the content, and also preliminary test how the buffering correlates with video dissemination data.

Secondly, in-depth interviews are applied to explore the inner reasoning of the impact of bullet comments on the individual psychology and behavior. This research will utilize two major actors in the study; the first one is senior content creators (5-8 individuals) to understand how they view, interpret, and strategically utilised bullet comments to make adjustments to their creation, on how they manage interaction, and how bullet comments selectively influence their viewing experience, emotional responses, and their participation behaviour: the second player is the highly interactive and active viewers (10-15 individuals) to understand their motivation and intentions of posting and viewing bullet comments, their perception and assessment of the various types of bullet comment, and how they specially impact the viewing experience, emotional response. The data will be provided in the form of the thematic analysis in the interview in order to make a further interpretation of the data of the content analysis to define the pathways of influence, i.e., how and why.

4. Research results

4.1. Impact on breadth dissemination mechanism

In the analysis of quantitative data as a result using a content analysis, it is observed that with a time series view, the maximum interaction of the bullet comments in the video, and the heat of the discussion in the video in external social platforms, such as Weibo, the synchronous fluctuation pattern is observed in most samples. As an illustration, out of the 90 samples that we have seen, thick bursts of bullet remarks in 68 videos were entwined with the small peaks of the number mentions on Weibo within 24 hours of their release. The peaks were concentrated heavily at the dramatic climax, emotional outburst, or at the surprise twists of the plot of the videos.

As interviews found that one of the greatest reasons that caused users to share across platforms was because of Divine bullet commentaries or hot memes. These beautiful "godlike bullet comments or memes" which distill the wisdom of the community to a very high degree have infiltrated the content of videos. As an illustration, an interesting interpretation of intricate knowledge expressed as a bullet comment or a classic comment on a memorable scene in a film or television drama is proactively gathered and exchanged by the viewers at the social site of Weibo, WeChat Moments, and Douban due to the high interest, knowledge, or recognition worth [8]. According to the interviewees creators, the issue here is: The actual content of a video does not always make it popular, but because a particular section of the video has already been played to death in the bullet comments, it is now a social currency. According to the audience, when the bullet comments were continuous as a storm, the overwhelming sense of communicate presence and feeling resonance would trigger the instant feeling to share and desire to share the resonance of the moment to the external world [1].

The analysis is of the view that the key mechanism behind the action of the bullet comments in broadening the dissemination is that it is able to narrow down the viewing interaction into a circulating social money and utilize the climax of emotional energy produced by collective interaction in solving the sharing behavior of a user. This mechanism can be especially seen in material that has high real time behavior and high attention in groups [9].

4.2. Actor of influence on level of spread

In interviews they established that viewers of knowledge video tapes tend to think that high quality of narration bullet comments are equal to real-time crowdsourced subtitles and actually this reduces the barriers to understanding [3]. But when the playful and interactive bullet comments are excessive, they will produce noise in the information and therefore disrupt the following of the fundamental logic thereby proving the correctness of the involvement theory [4]. In the case of emotional narrative content, viewers have more than once claimed that the presence of bullet comments like, I am so upset, Salute, will create the significant effect of emotional confirmation and resonance and therefore, significantly augment the simulation and depth of emotional investment that will come with the viewing experience [7].

The effectiveness of comments on the richness of dissemination brought by bullet comments is context-specific. It is able to enrich information and emotion with supplementation of information as well as emotional appeal, though it can impose interference in case of overloading information or redundancy. This ultimately depends on the corresponding level of congruence when it comes to the nature of the video content, the type, and the density of bullet comments.

4.3. The instrument of influence on the community culture building

Data analysis revealed ritual type bullet comments of the type of comments like a comment on a check-in, a comment on an anniversary in a single format that display periodic bursts at particular time nodes and allows the observation of the ritualized pattern of interaction.

The interviewees also underlined that the possibilities to comprehend and apply certain bullet screen lingo and memes are the key to the feeling of belonging to the community [6]. The engagement in the combination format of the bullet screen is seen as a significant ritual that may help to make people emotionally energized in the community. The creators also understand that bullet screen is a consideration of the foundation of seeing the community response and becoming part of the community culture to re-creation.

Bullet screen basically forms a living transfer context of video contents. Being the central interactive ritual, it constantly generates and reinforces the symbolic capital, the collective memory and the cultural transgression of the community [10]. This allows the bullet screen to go beyond the category of interactive tool and become an infrastructure of sustaining community vitality and cultural identity, and makes the development of it a field of cultural practice come true [11].

5. Conclusion

This paper, which employed built-in content analysis and semi-structured interviews, discovered that Danmaku (bullet comments) facilitates the cross-platform proliferation of videos by means of social monetization and mass emotional cascade. It affects the viewer mores comprehension and commitment to its context and type compatibility either helping or disrupting and creates a stable community culture and identity as an ongoing interactive rite. Danmaku already becomes a multifaceted text layer, which can be understood as the combination of the delivery of information, the expression of emotions, and the reproduction of the cultures.

This study is another advance in the field of theoretical and practical research. In theory, the multi-dimensional framework of Danmaku-dissemination-effect combined in this paper represents an operationalization roadway through which future studies can be performed in this subject. In practice, the results of the research can be used as a reference to video platforms optimizing the

system of Danmaku design, the strategies of content creators developing the system of interaction, and the culture operators developing a cultural ecosystem.

Going upon the results of the above discussion, it is possible to expand the scope of the future research by comparing the results with other platforms, including Douyin (Tik Tok) and YouTube and assess the external validity of the results of this research. With regard to research methods, it is possible to combine experimental methods like eye tracking to measure better the effect of bullet comments on the attention of the audience. Besides, the creation and influence of intelligent bullet comments will be another significant emerging research direction when the AIGC technology is developed.

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