Article

# Community-Building on Bilibili: The Social Impact of Danmu Comments

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**Abstract**
Danmu commenting is a new feature of the streaming industry, popular in East Asia. Danmu comments are displayed as streams of comments superimposed on video screens and synchronised to the specific playback time at which the users sent them, moving horizontally from right to left. Interestingly, users do not have options such as "replies" to structure their comments; their interactions commonly include poor addressivity, hidden authorship, and unmarked sending time. The ways in which users actually interact with each other and, more importantly, the implications of such danmu-enabled social interactions on building virtual communities are so far understudied. Through a case study centred on Bilibili, a leading Chinese danmu platform, this article argues that in spite of their visually chaotic manner, the social interactive patterns of danmu commenters contribute to community building. Under the theoretical framework of "sense of virtual community," the study adopts a data-driven methodology to qualitatively analyse such fragmented data. Results show that Bilibili users have discovered various ways to initiate social contact with each other through the creative use of linguistic and semiotic resources. Their ritualised performance in the Bilibili community is centred around the social aims of danmu comments, danmu clusters, and danmu language, all of which strengthen their sense of virtual community on the dimensions of membership, influence, and immersion. This article contributes to the research on this emerging media phenomenon by illustrating a new mode of watching and engaging in a participatory online community of practice that this platform encourages.

## 1. Introduction

The danmu (or *danmaku* in Japanese) interface originated on NicoNico, a Japanese video website, in 2006, and was later popularised in nearby East Asian countries including China. Unlike traditional online comments placed below the video frame and typically posted by viewers after watching the video, danmu comments are displayed as streams of scrolling comments overlaid on the screen and synchronised to the specific playback time at which the users sent the comments, moving horizontally from right to left. Climatic moments in the videos attract many danmu comments which can obscure the image in the video, causing a visual effect that resembles "弹幕'' (danmu, which literally translates to "bullet

curtain" in Chinese); hence, this type of online commentary is known as danmu comments. Adopted by nearly all major video sites in China, the introduction of the danmu interface has substantively changed the way internet users enjoy online videos, which, over time, has morphed into a distinct cultural phenomenon in the Chinese digital sphere.

### 1.1. Social Functionality of the Danmu Interface

The danmu interface, which interweaves text-based social media into video media, has aroused academic interest. Scholars have explored users' motivations for participating in danmu-enabled video consumption (Chen et al., 2017; Hu et al., 2016), the translation and

linguistic applications of danmu comments (Yang, 2020; Zhang & Cassany, 2020), and its commercial implications (Liu et al., 2016; Xiang & Chae, 2021). Scholars have widely referred to the watching of danmu videos as a social experience but fall short in stressing the importance of the social functionality of the danmu interface in an explicit and compelling manner. This article asserts that the social functionality of the danmu interface is the foundation for its popularity and its strong impact on community building.

Compared with viewers of "second screens" or "social TV" outside of China, who seek out co-viewing experiences by using various technology-enabled backchannels such as Twitter to share their opinions while watching TV, the danmu interface provides users with a more advanced, convenient, and immersive social co-viewing experience. By allowing audiences to insert and mark their comments at a specific playback time in a video, the viewers do not need to shift their gaze back and forth between two screens, avoiding an incoherent and loose connection between the videos and discussions. A stronger common space is created for discussing issues specific to the current context of the content. Viewers can exchange detailed information at the time of the actual viewing, rather than general impressions and post hoc reflections. Users do not need to specify what prompted their thoughts, because the context in which their comments are situated provides sufficient explanation.

Therefore, an impression of a pseudo-synchronic co-viewing experience is created for audiences (Johnson, 2013), removing the temporal and physical constraints associated with face-to-face co-viewing activities, and further enlarging the scope of co-viewers. Temporally asynchronised and geographically dispersed audiences, surrounded by the "presence" (Hwang & Lim, 2015, pp. 755–765) of co-viewers, can enjoy a sense of watching videos with company (Han & Lee, 2014). The danmu interface design is centred around overcoming the limitations of temporality, and thereby fulfils viewers' needs for companionship and satisfies their urge for interactive self-expression and their desire to belong to a community (Chen et al., 2017). Danmu comments are left on their own on the screen; this anonymity gives users a sense of safety to unleash their feelings and imagination with other viewers with common interests, encouraging a deluge of immediate online chat.

Hedonistic values that the danmu interface offers viewers, such as entertainment, passing time, and relaxation, also contribute to the pleasure that they derive from watching danmu videos. Reading humorous comments posted by earlier audiences encourages users to watch danmu videos (Fang et al., 2018). Comments which creatively ridicule the people or things in the videos, or perfectly express the users' own interpretations of the content, can spark emotions in viewers. Sometimes, audiences even watch a poor-quality video just for the thrill of making fun of the content together (Yuan et al., 2016).

Thus, the danmu interface constantly invites increasing levels of participation from viewers into the user community. They can communicate in formal or informal, thought-through or spontaneous, or interest-based ways over the video content. It is not an exaggeration to claim that the danmu interface creates not only a new mode of watching videos but also a new way to build and maintain a sense of community. Naturally, the advent of danmu commentary has restructured the media landscape in China through fostering a sense of virtual unity via a platform-based video culture and a shared interface (Li, 2017).

Vastly different from other social media sites which include threaded comments in a discussion section, the danmu interface does not afford a structured commenting service for its users. Interactions on Twitter, for instance, exist among connected users, and their common practices include mentions, replies, and retweets. In contrast, danmu users do not enjoy such options. The social interactions among danmu commenters occur under the conditions of poor addressivity (the technologically inability to specify the addressee[s] of the recipient[s] of a danmu comment due to the design of communicative interface), hidden authorship, and unmarked sending time. Despite such technological constraints, danmu users in the Bilibili community appear to have successfully adapted to and enjoyed the medium.

To date, comparatively little work has been done to explicate the ways in which danmu users communicate with each other. Ma and Cao (2017), among other findings, briefly introduced the interpersonal interactions among danmu users. Bi (2020, p. 111) analysed the connectivity between danmu comments, fostering "living networks" connected to both the videos and the platform. Zhang and Cassany (2020) examined the coherence of the comment chains from a semiotic perspective. By building on their works, three prominent features can be identified in the social interactions of danmu users: (a) The social aims of danmu commenters; (b) the clusters of danmu comments; (c) the language resources used to facilitate such social interactions.

This article is dedicated to mapping these three social interactive patterns through an evidence-based qualitative analysis of danmu comments. Furthermore, this article considers the impact of these patterns on the central issue, the community-building of Bilibili, which concerns the continued growth and potential of the platform.

### 1.2. Virtual Community-Building on Bilibili

To start with, it is necessary to justify the definition of the Bilibili community as a virtual one. Lee et al. (2003) gave a working definition for virtual community: a cyberspace supported by computer-based information technology, centred upon the communication and integration of participants to generate member-driven contents, resulting in the building of relationships. Through the danmu interface, Bilibili users "gather together," generate social ties,

and cultivate a sense of belonging, thereby constituting a virtual community. All the registered Bilibili users form a big virtual community. Simultaneously, this community comprises countless ephemeral subcommunities attached to individual videos and relatively long-term subcommunities of interest: for instance, those made up of followers of a certain uploader. The boundaries of these subcommunities are porous because individuals may have more than one cultural or aesthetical preference in video-watching and may navigate between several subcommunities.

In the current literature, the Bilibili community as a whole is largely understood as a collective of young Chinese internet users whose cultural preferences are closely associated with animation, comics, and games (ACG) products. Little is yet known about the mechanism of virtual community-building on Bilibili. In Zhao et al.'s (2017, p. 359) design for future fieldwork, they predict a cognitive self-awareness by the group membership referred to as "we-intention," but have not yet released their research outcomes. This article is the first attempt to elucidate the community-building dimension of Bilibili by analysing the social interactions among danmu commenters.

The rest of this section contextualises the Bilibili community to provide a better understanding of who is commenting and why. In the Chinese digital media ecology, Bilibili is in the unique position of having built the largest online co-viewing community for youth culture. According to this company's financial results in the second quarter of 2021, the platform hosted 62 million daily active users (Bilibili, 2021). Bilibili's growth engine relies on user-generated content in the style of YouTube; fundamentally different from other streaming giants like Tencent Video and iQiyi which rely on Netflix-style, professionally produced copyrighted programs. Moreover, the user-generated content on Bilibili refers to both the videos and the danmu comments.

Bilibili is a pioneering Chinese platform that incorporated the danmu interface in 2008 and is now the most popular video platform of this kind. The majority of danmu scholars have based their research around Bilibili's dominant market status. The added social benefits provided by the danmu interface can certainly give a strong boost to the development of a given video platform. Indeed, Bilibili treats the danmu comments generated by video users as no less an important pillar than the user-generated videos that this platform relies on for monetisation.

Bilibili exploits the additional space created by the danmu interface to enhance audiences' participation and engagement and to retain their membership both technologically and culturally. To encourage commentary, the danmu commenting service is turned on by default, inviting the users to join the video chats. Each comment is limited to a maximum of 30 Chinese characters, requiring little time and effort to post. Viewers can easily type text into the danmu comment box right below the video frame and post their comments directly to the screen at the point of submission. Registered users can adjust the font, size, transparency, and speed of viewable texts to increase the visibility of their own comments; those who prefer to be less distracted by the comments can also activate the anti-block function and filter the comments by movement, colour, and type.

Beyond its technological advancements, Bilibili cultivates the communities it hosts. Primarily, its attention has been focused on attracting young Chinese internet users into its user community. Initially, Bilibili focused on ACG content, labelling itself as the first forum for Chinese ACG fans. To filter and attract its preferred audiences, Bilibili has adopted a membership plan to develop its community of registered users. Anyone wishing to post danmu comments is required to complete a membership test involving 100 questions about the ACG culture and danmu netiquette. Bilibili is meaningful and entertaining to users who make efforts to pass the test.

Over time, the platform has expanded its target audience to a wider population by integrating more genres such as movies, music, dance, etc. Young Chinese internet users can always find a niche topic that they are fascinated with on Bilibili. This suggests that Bilibili aims to be an incubator for online youth culture (Xu, 2016). Bilibili users are gradually forming various interest-based communities which loosely revolve around a certain set of media products and become home to like-minded people linked by certain themes, dispositions, affects, and emotions (Chen, 2020). In short, Bilibili functions as a virtual headquarters for online youth cultures and fandoms of China.

Danmu interface affords an "affective contact zone" (Li, 2017, p. 238) for the Bilibili community, uniting viewers with a collective temporal experience of simultaneous viewing and creating a feeling of a highly immersive community that is organically present and intimately welcoming. Bilibili users invest themselves into this affective community by sharing their opinions and sentiments with like-minded cohorts. Over time, their commenting practices become ritualised both socially and linguistically, which further turns posting danmu comments into an act of membership-reinforcing communal signalling.

*1.3. Research Questions, Data, Theoretical Framework, and Research Methods*

This article focuses on mapping the social interactive practices among danmu users and evaluates their impacts on the community-building of Bilibili regarding the following research questions:

RQ1: What patterns of social interaction can be observed in the danmu comments of the Bilibili community?

RQ2: What language resources, exploited by the danmu users to facilitate their social interaction, can be identified?

RQ3: How do these interactive patterns of danmu users contribute to the community-building on Bilibili?

Bilibili users have posted countless danmu comments on the ocean of user-generated videos on this platform. It would be impossible and unnecessary to collect and examine all the danmu comments. Therefore, this article will focus on conducting a case study of danmu comments posted on Russian President Putin-related videos, which were uploaded by one of the top 100 uploaders—*The Observer*—on Bilibili; this topic arose from a larger project on the representation of Russia in the Chinese social media. *The Observer* is an online media outlet that exclusively targets Chinese internet users and runs an official channel on Bilibili. Being literate in the entertainment-dominated media ecology of Bilibili, *The Observer* introduces a high proportion of playful elements in its videos because playfulness contributes to capturing the attention of its audience (Wang, 2021). Among the total of 24 Putin-related videos in the dataset, only six videos are politically oriented. Platform-wise, Bilibili is not designed to support the circulation of serious political debate and users tend to be uncomfortable consuming hard politics or even partisan news. In these videos, Putin has been made into the selling point by the uploader as a political celebrity and icon of Russia (Goscilo, 2013), showing his "box office appeal" for the Bilibili audience.

The light-hearted response to this media highlights that Bilibili users' social interactions are similar in their playful tone, regardless of the nature and content of the videos. In a study on users' responses to political speeches, Yu et al. (2018) found that danmu comments appear to be jovial and relaxed rather than constructive or inclusive. Serious political videos and entertaining media clips, and anything in between, all tend to receive informal treatment, to a greater or lesser extent, by users. The dataset analysed comprises all the danmu comments (7,302 in total) posted to the 24 Putin-related videos selected by the uploader. Although the dataset is not inclusive of all the danmu comments posted on Bilibili, it is representative of the commenting patterns.

On first inspection, these danmu comments are typically short and more fragmented, less coherent, and less comprehensive than conventional online comments displayed below the screen. It is worth bearing in mind that the danmu comments on the screen merely display all previous comments at the time of viewing, erasing the actual time-lapse between comments. When posting, users are either responding to a previous user or sharing their opinions with future viewers. They are usually aware that subsequent viewers pay attention to their comments while watching. Hence, they are not only commenting on the videos but also communicating their feelings or opinions with their imagined interlocutors. Such behaviours enable the analysis of danmu comments as social interactions between those posting comments and viewers.

Often, danmu comments are written in subcultural dialects only decipherable by insiders. To communicate effectively with other like-minded viewers, diverse linguistic, and semiotic resources are mobilised by users, such as internet buzzwords and symbols. The language repertoire shared by Bilibili users enables them to interact in an expressive and dynamic manner, which is deeply rooted in their cultural and communal identities.

For this case study, two coders imported the comments into an SPSS file and coded them against variables tailored to the research aim. The inter-coder reliability between the two coders reached 89% which is above the threshold suggested by Cohen (1960). The analysis is interpretive in nature, and the coders are culturally and linguistically proficient in the online communicative practices of Chinese youth. In fact, they are frequent users of Bilibili.

The variables (see Table 1) were developed based on a fine-grained content analysis of the social interaction modes inductively observed in the dataset. To increase the reliability of the study, the videos and the comments were reviewed three times before coding. Watching the corresponding scenes helps to explain the context in which the comments arose. The variables focus on the social aims of the danmu users, the clustering of danmu comments, and the language used in the comments to facilitate communication. The variables regarding the social aims of danmu comments and the danmu language offer a set of generalised options based on inductive observation. Thirteen social aims of danmu commenters have been identified by considering danmu commenting as a social action in which commenters "talk" with each other, mirroring face-to-face conversation. Eleven types of language practices have been observed by focusing on the linguistic and semiotic characteristics of the usage of Chinese and foreign languages of danmu commenters.

Sometimes, several subsequent viewers have been provoked by a particular danmu comment on the screen and participate in a dialogue or debate on a certain issue regarding the videos, forming a cluster of danmu comments. Spatial proximity captures the physical closeness of several comments on screen. Whenever an element in a video resonates with several viewers, their follow-up comments usually synchronise within a short period. The content of these comments is thematically or topically similar. Through the combination of these two indicators, spatial proximity and content similarity, a danmu cluster is identifiable. The danmu cluster variable is a structured question; if answered positively, the comments in a cluster are marked with the number of the first comment in that cluster. Danmu clusters are formed by comments with various social aims, mostly comments agreeing with or repeating the opinions of one or more commenters. However, they are unique in the co-viewing activities by collectively occupying a visible space on the screen and demonstrating the common interests of danmu commenters.

The full coding scheme is listed in Table 1 below.

Subsequently, these interactive patterns of danmu practice have been analysed using the conceptual framework of sense of virtual community (SOVC) proposed by Koh et al. (2003). Drawn from McMillan and Chavis' (1986) place-based sense of community, Koh et al. (2003) conceptualised a descriptive framework for the construction of virtual communities, a common phenomenon in the digital era. They retained two components of McMillan and Chavis's (1986) conceptualisation—membership and influence—and included a scale of immersion. Their SOVC framework covers three dimensions:

1. Membership: People experience feelings of belonging to their virtual community.
2. Influence: People influence and/or are influenced by other members of their community.

3. Immersion: People experience a state of flow in which they enjoy great pleasure and perceive a quick passage of time due to concentration on their current activities.

This framework is a key construct in understanding the social dynamics among Bilibili users and in investigating the community-building mechanism on Bilibili. The social interactive patterns identified in this analysis are meaningful for community-building on Bilibili by creating and consolidating the sense of membership, influence, and immersion experienced by danmu users.

Using qualitative coding, this section offers nuanced insights on communication influx within a wider socio-cultural milieu. Although the data may not provide a sufficient basis for generalisation about all of the complex digital behaviours of Bilibili users, the aim of this exploratory study is to generate original insights into the

**Table 1.** Coding scheme categorising social interactions among danmu comments.

| Variable | Label | Value |
| --- | --- | --- |
| DanmuInteraction | How does the danmu comment interact with other viewers? | 1. The commenter is agreeing with (an)other commenter(s)<br>2. The commenter is critiquing (an)other commenter(s)<br>3. The commenter is answering a question asked in a previous comment<br>4. The commenter is repeating the words/ideas of (an)other commenter(s)<br>5. The commenter is asking for background information<br>6. The commenter is offering background information<br>7. The commenter is joking about some element in the video<br>8. The commenter is pointing out something in the video that other commenters may not have noticed<br>9. The commenter is imagining how they would have filmed the actions differently or what they would have said or done if they hadbeen involved in the activity in the video<br>10. The commenter is making a suggestion for the actors in the video<br>11. The commenter is revealing personal information<br>12. The commenter is expressing their immediate personal reaction to something in the video<br>13. The commenter is expressing a relatively long and serious opinion on something in the video |
| DanmuCluster | Is the danmu comment clustered with other danmu comments? | If so, mark this danmu comment with the number of the first comment which this comment is clustering with |
| DanmuLanguage | What special language is used in the danmu comment to facilitate social interactions? | 1. Chinese internet buzzwords<br>2. Chinese dialects<br>3. Transliterations<br>4. Foreign languages (e.g., English)<br>5. English acronyms<br>6. Code-mixing<br>7. Arabic numerals<br>8. Kaomojis<br>9. Lexical repetition<br>10. Conjunctions<br>11. Directional symbols |

mechanism of social interactions among danmu users in the Bilibili community.

## 2. Social Interactions Among Danmu Comments

Bilibili users demonstrate their passion towards videos by posting danmu comments. They exploit various channels to initiate social contacts with co-viewers with creativity and playfulness. Their ritualised participatory practices create and strengthen their sense of belonging to a certain community.

### 2.1. Social Aims of Danmu Interactions

Thirteen interactive social aims were observed in the dataset (see Table 2). A common attribute between these interactions is that they are mainly one-directional conversations. Although the pseudo-synchronicity of the danmu interface contributes greatly to the popularity of the danmu comments, it nevertheless affects users' interactive patterns.

As argued in Section 1.3, danmu users are interacting with their imagined interlocutors about the videos. These interlocutors generally fall into two main groups: one/several previous danmu user(s) and the entire viewership. The latter includes users who are happy to show their visibility in public via danmu commenting and those who prefer to be silent; in Chinese, such passive viewers are referred to as "围观群众" (bystanders). Goldkorn (2012), a Chinese cultural observer, describes "围观" (bystanding) as an activity in which people adopt a spectator mentality and engage simply to observe what is going on. In English, such audiences are often referred to as "lurkers." Those bystanders are included in the Bilibili

community for their ability to understand the meaning and value of the given content and to serve as the recipients of danmu comments, contributing meaningfully to the online communication as danmu commenters.

Categories one to four are interactions with specific addressees, while the remaining categories (five to 13) have no specific target. Most of the comments, consisting of nearly 81% of the total dataset, are posted without a specific addressee for various social aims, indicating that the users chat in a relaxed and talkative atmosphere and viewers socialise for fun rather than for serious political debate. The technological design of the danmu interface encourages prompt responses as opposed to in-depth opinions developed after careful thought. Rather than produce long sentences to elaborate their feelings and opinions, users only need to type out their immediate reactions and feelings.
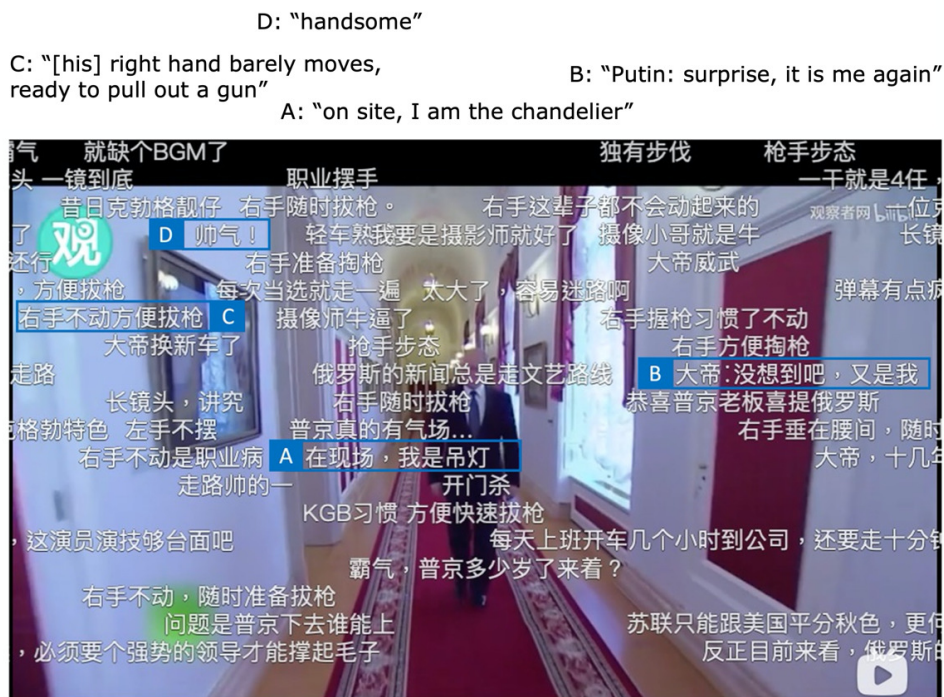
2.1.1. Danmu Comments Without Specific Addressees

These random chats mainly revolve around the video content. For example, as Figure 1 shows, the view of Putin walking on a long red carpet in the Kremlin has inspired a flood of light-hearted danmu comments from the audience.

Users can fantasise about a scenario in which they are involved in the scene, for example, as Comment A claimed, "On site, I am the chandelier." Users may even imagine they can speak on behalf of the characters, such as Comment B writing "Putin: surprise, it is me again." In Chinese internet slang, such a voiceover is known as overlapping sound. Comment C mentioned the way Putin walks and pointed out that "[His] right hand barely moves, ready to pull out a gun." Some users just

**Table 2.** Distribution of social aims of danmu commenters.

| Social Aims | Number of Danmu Comments | Percentage in the Dataset |
|---|---|---|
| 1. The commenter is agreeing with (an)other commenter(s) | 107 | 1.47% |
| 2. The commenter is critiquing (an)other commenter(s) | 230 | 3.15% |
| 3. The commenter is answering a question asked in a previous comment | 51 | 0.70% |
| 4. The commenter is repeating the words/ideas of (an)other commenter(s) | 975 | 13.35% |
| 5. The commenter is asking for background information | 374 | 5.12% |
| 6. The commenter is offering background information | 455 | 6.23% |
| 7. The commenter is joking about some element in the video | 1,502 | 20.57% |
| 8. The commenter is pointing out something in the video that other commenters may not have noticed | 1,359 | 18.61% |
| 9. The commenter is imagining how they would have filmed the actions differently or what they would have said or done if they had been involved in the activity in the video | 695 | 9.52% |
| 10. The commenter is making a suggestion to the actors in the video | 67 | 0.92% |
| 11. The commenter is revealing personal information | 221 | 3.03% |
| 12. The commenter is expressing their immediate personal reaction to something in the video | 1,058 | 14.49% |
| 13. The commenter is expressing a relatively long and serious opinion on something in the video | 208 | 2.85% |

D: "handsome"

C: "[his] right hand barely moves, ready to pull out a gun"

B: "Putin: surprise, it is me again"

A: "on site, I am the chandelier"



**Figure 1.** A screenshot of the video titled *A Grand Presidential Inauguration Has Taken Place in the Kremlin, Opening Putin's Fourth Term*.

give quick, immediate reactions to what they see, for instance, by posting "handsome" (Comment D) to voice their support for Putin.

These comments without addressees are emotionally rich, and together they can create an immersive, engaging illusion of group viewing (Ma & Cao, 2017). The danmu interface seems to be regarded as a tolerant space where the viewers can unleash feelings and imaginings which they may be uncomfortable and embarrassed to express in real life. Their immediate, ephemeral emotions and thoughts are accepted as normal by the entire audience. Such acceptance matters, facilitating a sense of membership by providing emotional safety for Bilibili users. When users feel that their individuality is not judged by others, they feel encouraged to form a strong attachment to the community. Moreover, such light-hearted interactions engage the audiences and users on an emotional level when they watch the videos, which is a form of investment that strengthens their feeling of belonging to this community.

Most of the danmu comments convey an apparent playful tone. Only a small number of them engage seriously with the video content and adopt an explicitly serious tone. Providing background information regarding a particular element in the video is a representative example of a serious engagement. The phrase "daily science education" (日常科普) is often used to start their additional background information. These seemingly objective and informative opinions, nevertheless, are subtle forms of subjective self-expression by users. By providing supplementary content to the video, these users believe that they have an influence on other viewers within the community. Importantly, sharing knowledge with co-viewers produces a feeling that one has earned a place in the community. As a consequence of such contribution, their membership will be more meaningful and valuable.

Also, users may derive a sense of empowerment from making narcissistic expressions that focus on themselves rather than the videos. Such behaviours reflect the emotional safety and a sense of belonging provided by a community to its members. Comments revealing personal information clearly demonstrate such a tendency. For example, one user expressed that they had "just finished an exam." Similarly, users like to rank themselves in terms of how early they came to watch the video. For example, "No. 1," "No. 2," and so forth, are marked on the screen by the users, typing themselves into virtual existence. Such off-topic practices turn the danmu space into a collective game board, encouraging viewers to experience a sense of immersion by jovially participating in the sequence of self-marking comments.

### 2.1.2. Danmu Comments with Specific Addressees

Danmu comments with specific addressees are typically written in response to one or more previous users. Although the connections between them are loose and less clear than those of threaded comments on other social sites, users have developed several linking expressions to establish connections with their addressees.

Directional symbols such as directional arrows are adopted to supplement such interactional needs. In the comment "← wrong," the "←" is applied to pinpoint the targeted comment which is inserted at an earlier

point. This arrow makes the connection between the comments relatively clear. Although several other comments might also be positioned on the left, the arrow symbol still constructs a dialogue between this comment and the targeted comment based on the similarity of their content.

Lexical repetition is another technique commonly used by users to indicate their addressees. Users also often adopt the pattern "who said + lexical repetition" to avoid merely repeating content from the earlier content. Sometimes, a user may simply refer to the targeted comment as "the previous one," or the name of the colour of the addressed comment, as in "the comment in red, well done." However, referring to a comment by colour is not universally applicable, because most of the danmu comments remain in the default colour of white.

Internet buzzword "+1" is another type of linking phrase frequently used by users to express agreement with a previous comment. For example, a user points out "Putin walks like a super star." This is followed by the comment "Star+1." By entering "+1," the user can say "I agree" or "me too" sufficiently and effectively. With the lexical repetition of "Star" as a reference, viewers can trace back which previous comment this one is agreeing with.

Sometimes, users choose conjunctions such as "because" and "so" to connect their comment to its addressee. With such linguistic and semiotic cues, users can specify with whom they are engaging. Also, linking phrases such as "correct" and "yes" are used to start comments expressing agreement.

Of course, linking phrases are not always necessary. Connections can be simply established based on the content of the comments. The question-and-answer comments are a prime example. For example, multiple answers may be prompted by a comment asking, "What vehicles can Putin drive [?]." This appears to be a common source of confusion among viewers, giving rise to speculation such as "fighter aircraft" and "submarine."

These links established by the danmu users demonstrate the mutual influence among them. A previous comment impresses another viewer, then stimulates a subsequent comment. As a result of being influenced by the previous comment, the latter commenter tries to connect with it. Despite being strangers to each other, this large group of participants creates a comfortable space in which to have relaxed and informal conversations about videos. They can challenge or support elements of, or the narratives contained within, the videos as they wish; often, in a ludic manner. Consequently, they become more attracted to the communities in which they feel that they are influential.

Users interact with their imagined interlocutors and usually do not expect a response. For them, what matters are the forthcoming viewers. Outspokenness is welcomed on Bilibili. In some respects, their communication over videos resembles playful collective gossip, in that they engage in random prattle regarding certain elements in the videos, giving both the users themselves and other viewers great enjoyment and "the comfort of validation" (Jones, 1980, p. 194). Such collective gossip generates a feeling of immersion for viewers by occupying their attention.

### 2.2. Danmu Language

In addition to the language practices mentioned above, in general, users have exploited various meaning-making strategies and semiotic resources, both verbal and non-verbal, in their communications (see Table 3). Such language practices reflect the discursive nature of computer-mediated communication in Web 2.0, which is often facilitated by the multimodality of the internet. In addition, Bilibili's user base consists of adolescents and young adults, who welcome colourful language.

A total of around 42% of the danmu comments adopted special language resources, and the rest of danmu comments use plain Chinese. Among them, internet buzzwords were the most frequently observed category. These buzzwords included an array of creative language usages. "红红火火恍恍惚惚," for instance, was used to express a loud laugh because all the

**Table 3.** Distribution of language type in danmu comments.

| Verbal vs. Nonverbal | Language | Category | Number of Danmu Comments | Percentage in the Dataset |
|---|---|---|---|---|
| Verbal | Chinese | Internet buzzwords | 1,987 | 27.21% |
| | | Chinese dialects | 156 | 2.14% |
| | | Transliterations | 237 | 3.25% |
| | | Lexical repetition | 98 | 1.34% |
| | | Conjunctions | 125 | 1.71% |
| | Foreign language | Foreign languages (e.g., English) | 74 | 1.01% |
| | | English acronyms | 53 | 0.73% |
| | | Code-mixing | 105 | 1.44% |
| Nonverbal | | Kaomojis | 216 | 2.96% |
| | | Directional symbols | 68 | 0.93% |

pinyin initials of these characters were "h," homophonic with the initial pinyin of the laughing sound character "哈" (ha). "十动然拒" is a Chinese acronym, short for "十分感动仍然拒绝," meaning "be deeply moved, but still reject." Arabic numerals like "666" express the meaning of admiration because "6" (liu) sounds similar to "牛"(niu).

Other creative language usages have also been exploited by the commenters to make their communication enjoyable, such as "因吹丝停" (yinchuisiting), a transliteration of the English word "interesting." "表情包get," a code-mixing phrase, expresses the meaning "the facial expression of someone in the video is captured and saved as a sticker by screenshotting" by combining English word "get" and Chinese word "表情包" (sticker). While some usages are common practice for Chinese netizens, they are typically welcomed by Bilibili users for encoding funny and rich meanings in short expressions and being convenient to type.

Importantly, due to the popularity of ACG culture on Bilibili, users tend to demonstrate their familiarity with its meaning-making signs and expressions in their danmu language practices. Prominently, "萌" is widely used. Originally, "萌" (もえ, moe) is used by the Japanese ACG community to describe someone or something as lovable and cute. Because the kanji of "萌" also exists as a Chinese character, it has been adopted by Chinese ACG fans and has become a Chinese online vernacular term with similar meaning.

Kaomoji or "颜文字" in Japanese, which literally means "face character," is also popular. Kaomojis are typed using a wide range of symbols and presented in a horizontal manner. For example, the kaomoji "ヽ(ˊ▽ˋ)ノ" is comprised of two eyes closed, a mouth opened; and two parentheses representing the edges of a face to mimic a facial expression. The hands are represented by the symbols "ヽ" and " ノ," resembling the action of a person stretching out their hands and shrugging their shoulders. This kaomoji captures the body language which often accompanies the utterance "there is nothing I can do." Kaomojis help commenters not only to convey complex meanings, usually related to feelings and emotions, but also to occupy a highly visible space on the screen.

Therefore, many language practices are common knowledge for Bilibili users because of their references to ACG culture. As nonusers lack that shared background information, such expressions are hard for them to fully understand. The homogenous interests and values derived from ACG products may foster a relatively high level of empathetic understanding and emotional attachment (Koh et al., 2003) to the user community. By constantly using such language practices, Bilibili users emulate and reinforce their "in-group identity" (Hsiao, 2015, p. 119) and create an invisible "boundary" (McMillan & Chavis, 1986, p. 14) to differentiate this virtual community from others. This language comprises a common symbol system that serves important functions in building and maintaining their sense of community (McMillan & Chavis, 1986). Individuals' ability to utilise this language signals their membership in this online community.

Influenced by the ludic nature of this language, an increasing number of viewers are turning their attention to and becoming embedded in their respective communities. Playfulness is one of the important prerequisites for user satisfaction in consuming and participating in online communication (Xiang & Chae, 2021). The emotional pleasure that danmu commenters experience by employing playful languages reduces the social distance among them and enhances their immersion within the community. The collective use of this playful language produces a positive evaluation of and affection towards the community, as well as even a sense of loyalty to it.

## 2.3. Clusters of Danmu Comments

Another prominent interactive pattern of danmu comments is clustering. The effect is analogous to the noisy conversations that surround you when you walk into a pub. Although they may be overwhelming at first, eventually you find that people are clustered in small or large groups, discussing issues of interest to them. The clustering of danmu comments is equivalent to the physical gathering of a crowd. Both demonstrate the momentum of collective reactions, in that some comments coalesce around a certain element in the video.

In relation to exciting moments, viewers like to type comments as part of a collective to show their passion. Such a ritualistically communal practice enhances the emotional intensity of the particular moment, be it humorous, sad, or passionate. There are 198 danmu clusters in total throughout the 24 videos. The cluster sizes range from three comments to 78 comments. Sometimes, the volume of comments simultaneously posted on the video is large enough to obscure the entire screen, forming the visual effect of a danmu curtain. There are often multiple bursts of danmu clusters along the video timeline, although not all are on the scale of danmu curtains.

For example, this effect may be observed by a small danmu cluster made up of four comments in the dataset (Figure 2). These comments are shot onto the screen within several seconds and are topically related to a scene in which Putin's motorcade is driving from his workplace in Moscow to the location of a ceremony he is attending when his car crosses the single solid line on the street.

Comment A pointed out "crossing the solid line, traffic offence." Comment B raised the same issue, noting he "crossed the line." Comment C made fun of the situation, saying "driving on two lanes, domineering exceedingly." Comment D then appeared on the screen: "What's wrong with crossing the line? I'm the president." All four comments are rooted in the common awareness that drivers in China will be fined if they are caught by the police or on camera crossing the solid line on the road.
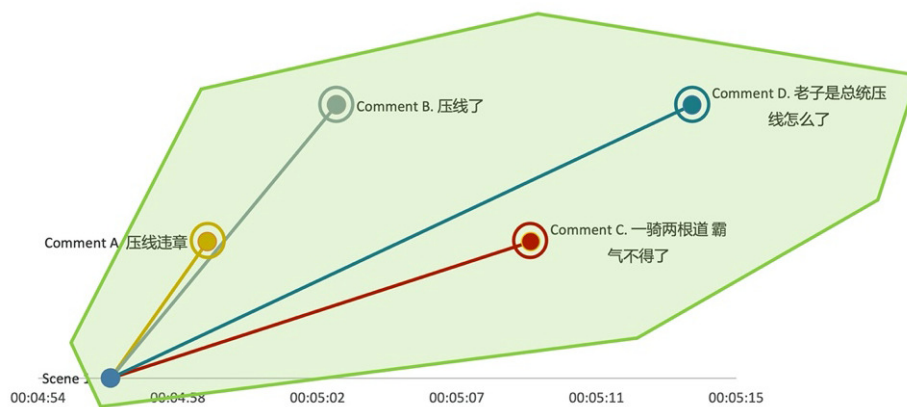
**Figure 2.** A graphic showing a small danmu cluster extracted from the dataset. Notes: The horizontal axis represents the video timeline and the vertical axis represents the height of the screen.

This indicates that danmu clusters are usually developed based on a certain pre-existing knowledge that is commonly held by the audience.

Whether Comment A begins this danmu cluster is in doubt. The first-in-first-out regulation of the danmu interface determines that the earliest comments are removed from the screen once the storage capacity of a video has been reached. Therefore, it would be difficult to identify whether this danmu cluster is inclusive of all the responses activated by the same cue in the video. The fact that a comment appears first in video time does not guarantee its actual chronological primacy.

Users rely on each other's comments as a reference when interpreting the videos, demonstrating the influential force of social interactions among community members. The comments posted on the analysed videos not only reflect the personal attitudes of the users towards the video, but also the influence of other users (Weisz et al., 2007). This herding effect, in turn, has an impact on the users' perception of the videos. Such a ritualistically communal performance, which collapses asynchronous behaviours into a seemingly simultaneous show of community, can reinforce a sense of unity in the user community. When users who share similar values, opinions, and sentiments form clusters, their emotional intimacy and connection generate a unifying force that leads to cohesive communities. Thereby, a sense of influence emerges from the clustering. Also, when a large danmu cluster occupies a prominent space on the screen, especially in the case of a bullet curtain, it invites the viewers to enjoy a flow of responses flying across the screen, facilitating their immersion into the community as well.

**3. Concluding Remarks**

Compared to other types of online commenting, the danmu interface allows its users to enjoy much greater flexibility and freedom to construct their social interactions. These unconnected viewers actively engage in multi-participant chats about the videos. The logic of socialising is integral to their behaviours and iden-

tities, unleashing a performative element within this co-viewing activity that is steeped in both playfulness and creativity. The ritualised ways in which Bilibili users communicate with each other and their aesthetic values differ greatly from other social sites. Probing into the interactive patterns of danmu comments, especially the social aims, clusters, and languages of danmu comments, this study shows that the high rate of collective commenting on Bilibili enhances users' sense of membership, influence, and immersion, contributing to the establishment and sustainability of a loosely connected community of interests. This study also contributes to the theory of SOVC by empirically testing the capability of the danmu interface on virtual community-building and suggests that the social interactions of users in homogenous and entertainment-oriented communities like Bilibili tend to have positive effects on the practice of community building, such as the playful languages of danmu which create a boundary for the Bilibili community.

However, the categories of social aims and language practices of danmu comments identified in this study are not inclusive due to limited sample size and this limitation warrants further investigation in order to produce statistically representative outcomes. We expect that this study can be applied to other danmu-enabled video sites with a heterogeneous user base, allowing the positive association between the social functionality of danmu interface and community-building to be further identified. Moreover, future studies could investigate the well-being of users, their positive perceptions of video content, and successful social and political mobilisation and collaboration within communities by examining the implications of the users' sense of belonging and self-empowerment derived from their involvement in virtual communities. Different research methods like interviews and netnography can be employed for further exploration.

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**Conflict of Interests**

The author declares no conflict of interests.

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