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Graphicon Evolution on the Chinese Social Media Platform BiliBili

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Graphicons: graphical icons used in computer-mediated communication (Herring & Dainas, 2017)

- Emoticons (kaomojis): combined keyboard symbols for expressing emotion
- Emojis: more colorful, more representational (as opposed to schematic); express a wider array of concepts than ASCII emoticons
- Stickers: character-driven illustrations or animations typically offered as thematic sets on social media platforms

:-) (Western), ^_^ (Japanese kaomoji)



Graphicon evolution (I)





Figure 2 Three phases of graphicon evolution.

Graphicons tend to follow an evolutionary trajectory consisting of three phases.

(Konrad, Herring, & Choi, 2020)



Graphicon evolution (II)



- The main criteria for determining which phase a graphicon is currently in are *frequency of use* and *pragmatic changes* in graphicon use.
- > Used interview and survey methods to infer the evolution trajectory of emojis and stickers.
 - Stickers are more contextually specific than emojis.
- Posited that graphicon evolution is more advanced in Asia than in the West.

(Konrad, Herring, & Choi, 2020)





- Design: carries rich cultural messages (de Seta, 2018) and interacts with the Chinese character (Li & Zhu, 2019)
- Functions:
 - playfully subvert reality and avoid internet surveillance and censorship (Li & Zhu, 2019)
 - resolve tension between the openness of social media and constraint-bounded social norms (Zhang et al., 2021)



Graphicons on Chinese social media



- > Kaomojis were introduced in the mid-1990s.
- > Emojis were first used in the early 2000s.
- Stickers became available on the QQ and WeChat platforms in 2012.

(de Seta, 2018)



Research questions



- > What are the relative frequencies of each type of Chinese graphicons, and how have their frequencies changed over time?
- > What trends are evident from the most frequently-used graphicons of each type?



Data: the BiliBili platform



- > A video sharing platform like YouTube, which allows users to post comments below the videos.
- The only Chinese platform allowing automatic capture of longitudinal data that include kaomojis, emojis, and stickers.



Data: BiliBili comments



Comments and replies to comments from the videos on the channel of BiliBili's annual Spring Festival Gala Show

- Mash-up videos of content provided by users to celebrate the Chinese New Year (CNY).
- Comments dating back to 2010.
- > A total of 1,031,183 messages (including both comments and replies).
- > Messages are on the topic of CNY celebration.



Homepage of the channel





https://space.bilibili.com/1868902080/video, captured 06042022



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Example of comments from the 2022 show

Developing lists of graphicon types



- Kaomoji: semi-supervised process of deep learning and manual identification; manual annotation done to train deep learning models of BiLSTM and CRF
- Emoji: the Python emoji module and part of the set of "Yellow Faces" from the sticker package
- Sticker: the package of BiliBili stickers available on GitHub, excluding part of the set of "Yellow Faces"



The set of Yellow Faces











> Frequency distribution of graphicons

> Top 10 graphicons





Fig 2: Frequencies (tokens) of 3 graphicons

Fig 3: Frequencies (types) of 3 graphicons

- The use of kaomojis shows a clear trajectory of rising to a peak and then declining, replaced by emojis and stickers.
- In the last three years (2020–2022):
 - Emojis used with high frequency but with a limited number of types.
 - Stickers decrease in tokens, but increase in types.

Frequency differences in comments and replies





Fig 5: Frequencies of graphicon use in comments and replies.

Fig 6: Frequencies (tokens) of 3 graphicons in comments and replies.

- > More graphicons were used in comments than in replies.
- More kaomojis and stickers were used in comments, but the use of emojis was roughly the same in comments and replies.

Findings (frequency)



- The use of kaomojis fits into the three phase trajectory, but the trajectories of emojis and stickers are more complex.
 - Token frequencies support that emojis are on the rise, but type frequencies support that stickers are on the rise.
- More kaomojis and stickers are used in comments than in replies.



Top 10 graphicons



	Kaomojis	Meaning	Freq	Emojis	Meaning	Freq	Stickers	Meaning	Freq
1	-(°- °)つロ	Cheers	108691		Playful dog face	28495	女少!	PWS: Wonderful	27179
2	$(= \cdot \omega \cdot =)$	Cat	19217		Being blessed	19420	好耶	PWS: Hooray	16853
3	(̄▽ ̄)	Joy	14668		Cheering for someone	6603		PWS: Obtaining trivia	8041
4	(`• ω •')	Joy	12815		Wonderful	6077		Tiny TV set: smile	4920
5	(°A ₀)\	Greeting happily	11427		Smile	5740	(È)	Tiny TV set: like	4439
6	~(~_∇_)~	Dancing with music	7319		Year of the Ox	5599		2233 girls: laugh out loud	4369
7	$(\frown \nabla \frown)$	Joy	6642	+ \$	Sparkles	5230		Happy new year	4318
8	(╯°□°)╯(┸_┸	Flipping the table	5742	Co	Crying with laughter	5154	领爆	PWS: moving glow sticks for someone	3273
9	(≧∇≦∖)=3=3	Moving forward happily	4997	3	Year of the Rat	4777	2021	2021 gala show	2528
10	ר ([−] ∇ [−]) ר	Joy	4459		Wailing	4198	(2233 girls: act cute	1994

Findings (top 10 graphicons)



- > An evolution from general emotion expression to meanings localized in platform discourse practices.
- Increasing integration of Chinese characters in emojis and stickers.



Contributions



- > Analyzed large longitudinal dataset, including 3 types of graphicons.
- Findings partially support Konrad et al.'s (2020) evolutionary model regarding the relationship between kaomojis and other types of graphicons.
 - Relationship between emoji and stickers is more complex.
 - Extended the specificity of stickers as compared to emojis: more specific in relation to community discourse practices.
- Explored more fine-grained distinctions between types and tokens, and between comments and replies. Each of these should be taken into account for a more complete picture of graphicon evolution.

Limitations



- Limited data from 2022 might have affected the evolutionary trajectory.
- Our data center on the topic of the Chinese
 New Year; other topics would display different
 themes of graphicon usage.
- Trends in Chinese graphicon usage might differ on other platforms such as WeChat or Weibo.





Thank you!

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