A Study on the Consequences of Kongping Behaviour in the Framework of the Spiral of Silence and the Weighted and Calculated Needs for New Media
-- Taking Weibo Kongping as an Example

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Abstract: Under the influence of the "artificial intelligence +" trend, a large number of highly "automated" and "anthropomorphic" robotic social water army have emerged in new media platforms to participate in kongping (which describes mediums and bloggers use artificial water army or robotic water army to control reviews for making the comment content or public opinion trend meet their own expectations.). From the traditional artificial water army to "fake social media accounts" to robotic social water army. On the one hand, kongping is becoming more and more low-cost, accurate and highly intelligent. But on the other hand, the large-scale robotic social water army also have an impact on users' media adoption and usage habits. This paper examines the consequences of kongping based on the spiral of silence theory and the weighted and calculated needs for new media. The results of the study show that the more kongping behavior there is on Weibo, the more silence it provokes. And kongping behaviour reduces the frequency of users' use of Weibo.
Keywords: spiral of silence; weighted and calculated needs for new media; kongping behavior; robotic social water army

1. Introduction

In the era of accelerated development of Internet technology and artificial intelligence, online water army has undergone the development process from traditional artificial water army to low-intelligence "fake social media accounts", and then to robotic social water army with a high degree of anthropomorphism and social attributes. Nowadays, the bots learn the language expressions and media habits of real users through algorithmic crawling and big data, so as to simulate and generate a language system that matches the real users. With deep learning capabilities, these social bots are able to penetrate the public opinion space to a deeper degree. However, as a communication tool, social bots are manipulated by capital or humans to deliver purposeful messages, disrupting the normal social landscape and influencing public opinion in a perverse way. In the case of Weibo, for example, we have observed that a large number of robotic social water army have started to move into Weibo to participate in kongping, which on the one

hand does serve the purpose of comment control. But on the other hand, it has also led to a decline in the proportion of active users on Weibo, increasing the tendency for users to flee the site. In this regard, we are curious to know what the consequences of kongping on Weibo are. What is the consequence of social bots participating in kongping on Weibo?

2. Literature Review

2.1 A literature review on the spiral of silence theory

2.1.1 Literature review on the spiral of silence theory

German communication scholar Elisabeth Noelle Neumann, E, proposed the spiral of silence in her 1974 paper The Spiral of Silence: A Theory of Public Opinion. The spiral of silence theory emphasizes three core concepts: fear of isolation, climate of opinion and quasi-statistical sense (Zhu, 2012). 2012). Fear of isolation leads individuals to perform quasi-sensory statistics on the opinion climate created by the media, the results of which influence whether or not individuals openly express their true opinions, resulting in the reinforcement of dominant opinions and the silencing of weaker ones. The spiral of silence theory "reveals the tendency to oligarchize public opinion" (Guo, 2015).

However, some scholars have also questioned the spiral of silence theory. Foreign scholars such as GLynn & Mcleod have pointed out that the variable of 'isolation fear' is difficult to quantify accurately and have thus questioned the scientific validity of the spiral of silence theory. Mutz, for his part, points out the difficulty of accurately assessing the climate of opinion due to the limitations of individual rationality, third-person effects and cognitive dissonance. Scholars Shoemaker, Breen & Stamper have questioned the adaptability of the spiral of silence theory to different cultural contexts and spatial and temporal conditions.

2.1.2 Literature review of the double helix theory of silence

With the shift from mass communication to electronic communication, many scholars have proposed the concepts of the "anti-spiral of silence" and the "double helix of silence". In A Preliminary Study on the Limits of the Spiral of Silence, Chinese scholars Bifen Wang and Ying Wu pointed out that the anonymity of online communication has widened the space for expression, weakened group pressure and the fear of isolation, and made the conditions for the creation of the spiral of silence lacking. In The Anti-Silence Spiral in the Internet, scholar Jun Yao proposed that some "minorities" would be firm in their opinions, causing the audience to think the opposite way and gradually become the "majority", forming an "anti-spiral of silence ".

In their article From "Negative Silence" to "Positive Interaction": The "Double Helix of Silence" Effect in the New Media Environment, scholars Xianchun Gao and Wei Xie first proposed the "double helix of silence" based on the changes in the new media environment and the research dilemma of the spiral of silence theory. Their research argues that in the new media

environment, the mass media, which disseminates information from the top down, and a specific community of individuals, which diffuses information from the bottom up, each form an opinion spiral that interacts with each other and has a decisive influence on social opinion and individual opinions and behaviour. In The Path and Channeling of Public Opinion Dissemination in Public Emergencies from the Double Helix Theory, scholar Jie Zhang examines the spread of public opinion in public emergencies based on the "double helix of silence" theory, and explores ways to channel it.

2.2 Literature review of the weighted and calculated needs for new media

With the development of new media, scholar Jianhua Zhu has proposed the "Weighted and Calculated Needs for New Media" theory based on the uses and gratifications approach, which suggests that audiences will adopt and continue to use a new media when and only when they find that an important need in their lives cannot be met by traditional media. And they will only begin to adopt and continue to use the new media when they believe it can meet that need. The basic premise of the weighted and calculated needs for new media is that audiences are active and that their media use is purposeful.

Chinese scholars Xiaohua Wang and Lina Yan in A Study of Factors Determining Audience Choice of the Internet - A Re-Examination of weighted and calculated needs use weighted and calculated needs theory as an analytical framework to study the factors influencing audience choice of the Internet or newspapers through audience surveys. The study found that when explaining the adoption of weighted and calculated needs for new media is not an independent variable but an intermediate variable influenced by individual differences. In A Study of Internet Users' Usage Scenarios in the Era of Fragmentation - A Supplement to the Theory of weighted and calculated needs for media, scholar Shuo Chen takes the popularity of Internet mobile terminals and the "fragmentation" of usage scenarios as the background. The results show that media use and substitution are no longer a "zero-sum game" and that the use of new media is no longer a simple substitution.

2.3 Literature review of the social bot phenomenon

Foreign scholar Boshmaf defines a socialbot as an intelligent program that runs its own social accounts in online social networks and has the ability to send messages and connection requests automatically, emphasizing that socialbots can achieve automatic information dissemination. According to Shuang Zhao, the function of robotic water army is to "replace traditional manual use of social media accounts for public opinion propaganda".

In response to the study of robotic water army, foreign scholars have focused their attention on the following aspects. Firstly, to study the impact of robotic water army on political communication. Scholar Summer Lightfoot, in conjunction with the use of robotic water army in general elections in the United States, France and Germany, argues through comparative studies that social bots have had an impact on global politics. Secondly, the study of robotic water army’

monitoring. Scholar Ferrara proposes three methods of identifying robotic water army, namely using social network information, crowdsourcing and artificial intelligence systems. Thirdly, research on the negative impact of mass infiltration of robotic water army in online platforms on user privacy. Scholar Boshmaf Y's research shows that the penetration rate of Facebook by robotic water army in online platforms is 80%, and the rate is proportional to the degree of user privacy violation.

Chinese research on robotic water army is relatively limited, focusing on the following two aspects. Firstly, the impact of robotic water army. In The Evolution, Problems and Governance of Robotic Water Armies, scholar Ting Rong points out that highly "automated" robots pose a challenge to the normal public opinion environment and Internet governance. In The Development, Social Hazards and Governance of Robotic Water Army, scholar Zhiyi Zeng also points out the same problem, arguing that the government should use artificial intelligence technology to strengthen control over robotic water army and further implement the real-name system on the Internet. Secondly, research on the monitoring of robotic water army. In Research on the Identification of Chinese Online Water Armies, scholars Haimei Yang and Heng Wang conclude that the monitoring of robotic water army relies mainly on the analysis of content characteristics, user behaviour and user relationship characteristics from the perspective of the target areas of robotic water army.

However, the above studies do not examine the impact of large-scale use of robotic social water armies on the spiral of silence, nor do they answer questions about whether the act of controlling comments on Weibo has an impact on users' media weighing demend.

2.4 Problem formulation

Therefore, this paper will analyse the impact of robotic social water army's participation in Kongping on users' expression of opinions and the weighted and calculated needs for new media. It based on the theory of the spiral of silence and the weighted and calculated needs for new media, in conjunction with the Kongping behaviour of robotic social water army on the Weibo platform.

3. Research Methodology and Process

3.1 Profile of the interviewees

In this paper, a total of nine Weibo users were interviewed in depth in April 2023, six of whom were female and three male; four with a Bachelor's degree and five with a Master's degree. All in-depth interviews were conducted as telephone interviews. The results of the interviews were collated into verbatim transcripts, with a total of 34,299 words in the interview transcripts. The processing the content of the interviews was completed by the authors. The basic profile of the interviewees is shown in Table 1.

Table 1: List of basic information about the interviewees

Interviewee Profile					
No.	Gender	Academic qualifications	Degrees	Hours of Weibo use	Interview date
1	Female	Undergraduate	Arts and Sciences	1 hour ~ 4 hours	2023-04-02
2	Female	Master's degree in progress	Arts and Sciences	Half an hour ~ 1 hour	2023-04-02
3	Female	Master's degree in progress	Arts and Sciences	1 hour ~ 2 hours	2023-04-02
4	Male	Master's degree in progress	Business Studies	Half an hour ~ 1 hour	2023-04-02
5	Female	Undergraduate	Arts and Sciences	Half an hour ~ 1 hour	2023-04-02
6	Male	Undergraduate	Engineering	Half an hour and under	2023-04-02
7	Female	Undergraduate	Arts and Sciences	1 hour or so	2023-04-03
8	Female	Master's degree in progress	Arts and Sciences	Half an hour and under	2023-04-03
9	Male	Master's degree in progress	Engineering	Half an hour and under	2023-04-03

3.1.1 Interview outline production

The research hypothesis of this paper is that:

H1: The more Kongping made on Weibo for those within the circle, the more they provoke resistance;

H2: The more Weibo Kongping is made for those outside the circle, the more silence it arouses;

H3: The more robotic Kongping is, the more silence it provokes.

The interview questions were divided into three main sections:

The first part, mainly concerns the basic information of the interviewees, including their gender, age and education.

In the second part, the research questions were downscaled into interview questions. This included their perceptions of Weibo Kongping, specific media use habits and media adoption strategies.

In the third part, the preparation which deals mainly with the questions that may be dug deeper possibly.

3.1.2 Interview process

Semi-structured in-depth interviews of an average length of 22 minutes were conducted with each of the nine interviewers who used Weibo more frequently in this study. The interviews began in April 2023 and ended in April 2023. The interviewees included firstly the authors' classmates, and secondly a larger research sample was recruited through classmate referrals or Weibo

platforms.

According to the principle of maximum sampling in qualitative research methods, by the time the ninth interviewee was recruited, all the interviews were sufficient to answer the research questions and the sample collection was closed. The respondents varied in age, occupation, level of education, location, and media use habits, with a low degree of homogeneity.

3.1.3 Analysis of interview data

The average length of each interview in this study was approximately 22 minutes, with the shortest being 12 minutes and the longest being 29 minutes. The frequency of buzzword and high frequency word clouds in the interviews are shown in Table 2 and Figure 1.

Table 2: Frequency of buzzwords in the interview text

Keywords	Word Frequency
Weibo	218
Kongping	172
Robotic Water Army	163
Leave a comment	57
Silence	20
resentment	34
True opinion	24
Star	40
Collective	24

Figure 1 Word cloud map of the interview text



The material analyzed in this study is the content of the interviews and is open coded, i.e. the data collected is a optional process, which is firstly "crumbled" and "broken up" and given a conceptual label, then reassembled in a new way to define the concept and discover the category. The steps are: (1) labeling the data, extracting the corresponding concepts, and defining the phenomenon; (2) moving the concepts into deeper analysis to uncover more general categories; (3) giving precise names to the categories; and (4) discovering and summarising the nature and

dimensions of the nature's categories.

Table 3 Open coding categorization of interview content

Category	Original information statements
Influence the use of Weibo	Interviewee #1: "If there is kongping then I will doubt the authenticity of the event like this..I don't really like this kind of atmosphere..I usually just interest the comments. If I see kongpingt, if every post's comments are controlled then I will probably give up using Weibo." Interviewee #2: "If it's all consistent stuff, consistent comments, it's boring,, and then probably wouldn't want to play it again." Interviewee #3: "I think it might have affected me after that. Because if real comments from people completely gone, I would definitely give up." Interviewee #5: "I will reduce the using time of Weibo because of robotic kongping behaviour. Sometimes I already lost interest in reading those posts" Interviewee #7: "Sometimes I feel tiring, I am not interesting to see kongping., There's some questioning of the ecology of the platform. And I feels expelled when I see much kongping on Weibo." Interviewee #8: "I would probably cut back on my use of Weibo" Interviewee #9: "This robotic kongping behavior on Weibo causes me to reduce the probability of using it"
Awareness of kongping behavior	Interviewee #1: "I think the person who buys this kind of online water army, he has a problem with this strategy" Interviewee #3: "I don't understand why they are like this. I don't think they (the bot online water army) should exist, very much not, why should they exist?" Interviewee #8: "And I can understand why they did it, but I don't think it makes sense, and then it doesn't give people a very good perception of this" Interviewee #9: "I think this kind of stuff is one of the egregious situations"
Artificial Kongping impact	Interviewee #1: "I can accept robotic kongping. But frequent human kongping would make me probably choose to give up using Weibo." Interviewee 2: "If they control me within the Super topic and don't let me send anything. I probably won't want to send my thought" Interviewee #3: "What I don't like is the kongping in official news, or a more controversial event. I think this kind of thing makes me not able to see the real point of view" Interviewee #4: "I will close the comment section when I see there is artificial Kongping." Interviewee #8: "I think to a certain extent it provokes rebellion in others" Interviewee #9: "I will give up send my opinion and use the Super topic if there is Kongping behaviour within the hashtags."

Influence of robotic water army kongping	Interviewee #1: "I think it's actually a program, I don't think it has much of an impact on me. ..... I would ignore it" Interviewee #2: "I should be more reluctant to publish when there are bots kongping in the comments section" Interviewee #3: "I don't think the impact is as great as artificial ones, and if it was a social bot online water army I would definitely voice my true opinion." Interviewee #4: "I feel that this is no better than closing comment sections. I feel very speechless. This will also cause disgust and rebellion after reading it" Interviewee #7: "The robotic water army has been involved in kongping within entertainment activities or commercial activities, and this behaviour is acceptable"
Silence on the comment sections	Interviewee #2: "I should be more reluctant to publish when there are bots kongping in the comments section" Interviewee #3: "I Only express my opinion when it agrees with the majority, otherwise I will hide my true opinion and choose to be silent" Interviewee #4: "I'm definitely inclined to be silent since someone have kongping behavior" Interviewee #5: "When the robot dose kongping, I choose to remain silent and just ignore it" Interviewee #6: "I would take offense when I see a online water army or artificially go for malicious comments, but I wouldn't take any specific measures" Interviewee #7: "Didn't want to publish it. It just felt like there was natural antipathy" Interviewee #8: "I would choose to be silent, because I find it troublesome"

4. Research Findings and Discussion

4.1 Kongping conducted by humanbeings has a greater impact on users' opinions publishment than conducted by robots

During the interviews, respondents generally said that kongping conducted by humanbeings were more likely to influence their behaviour in expressing their opinions. The majority of interviewees held this statement because they felt that they could easily get into arguments with others on the Weibo platform if they expressed inconsistent views, and even put themselves at risk of being subjected to online violence. For example, interviewee #1 said, "If I didn't have a very strong will to hold this opinion, I would probably go along with the public because I am more afraid of suffering from cyber violence". Interviewee #3 also said, "..... but I would definitely voice my true opinion if I met a social bot."

4.2 The more frequent the kongping, the more it provokes silence

In interviews, respondents generally said that they were more inclined to be silent when there was kongping behavior, whether outside or inside the Super topic.. The interviewees said that they remained silent partly to avoid arguments, but also because under this situation, their expression of opinion seemed meaningless. Interviewee 2 said in the interview: "Because it's a bot, and then I just don't see the point of differentiating anything anymore. Even if you express your opinion, you're still overwhelmed by these bots' opinions, those tens of thousands of big data, the same comments they post, and I think then I don't have to say that anymore either. " Interviewee #4 said, "Since someone have kongping behavior, I definitely tend to be silenced ..... I can definitely only post comments that he wants me to appear in, and I definitely can't post views that oppose him." And #4 also believed that frequent kongping would provoke rebelliousness, but even under the effect of rebelliousness, he would not post comments in revolt because it was meaningless. This study's H1: The more comments are made, the more rebellious they provoke for those within the circle is not confirmed. The H2: the more comments are made, the more silence is provoked for those outside the circle and H3: the more comments are made by bots, the more silence is provoked were both supported.

4.3 Weibo kongping behaviour influences users' usage habits and media choices

In the interviews, the majority of respondents said that frequent kongping made them spend less time on Weibo. Interviewee #7 felt "banished" by Weibo kongping practices, while interviewee #8 said, "It's just annoying, and I'll probably use Xiaohongshu more because I think there are more comments from real people." However, respondents generally said that the current Weibo kongping would not cause them to abandon their use of Weibo and seek a new medium, as there was still content in Weibo that interested them and it was one of their key channels for the latest news. But respondent #3 also said, "If the real comments were completely gone and it all became this (kongping), I would definitely give up using Weibo."

5. Summary and Reflection

Through in-depth interviews with nine Weibo users, this paper clarifies the group's perceptions of Weibo kongping and the impact of Weibo kongping on users' expression of opinions and media use.

In the case of Weibo kongping, when users' opinions differ from those of the kongping, they are more likely to provoke silence rather than resistance, which further reinforces the effect on spiral of silence in public opinion. In addition, the kongping of Weibo affects the user’s experience, causing users to use Weibo less frequently to different degrees, but users do not completely abandon their use of Weibo while seeking and using new media. In the case of kongping conducted by humanbeings, users with minority views tend to be silent in order to avoid arguments and online violence. And in the case of robotic kongping, users lose the desire to speak and choose silence when they think the communication is ineffective. On the one hand, this situation destroys the normal ecology of the public opinion arena, causing a gradual decrease

in real and effective communication in the arena and reducing the public's desire to participate in public and political life. On the other hand, in emergencies, Weibo is an important means of guiding public opinion, and the interviewees of this study also expressed that it is understandable and appropriate to support kongping for the sake of national affairs. Respondents in this study also said that when they could not tell whether robots were involved in the comment section, they might be persuaded by the commenter's opinion and accept public opinion guidance. Therefore, in the future, Weibo platforms could take steps to optimise artificial intelligence technology in the area of social bot kongping, so that bot kongping is more "seamless". At the same time, it is also important to ensure that the "degree" of kongping, so as to avoid too frequent kongping behavior disrupting the order of the public opinion arena or leading to the loss of users.

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