

Algorithm-Driven Identity Politics: Role of Social Media in Polarisation and Mobilisation

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Abstract. This is an essay that explores the role of recommendation algorithms in the communication of identity politics and their sociological and political implications, focusing on how the phenomena of filter bubbles and information cocoons reshape users' information exposure and cognitive structures. By combining Baudrillard's theory of mimetic environments, Bourdieu's theory of cultural capital, and Mead's theory of symbolic interaction, the article reveals how recommender algorithms reinforce group identities and exacerbate social divisions through selective pushing of information. In addition, the proliferation of disinformation exhibits higher dissemination efficiency in algorithm-driven environments, posing challenges to the openness and inclusiveness of the public sphere. The article calls for multi-dimensional interventions in technological design, policy regulation and public education to mitigate the masking effect of algorithmic communication and the negative impact of disinformation, and to provide solution paths for building a pluralistic and open digital public sphere. This article aims to provide theoretical support for understanding the double-edged sword effect of recommendation algorithms in identity politics and practical suggestions for the governance and optimisation of digital society.

Keywords: Recommendation Algorithms; Filter Bubbles; Information Cocoons; Disinformation; Identity Politics; Mimetic Environments; Cultural Capital; Group Identity; Social Fragmentation; Digital Public Sphere.

1. Introduction

Identity politics, as an important field of study in contemporary political science, centres on the struggle for the redistribution of social resources and discourse through the identification and expression of group identity [1] (Fukuyama, 2018). This concept originated from the concern for the rights and interests of marginalised groups in society, such as the expression of issues in the areas of race, gender, religion and sexual orientation. So in the context of globalisation and social diversity, we can argue that identity is no longer just a label for personal belonging, but an important driver of political conflict, especially in contemporary democratic practice, where the emphasis on identity often transcends traditional class and ideological boundaries.

However, traditional identity politics relies heavily on geographical, linguistic and cultural commonalities, and its reach is limited by physical space and the dissemination capacity of traditional media. With the rapid development of digital technology, especially the popularity of social media, the expression of identity politics is undergoing profound changes. Digital platforms, with their transcendence of temporal and spatial constraints, provide a more dynamic and decentralised vehicle for the expression of identity issues [2] (Bennett & Segerberg, 2012).

The rise of social media has redefined the mode of communication and participation in identity politics. Compared to traditional media, social media's personalised recommendations, decentralised network structure and instant interaction have significantly lowered the threshold for users to participate in issue discussion and social mobilization [3] (Pariser, 2011). In addition, recommendation algorithms are a core element in the social media ecosystem, analysing user behaviour through big data and pushing personalised content to enhance user experience and platform stickiness. Therefore, in the broader context of identity politics, algorithm-driven social media are reshaping issue communication and social mobilisation through two main mechanisms.

As a result, we can see that algorithms have provided marginalised groups with a wide range of spaces for expression, allowing them to break through the monopoly of traditional media on discourse. For example, the #MeToo movement spread rapidly across the globe through social media hashtags,

garnering widespread attention for gender equality issues [4] (Clark, 2016). On the other hand, the 'filter bubble' and 'information cocoon' effects triggered by algorithmic recommendations lead to long-term exposure of users to information streams that are consistent with their established preferences, thus reinforcing intra-group identities while weakening cross-group understanding and dialogue [5] (Sunstein, 2018).

In addition, "emotional priority communication" further aggravated the opposition and polarization of identity politics. With the development of media technology and the richer and more accurate means of expression, emotional communication is increasingly prominent in mass communication and has a greater impact on society. Research has shown that negative emotions (e.g., anger, sadness, fear) are more easily recognized and pushed by algorithms, which not only amplifies the rate of transmission of identity issues, but also leads to emotional confrontation among social groups [6] (Vosoughi, Roy, & Aral, 2018). Such dual effects highlight the contradictory role of social media in identity politics, that is, as a tool of expression and mobilization, it also becomes a booster of social division and conflict.

In recent years, the role of social media algorithms in shaping identity, political communication and social mobilization has attracted more and more academic attention. Although the existing research reveals the influence of bubble filtering, information cocoon and emotional priority communication on social polarization, there is still a lack of comprehensive combing on how the algorithm systematically shapes the mechanism of identity politics. The lack of this part of the theory limits our in-depth understanding of the role of the algorithm in promoting the spread of issues, strengthening identity and intensifying social division.

Based on the new framework of "algorithmic identity politics", this paper discusses how algorithmic recommendation affects the communication dynamics and social consequences of identity politics by integrating existing theoretical and empirical research. At the same time, it reveals how the algorithm can improve the communication efficiency of identity politics, and analyzes the potential risks such as information simplification and group opposition, so as to provide theoretical support and practical reference for platform design and algorithm governance, in order to achieve the balance between communication efficiency and social harmony.

2. Theoretical Background of Identity Politics

2.1 The Rise and Traditional Limitations of Identity Politics

Habermas (1989) pointed out that the formation of public sphere in modern democratic politics often excludes the voices of marginal groups, which leads to the inability of these groups to express their interests through established systems. Therefore, identity politics has become a tool for these groups to challenge the existing power structure, emphasizing the needs of "dignity" and "equality" to strive for institutional recognition and fairness in resource allocation. [7]. Therefore, identity politics is particularly important in a pluralistic political system because it directly involves the intersection of cultural identity and political power.

From a sociological perspective, identity is both a product of individual and societal interactions and a component of symbolic exchange within social hierarchies. Identity politics reinforces the self-identity of marginalized groups through collective action, creating mechanisms to counteract the "stigmatization" imposed by mainstream society. Social movement theory further demonstrates that identity recognition is a core resource for mobilization, functioning not only to enhance internal cohesion but also to leverage symbolic expression in gaining political and social support from external actors.

Despite the far-reaching critical potential of identity politics in theory, its practical form is significantly limited in its traditional phase. First, spatially, traditional identity politics is highly dependent on locality and linguistic community. For example, the rise of the civil rights movement in the United States relied on the geographic concentration of segregated areas, which made organisational mobilisation more efficient but made it difficult for its influence to extend beyond

specific regions. Second, in terms of scope of communication, the impact of identity politics is limited by the reach of traditional media. This limitation has prevented the development of a national or even global consensus on many identity politics issues, which in turn has limited the possibilities for their practice on a wider scale.

The arrival of postmodern society has prompted identity politics to gradually break through the traditional limitations. Bauman (2000) analyses the mobility and uncertainty of postmodern society from a sociological perspective, and argues that the identities of individuals and groups are no longer fixed and unchanging, but dynamically evolve in response to temporal and spatial changes. [8] This theory reveals the internal logic of the shift in identity politics from fixed belonging to mobility and diversity. Postmodernism's emphasis on the deconstructive nature of culture and the decentralisation of power has enabled identity politics to break away from traditional geographical and cultural constraints and move in the direction of individualisation and globalisation.

Young (1990) deepens this perspective in political science theory by proposing the framework of 'multicultural democracy', which advocates the accommodation of identity diversity through institutionalisation. She points out that while traditional identity politics relies too much on a single cultural narrative, identity politics under postmodern conditions provides a theoretical basis for multicultural coexistence by deconstructing the dominant narrative. [9] This transformation not only expands the scope of identity politics in practice, but also gives it greater political legitimacy in the context of globalisation.

In addition, the sociological view of technology further reveals the technological conditions for identity politics to break through its limitations. In the traditional stage, identity relied on face-to-face social interactions, but the rise of digital technology has injected new vigour into identity politics. The Internet and social media have expanded the reach and impact of identity politics through the construction of a virtual public sphere. Bimber (1998) points out that ICT not only reduces the mobilisation costs for social movements, but also enables the issues of identity politics to cross geographical boundaries quickly and form a global network of identities. [10]

In short, the rise of identity politics is both a critique of power structures and a response to issues of social identity and resource distribution. From the analysis of power in political science to the study of group identity in sociology, identity politics presents an interdisciplinary complexity. Although it was subject to both spatial and cultural limitations during its traditional phase, the mobility, diversity and technological advances of postmodern society have provided the conditions for breaking through the limitations, promoting a profound transformation of this form of political action.

2.2 Identity Politics in the Digital Age

The spread of digital technology, especially the Internet, has provided identity politics with a brand-new medium of expression and social space. This transformation breaks through the limitations of traditional physical boundaries and enables identity politics to be practised in a wider range of contexts. The trans-regional and instantaneous nature of the Internet has given identity greater mobility and diversity [11] (Cheney-Lippold, 2017). Through social networking platforms, individuals can quickly connect with similar groups across the globe. For example, specific hashtags, a digital symbol, not only mark the core of issues, but also enhance interaction and belonging among individuals. This mode of interaction contributes to the digital reproduction of identity, making group identity no longer limited to geographic location or cultural background, but relying on virtual space to achieve cross-cultural connection and dissemination.

Olson's (1965) logic of collective action suggests that traditional social movements usually face high organizational costs, [12] while digital technology significantly improves the possibility of collective action by reducing the cost of information dissemination and group mobilization. For example, the digital platform can quickly gather individuals with common demands by pushing the content that is consistent with the user's identity preference through the "recommendation algorithm", thus promoting the occurrence of collective action. This technical path breaks the traditional group

boundaries based on geography and language, and extends the practice of identity politics to the virtual space of globalization.

Recommendation algorithm has further promoted the digitalization of identity politics. Based on the analysis of users' behavior data, the algorithm accurately identifies users' identity preferences, and strengthens their sense of group belonging through personalized content push. Based on behavioral data, this personalized distribution model redefines the logic of topic communication and significantly improves the communication efficiency and coverage of identity politics. For example, when users participate in a specific topic, the algorithm will automatically recommend more relevant content, thus enhancing users' attention and emotional input to the topic. This technology not only optimizes the construction path of identity, but also promotes the overall transformation of identity politics from physical space to virtual space.

However, this kind of technical empowerment is not without risks. Recommendation algorithms tend to push information consistent with users' existing preferences by analyzing users' behaviors. This leads to information stratification, which intensifies the cognitive isolation between users and forms “echo chamber effect” and a “filter bubble”. [13] (Van Bavel et al., 2021). This cognitive isolation not only weakens the ability to engage in cross-group dialogue but can also lead to further intensification of confrontations between different identity groups. For example, some extreme or emotional content is concentrated and expanded under the impetus of the algorithm, which forms group resonance, thus intensifying the conflict in identity politics issues and leading to the intensification of social division.

The “frontstage and backstage” theory proposed by sociologist Goffman (1959) can help us understand the identity display and interaction patterns in virtual space. In the digital space, the identity of individuals is displayed more through self-planned content than by geographical or cultural background. The mobility and plasticity of this identity enable individuals to switch roles among multiple groups flexibly, but at the same time, it may also lead to new social contradictions due to the excessive strengthening of identity. [14]. For example, some users may use virtual identities to conduct false mobilization or create conflicts, thereby undermining the authenticity of identity politics.

Above all, the digital transformation of identity politics not only redefines the connotation of identity, but also changes its expression and communication mode. The immediacy and decentralization of virtual space provide an important tool for marginalized groups to fight for the right to speak. However, the information control problems and algorithm bias that accompany this process also bring challenges to the practice of identity politics. Such a migration from physical space to virtual space highlights the important role of digital technology in reshaping social interaction and political participation. Further research needs to explore how to achieve a balance between technological empowerment and social governance, so as to promote the positive development of identity politics in diversity and inclusiveness.

3. The Use of Algorithms in Identity Politics

Recommendation algorithm is the core technology of social media ecosystem, and its role in identity politics communication is mainly reflected in three aspects: shaping users' cognition, strengthening group belonging and promoting topic communication. Through personalized recommendations, algorithms can analyze user behavior data, such as browsing history, likes, and social interactions, to push content that is highly relevant to user interests. This targeted distribution of information not only enhances user engagement with specific issues but also constructs what is referred to as “algorithmic identity”—a concept where users' identities are continuously defined and reinforced through algorithmic logic. [11] (Cheney-Lippold, 2017). Mao Zhanwen et al. (2024) further suggest that algorithmic identities are both ‘mirrors’ reflecting users' interests and preferences, “bridges” connecting users to specific social issues, and “toys” that can be used to keep users trapped in entertainment and one-sided information by reinforcing specific content, that reinforces specific content to make users fall into the predicament of entertainment and one-sided information. [15]

3.1 Emotion-first Communication: The Deeper Logic of Algorithm-Driven Identity Politics

The impact of emotion-first propagation as an important mechanism of recommendation algorithms in identity politics propagation is not only reflected in the enhancement of users' sense of group belonging, but also exacerbates the phenomenon of information homogenisation and cognitive bias. Li Fang (2022) pointed out that emotional and polarised content becomes a priority target for recommendation algorithms to push due to its property of attracting users' attention [16]. Related research further suggests that negative emotions (e.g., anger and fear) are more likely to trigger users' attention compared to positive emotions, and are therefore more likely to be prioritized by algorithms [6] (Vosoughi et al., 2018). In the 2020 U.S. presidential election, the Facebook algorithm's prioritised push of emotional content significantly exacerbated the fragmentation of the voter base. While this mechanism facilitated the dissemination of identity issues, it also inevitably led to social polarisation and a weakening of cross-group understanding.

The mechanism of emotion propagation is particularly prominent on Chinese social media platforms. For example, Wang Yi et al. (2024) found that Tiktok's recommendation algorithm was able to significantly enhance users' sense of group identity by pushing video content with angry and fearful emotions, while helping to construct group identities with a high degree of loyalty. At the same time, Tiktok and Weibo further strengthened users' sense of belonging within the group by algorithmically tying them to specific topics. [17] While constructing group identities, this mechanism also exacerbates the homogenisation of information dissemination. Emotional discourse tends to dominate political discussions on Weibo, while cross-group dialogue is extremely rare. In addition, Wu Yue and Li Faigen (2022) point out that comment sorting and content recommendation in gender issues are differentially distributed based on users' gender, occupational, and geographic characteristics, further exacerbating intergroup prejudice and antagonism. [18]

From a sociological perspective, the combination of emotional communication and online narratives provides a deeper social logic for algorithm-driven communication mechanisms. Kim and Kokuryo (2024) show that online narratives not only amplify users' behavioural responses through emotional drives, but also further deepen prejudices and stereotypes of out-groups [19]. In their case study of the YouTube platform, they found that viewers' attitudes towards outgroups deteriorated significantly when algorithmic recommendations directed users to more polarising and emotionally charged content. This mechanism not only reinforces intra-group identification but also makes cross-group dialogue and understanding more difficult through the superposition of the emotional infection effect and the echo chamber effect. In addition, Zhao Yunze (2023) analysed how emotion communication shapes the way users interpret social events from the perspective of framing effects. He pointed out that mass emotion communication frames further exacerbate intergroup prejudice and segregation by reinforcing users' emotional resonance on specific topics. [20]

The emotion-first communication mechanism has had a profound impact on social structure while enhancing the efficiency of identity issue communication. Zhou Jiayi (2021) suggests that mediated social groups have redefined the mode of communication of social emotions through algorithmic logic. [21] Particularly in the Chinese social media environment, algorithmic recommendation makes the amplification of negative emotions a systematic feature by embedding the user's behavioural trajectory into a specific emotion dissemination framework through a dynamic content screening mechanism. This mechanism not only promotes the rapid spread of various topics on the Internet, but also weakens the diversity of expression in the public sphere to a certain extent and greatly strengthens the exclusion of external groups.

Therefore, in future research, we can focus on how to optimize algorithm design to balance the positive effects and potential risks of emotional communication. By reducing the excessive amplification of negative emotions through algorithms and introducing more diverse and neutral information push mechanisms, cross-group dialogue and cooperation can be promoted. In addition, policymakers and technology developers should strengthen the management of algorithm transparency and enhance users' cognition and understanding of algorithm mechanisms, thereby providing possibilities for building a more inclusive and diverse public opinion space. Through the

coordinated development of technology and society, the negative effects of emotion-first communication may be effectively alleviated, laying the foundation for the healthy development of identity politics issues.

3.2 Cross-Cultural Hashtag Dissemination: Algorithm-Driven Globalized Issue Expression

Recommendation algorithms have played a vital role in promoting the cross-cultural dissemination of identity politics. As the core technology of social media platforms, algorithms link scattered individuals and groups through hashtags, allowing identity politics issues to transcend geographical, cultural and linguistic limitations and enter the global public domain.

For example, we can see that hashtags such as #MeToo and #WhyIStayed have become symbols of collective action in the digital age. During the early stages of the #MeToo movement, users from 85 countries participated within just 24 hours, creating transnational resonance [4] (Clark, 2016). This dissemination model, which algorithms facilitate by identifying and amplifying individual narratives, establishes a "personal experience → collective resonance → social action" chain of dissemination. It underscores the crucial role algorithms play in enhancing the efficiency of issue dissemination in the digital age [22] (Gerbaudo, 2018).

From a sociological point of view, cross-cultural labelling reflects the typical characteristics of the 'fluid society' in the network society. Custer (2010) suggests that the core qualities of the network society are its nodal structure and decentralised dissemination of information. Recommendation algorithms, as the driving force of digital nodes, reconfigure collective action paths on a global scale by connecting users to specific issues. [23] This technology-enabled communication model breaks the monopoly of traditional media in information selection, allowing the voices of marginalised groups to be heard, while reinforcing the plurality and openness of the global public sphere. The communicative success of the #MeToo movement relies on this networked logic of communication, in which users' participation through hashtags rapidly accomplished the transformation from personal experience to global issue, a process that not only shaped a new social consciousness, but also contributed to policy and cultural shifts.

However, the double-edged sword effect of this mode of communication also deserves attention. From a political science perspective, recommendation algorithms, by reinforcing the efficiency of hashtag communication, may exacerbate the polarisation of information dissemination and social fragmentation. Gerbaudo (2018) points out that while hashtags provide technical support for collective action, their algorithm-driven communication logic may also trigger 'information bubbles' and the 'echo chamber effect'. [21] Under this mechanism, users are more inclined to be exposed to information that is consistent with their established views, neglecting exposure to dissent. This information stratification may lead to a widening of the cognitive gap between different groups and even further radicalise social antagonisms. For example, in #Brexit-related hashtag communication, pro- and anti-Brexit users formed two almost completely segregated communication networks. This division not only limits the space for cross-group dialogue, but also reinforces intra-group identities, making the public sphere dialogue more unidirectional and polarised.

The success of cross-cultural hashtagging also relies on the 'visual politics' of social media platforms. This feature amplifies emotional narratives through algorithms, making user engagement more immediate and visually impactful. This 'visual narrative politics' has contributed to the widespread dissemination of identity politics issues by strengthening users' emotional engagement, but it can also undermine the rational dimension of the discussion by being overly emotive.

From the perspective of social network theory, hashtag propagation enhances the connectivity of the network and the immediacy of propagation through algorithms. Chueca Del Cerro (2024) highlights that recommendation algorithms enable hashtag propagation to scale and become real-time in a short period of time by amplifying the network centrality of nodes. [24] While this efficient propagation enhances the collective action capacity of identity politics, its inhibiting effect on the expression of diversity cannot be ignored. In the context of information polarisation, algorithmic recommendation may lock users into a single information environment, weakening the inclusiveness

and acceptance of dissent, and ultimately limiting the potential for cross-cultural dialogue of hashtag communication.

In conclusion, cross-cultural hashtag communication, as an algorithm-driven path of globalised expression of issues, demonstrates a new form of identity politics in the digital age. By connecting dispersed individuals and groups, it breaks the boundaries of traditional communication and provides a globalised expression platform for identity politics. However, the information polarisation, cognitive stratification and emotional tendency in this process also pose challenges to the inclusiveness and diversity of the public sphere. Future research should further explore how to balance the efficiency of algorithm-driven communication with the plurality of the information ecology, and promote the positive role of cross-cultural labelling communication in promoting social change through the synergy of technological optimisation and social policy.

3.3 Disinformation and Group Polarisation: The Profound Impact of Recommendation Algorithms on the Public Sphere.

Recommendation algorithms have profoundly changed users' information exposure patterns and social cognitive structures through the phenomena of “filter bubbles” and “information cocoons”. This phenomenon not only limits the diversity of information expression, but also redefines the logic of social interaction by shaping the cognitive environment of users. From a sociological point of view, this phenomenon can be explained by Baudrillard's (1983) theory of ‘mimetic environments. Mimetic environments are algorithmically-driven virtual spaces that amplify the symbolic meaning of the information environment independent of the real world by intensifying the user's focus on specific content. This environment leads to a gradual disconnection between the information users are exposed to and the complexity of the real world, causing them to form fixed cognitive patterns in a particular symbolic system. [25] Yao et al. (2024) point out that recommendation algorithms implicitly obscure the ability to reach mainstream ideologies and pluralistic information, keeping users in a long-term monolithic information cycle, thus reinforcing intra-group identity but also solidifying inter-group divisions. [26]

The dissemination of disinformation is an important part of this dynamic, which exhibits higher dissemination efficiency and wider reach through algorithmic prioritisation and recommendation mechanisms. Vosoughi et al. (2018) show that disinformation has a faster dissemination rate than truthful information due to its emotional and novelty qualities. [6] This phenomenon can be understood through the sociological theory of symbolic interactionism for understanding [6]. Mead (1934) pointed out that an individual's social cognition is formed in symbolic interaction, [27] and disinformation, as a highly emotional and symbolic content, occupies a central position in users' social cognition through the algorithmic amplification effect. For example, during the 2020 U.S. presidential election, disinformation on Twitter focused on emotional topics such as election fraud, which spread more than twice as much as ordinary news. This phenomenon reinforces in-group attitudinal uniformity through the construction of emotional symbols, while weakening the ability of cross-group dialogue in the public sphere. Therefore, the spread of false information is not just a technical issue, but also a symbolic process of intervening in social cognition through algorithms.

Judging from theory of cultural capital [28] (Bourdieu, 1984), the selective push mechanism of recommendation algorithm profoundly affects the dynamic allocation of cultural capital. Cultural capital refers to the knowledge, symbols and value resources accumulated by individuals in social interaction. By analyzing users' preferences, the algorithm limits the information content they contact to the framework of existing cultural capital. The research of Barberá et al. (2015), for example, found that recommendation algorithms tend to push users with information consistent with their existing interests and social background. This homogenization of information not only limits users' access to different cultures, but also further strengthens the symbolic boundaries of groups, making information dissemination more one-sided [29]. This solidification mechanism of cultural capital strengthens the cultural consistency within the group by filtering the bubble effect, while limiting the cross-cultural interaction.

The information cocoon and bubble filtering together create a highly differentiated social interaction field, which is reflected in both cognitive level and social action. The efficiency of recommendation algorithms has certainly increased the speed and scale of information dissemination, but it has also invisibly magnified the risk of social division. Chueca Del Cerro's (2024) study shows that filtering bubbles, by dynamically adapting the paths of information flow, render the user's cognitive environment closed and unidirectional. Users who have been in this information environment for a long period of time have difficulty in accessing information that differs from their viewpoints, and this closedness not only hinders the formation of social consensus, but also leads to a further intensification of antagonism between different groups [24].

To deal with the algorithm-driven "masking effect" and the spread of false information, it is necessary to establish a collaborative path between technology design, policy supervision and public education. From a technical perspective, we can reduce the phenomenon of information homogeneity by optimizing algorithm design, introducing diversity weights and dissenting information push mechanisms. Studies have shown that such optimization can significantly increase users' access to diverse information, thereby alleviating group polarization to a certain extent. (Chueca Del Cerro, 2024).[24] At the policy level, legislators should promote the legislation of algorithm transparency, ensure that the platform makes its recommendation logic public, and give users more rights of choice and control. At the social level, public education is an important link to alleviate the information filtering effect. By improving users' media literacy and critical thinking ability, we can help users maintain their initiative and reflective ability in the information environment dominated by algorithms, thus reducing the negative impact of a single information environment on social cognition.

Recommendation algorithm not only improves technical efficiency, but also profoundly affects social cognition and interactive structure. In the future, digital ecology needs to build a more open, inclusive and pluralistic public sphere through technical design, policy supervision and social coordination, so as to reduce social division, promote cross-cultural understanding and lay the foundation for the healthy development of identity politics.

4. Summary

The wide application of recommendation algorithm has injected new vitality into the communication and practice of identity politics, which has significantly improved the efficiency of social mobilization by constructing virtual space and promoting the dissemination of issues. However, this technological advantage is accompanied by potential risks and challenges. Filtering bubbles and information cocoon effect weaken the diversity of information ecology, solidify the cognitive isolation between groups, and at the same time, the preferential spread of emotions and the spread of false information aggravate social division and polarization of issues. These phenomena not only affect the inclusiveness and openness of the public sphere, but also pose a threat to the connectivity and stability of society as a whole.

Sociological theory can be well used to understand the complexity and social consequences of algorithm-driven communication. From the perspective of sociology, recommendation algorithm has changed the traditional social relationship and identity model by reshaping the interactive logic between individuals and groups. Bourdieu's theory of cultural capital reveals how algorithms solidify social inequality in information dissemination, while Baudrillard's theory of simulated environments points out the dissolution of real-world cognition by virtual space. On this basis, symbolic interaction theory further clarifies the constructive role of false information as a symbol in social cognition.

Future research and practice need to establish a balance between technology optimization, policy supervision and social education. On the one hand, by optimizing algorithm design and introducing diversified weights and dissenting information push mechanisms, the phenomenon of information homogeneity and cognitive isolation can be alleviated to a certain extent; on the other hand, legislation and platform governance that promote algorithm transparency will give users more information choices and control rights. In addition, public education is also an indispensable part. Only by

improving users' media literacy and critical thinking ability can we help users maintain independent judgment and reflection in a complex information environment.

The double-edged sword effect of recommendation algorithms highlights the importance of technology governance. Only through the collaborative efforts of society and technology can we build a more open, inclusive and diverse public domain while improving communication efficiency, and provide a basic guarantee for the healthy development of identity politics in the digital age. The future digital ecology needs to pay attention not only to the social dividends brought by technological innovation, but also to the standardization and regulation of technology use to ensure that identity politics continues to play a positive role in a globalized and diverse social environment.

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