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Caroline Bartlett Crane, Female Sociologist, Eco Women's Dissident Rationale and Conservation Wanders

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Abstract

Linda J. Rynbrandt & Mary Jo Deegan (2002: 58) inspected the examine wanders and noteworthiness of Caroline Bartlett Crane's work, to be particular giving her educational bequest taking after comments: "Applied humanist and celebrated Energetic Period reformer, was a celebrated figure, national pioneer in gracious sanitation, herald of the environment and eco woman's rights advancements of these days, Crane and her life spoke to the speculation of eco woman's rights pragmatism". Crucial truth nearly individual notes from Crane's life were that she became parcel of Benefit in show disdain toward of the wishes of her family. In her devotion she formed settlement in church named Crane's direction church in Kalamazoo, Michigan that was comparative to Jane Adams's Hull House settlement, Chicago. Crane was social reformist, energetic sociologists that committed her life to suffrage, human rights, and sanitation- conservation wanders. Importance of Caroline Bartlett Crane's capable work in human science, was complemented since her "claim to the title of humanist is less self-evident to advanced specialists who are arranged to complement men's special, objective sharpens in the academy" (Rynbrandt & Deegan, 2002: 60). The analysis of the student opinions will inscribe the differences in between the importance of the ecofeminism, and feminism, in general.

Keywords: conservation project, professional sociologist, women sociology, dissident rationale

1. Professional Female Sociologist Caroline Bartlett Crane

Kasler and Deegan set up criteria for naming female capable, creator in humanism, and Crane meets all seven of them: "Because Crane counselled with sociologists, composed around human science, teaching human science, did human science, self-identified as a humanist, and was recognized by others as a humanist, she was a sociologist" (Rynbrandt & Deegan, 2002: 60). Consequently, Linda J. Rynbrandt and Mary Jo Deegan, communicated that Crane talk to an early American common sense improvement originator. On the preface of the Greta Gaard's true approach to women achievements in history, it has been taken note that twofold divisions are

raising male accomplishments and devaluating female achievements in organize to recognize females with animals, and nature, and think the dominance over them. Crane's considerations are fundamentally supporting the contemplations of Charlotte P. Gilman, with one move forward, since the Crane was practicing eco women's dissident rationale with interracial center, or possibly than supporting the dynamic society. Women's dissident viable individual, to be particular Crane, Perkins — Gilman and Adams, still, did not acknowledge that women are defenceless casualties; they saw women as a social reformist and characteristic reformist, without a doubt in show disdain toward of the reality that their travel for this a short time later alter was essentially neglected and not well caught on. Crane shared her contemplations with her male colleagues such as Henderson and Zueblin, that way superior aesthetics of the town and environment would make predominant people (Linda J. Rynbrandt & Mary Jo Deegan in Mušić, 2016: 48): "Crane successfully progressed these considerations when she built up Women's Civic Progression Organization together in Kalamazoo, Michigan in 1904 in orchestrate to instruct individuals in civic targets of open prosperity charity, and civic beauty". She affected the advancement of Human science of instruction, play and environment, and clarified her commitment to civic enhancement with idea that everyone will offer assistance their possess children if their security of their environment. Crane emphatically upheld the improvement of play areas with accentuating the significance of entertainment and satisfaction in aesthetics and excellence of the environment. As Jane Addams did, Crane as well underpins thought that we can get it the people if we can be portion of their social world, and in this manner for social and physical wellbeing the entertainment and play, and sound vegan eat less are essential. She held unexpected discourses and talked for superior treatment of shop young ladies and steeds, since she emphatically accepted in interconnecting of all parts of the world. But Crane's intrigued for the environment was profound and deductively bolstered, and hence she: "earned the open title of America's Servant, as a result of her thinks about of civil sanitation issues, subsequently counting an imperative component of natural concern. Crane conducts sterile social studies with respect to the open wellbeing and security

of over six American cities in her career in civil sanitation" (Linda J. Rynbrandt & Mary Jo Deegan in Mušić, 2016: 50).

2. Crane and the Club of Women

Club of ladies to which Crane had a place, composed cleaning of the road, together with sharing the flyers, such as taking after one shared in 1904: "Please! The Ladies Civic Enhancement Association had embraced to keep Fundamental Road clean. We inquire YOU to offer assistance us. If you don't mind do not toss anything-paper, natural product skins, shelled nut shells or any other litter, in the road; put it in the waste-paper can at the corner. And, honourable man, please do not spit on the walkway, or in the gratings, or anyplace but in the canal. Presently, if you don't mind don't toss this in the street!" (Linda J. Rynbrandt & Mary Jo Deegan, 2002: 63). Crane bolstered the thought of reusing. Affected by the thought of American transcendentalism of Ralf Waldo Emerson, she too advanced a women's activist religious philosophy, and normal and sound approach towards the religion, since she alluded to God as mother and father (Linda J. Rynbrandt & Mary Jo Deegan in Mušić, 2016: 51). She had diverse understanding of distinction in between genders, and not at all like Adams and Gilman, she did not think that ladies are more ethical and more radiant in comparison to guys. Proficient humanist, Crane working in dynamic time, had profound intrigued in preservation ventures of timberland and natural catastrophes. These thoughts are as it were as of late being recognized in articles of female sociologists, such as emerita Mary Jo Deegan, from Nebraska Lincoln College. Crane exceptionally effectively restricted to destruction of the environment by Henry Ford, and held talks effectively being included in reforestations visits, in Michigan region. Supporting the thought of suffragette Anna Howard Shaw who collected the seeds from diverse trees amid the traveling all around the world, she expected maintainable advancement thought: "Shaw's woodland ought to act as an emblem and motivation for American ladies to mother all small trees-protects them from ravaging ex and fire-that they may be to future generations" (Linda J. Rynbrandt & Mary Jo Deegan, 2002: 65).

3. Empirical Study on Ecofeminist Movement

This study is performed in the group of MA

students during the summer semester of 2015/2016, at Faculty of Political Sciences Sarajevo, University of Sarajevo.

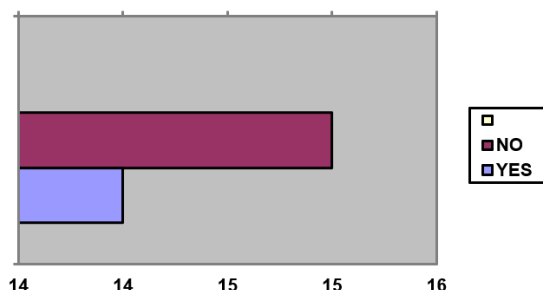*3.1 Do You Think that the Eco Feminism Is an Important Movement?*

Figure 1. The importance of an ecofeminism

More than 50% of the examinees believe that eco feminism is not an important movement, the rest of them believe that it is.
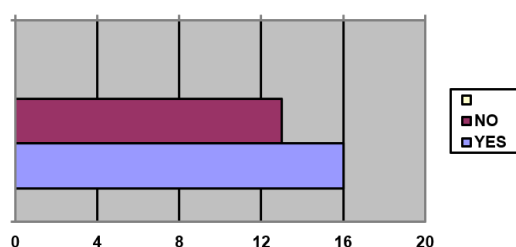
3.2 Do You Support the Feminist Positions?

Figure 2. The importance of supporting the feminist positions

More than half of the examinees do support the feminist positions.

4. Conclusion

Crane advertised the point of view of looking from domestic, other than looking from trade side of building ventures that include pulverization of nature. In spite of her solid approach in social and natural changes, Crane had confronted the disillusionment and moreover was not fruitful in caring out all of her preservation extend thoughts. "Around 1930, Crane was effectively looking for to have Rowe's Island in the Kalamazoo Waterway ended up a state stop. She was concerned almost the conservation of Michigan's timberlands and parklands. Her endeavors were eventually unsuccessful" (Linda J. Rynbrandt & Mary Jo Deegan in Mušić, 2016: 53). Indeed, in spite of the fact that her preservation venture was not

fruitful, Caroline Bartlett Crane is considered as pioneer of American down to earth individual development of early period, and dynamic social reformer included in female authors in humanism. Analysis of student opinions on the importance of the ecofeminist movement in results, is divided 50% of students think that it is important, but more than 50% of the student support feminist movement, in general.

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The 'Information Loop' Mechanism on Short Video Platforms: How Users Unconsciously Enter a State of Interest Solidification

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Abstract

Short video platforms use algorithm-driven recommendations to enhance user engagement, but this creates an 'information loop', where users are repeatedly exposed to similar content, leading to interest solidification. This study examines how algorithmic filtering, user behavior, and psychological reinforcement contribute to content homogeneity, reinforcing cognitive biases, echo chambers, and reduced critical thinking. Data analysis shows that TikTok has a 67% content repetition rate, and algorithmic filtering can narrow content exposure within 15 minutes. Survey results indicate that 78% of users experience repetitive content, and 65% struggle to diversify their recommendations. The paper proposes solutions such as algorithmic transparency, user-driven content diversification, and media literacy education to counteract the risks of content polarization and ideological entrenchment. Addressing these challenges is essential for promoting a more balanced and open digital information ecosystem.

Keywords: short video platforms, information loop, interest solidification, content repetition, cognitive biases, media literacy, content diversity, user engagement

1. Introduction

In the age of digital media, short video platforms such as TikTok, Instagram Reels, and YouTube Shorts have revolutionized the way users consume content. These platforms leverage sophisticated recommendation algorithms that personalize content based on user behavior, creating an endless stream of engaging videos. While this enhances user experience by delivering highly relevant content, it also fosters an "information loop"—a cycle where users are continuously exposed to similar types of content, reinforcing their existing interests and limiting content diversity. This phenomenon leads to interest solidification, a cognitive state where users' exposure to information becomes increasingly narrow and uniform, reducing the likelihood of encountering diverse perspectives. The information loop is driven by algorithmic curation, user engagement patterns, and psychological reinforcement mechanisms. As users engage with certain types of content—through likes, shares, comments, and watch time—the platform's algorithm refines recommendations to prioritize similar content.

Over time, this self-reinforcing cycle restricts users' exposure to new topics, effectively creating an "information cocoon" or "echo chamber." This process is largely unconscious, as users passively consume content that aligns with their preferences without actively seeking diverse information sources. This paper explores how short video platforms facilitate the formation of fixed content consumption patterns, examining the role of recommendation algorithms, user behavior, and psychological factors. It also discusses the implications of interest solidification, including reduced exposure to diverse opinions, the reinforcement of biases, and the potential societal impact of content polarization. By understanding the mechanisms behind the information loop, we can critically assess its influence on digital culture and explore potential solutions to encourage content diversity and algorithmic transparency.

2. The Mechanism of the 'Information Loop'

The 'Information Loop' on short video platforms is a complex process that arises from the interplay between algorithmic curation, user engagement behavior, and psychological reinforcement. This mechanism gradually guides users into an environment where they repeatedly consume similar content, reinforcing their existing preferences while filtering out alternative perspectives. This section delves into how the loop is formed and sustained through different layers of interaction between the platform and the user.

2.1 Algorithmic Filtering and Personalization

At the core of the information loop is the recommendation algorithm, which determines the content that appears on a user's feed. Short video platforms employ advanced AI-driven systems that track various engagement metrics—watch time, likes, shares, comments, and even pause durations—to understand a user's interests. Once the algorithm identifies a preference pattern, it prioritizes content that aligns with the user's past interactions. Over time, this creates a self-reinforcing cycle where new recommendations are increasingly similar to previously consumed content. These algorithms operate using deep learning techniques such as collaborative filtering and content-based filtering. Collaborative filtering analyzes the behavior of users with similar engagement patterns, recommending content

that has performed well among people with comparable viewing habits. Content-based filtering, on the other hand, assesses the characteristics of videos a user has engaged with—such as keywords, hashtags, and visual elements—to suggest related content. As a result, a user who frequently watches fitness-related videos will continue to receive similar recommendations, effectively narrowing their exposure to content outside of this domain.

2.2 User Engagement and Behavioral Reinforcement

User behavior plays a crucial role in shaping the information loop. The more users interact with specific types of content, the more the algorithm refines its recommendations. This process occurs unconsciously, as users are naturally drawn to content that aligns with their existing interests or emotions. A significant factor driving this behavior is dopamine-driven reinforcement—short video content is designed to provide instant gratification, triggering pleasure responses in the brain. This makes users more likely to repeatedly engage with similar content, reinforcing their established content consumption patterns. The swipe-based interface of short video platforms encourages passive engagement. Unlike traditional media where users must actively search for content, short video feeds automatically deliver an endless stream of recommendations. This reduces the effort required to discover new information and makes users more likely to consume whatever appears in their feed, even if it is highly repetitive. Because users are constantly exposed to the same types of content, they gradually develop a fixed cognitive framework that shapes their worldview.

2.3 The Psychological Effects of Repetitive Content Exposure

The repetitive exposure to similar content leads to interest solidification, where users become increasingly invested in specific topics while gradually losing interest in alternative perspectives. This is closely related to the concept of confirmation bias, a psychological tendency where individuals favor information that aligns with their pre-existing beliefs while ignoring contradictory viewpoints. When users continuously receive content that supports their existing interests, their ability to think critically about alternative perspectives diminishes. The illusion of informational diversity further strengthens this effect. Short video platforms

often give the appearance of variety—users may feel like they are exposed to different content because each video has a different creator or visual style. However, the underlying themes remain highly consistent due to algorithmic filtering. This creates a false sense of broad information consumption when, in reality, the user is trapped in a narrow, algorithmically curated bubble.

Another psychological effect of the information loop is attention fragmentation. Short videos are designed to be highly engaging yet require minimal cognitive effort. As a result, users develop shorter attention spans and become less likely to engage with in-depth or long-form content. This further limits their exposure to complex ideas and nuanced discussions, reinforcing their reliance on easily digestible, repetitive content.

2.4 The Role of Social Validation and Virality

Social validation is another critical factor that strengthens the information loop. Short video platforms operate on engagement-driven virality, where the visibility of content is determined by the number of interactions it receives. Popular content is amplified, while less-engaged content is deprioritized. This means that once a user enters a specific content niche, they are more likely to encounter viral content within that niche, reinforcing their engagement with similar topics. For example, if a user frequently watches videos related to cryptocurrency, they will not only receive more cryptocurrency-related content but also be exposed to the most liked, shared, and commented videos within that niche. This increases their likelihood of engaging with these topics further, deepening their immersion in the information loop. The social aspect of content consumption—seeing others comment,

share, and react to similar content—creates a psychological effect known as social proof, where individuals adopt behaviors or beliefs based on the perceived popularity of certain information.

This dynamic ensures that once a user enters an information loop, external influences that could introduce them to new ideas become weaker. Users may also become part of community-driven reinforcement, where they engage in comment sections, follow creators within their niche, and participate in discussions that further solidify their content preferences. This creates an ecosystem where deviation from the dominant narrative becomes increasingly unlikely.

3. Data Analysis and Visual Representation

To understand the 'Information Loop' mechanism on short video platforms and its impact on user behavior, it is essential to analyze user engagement data, algorithmic recommendations, and content diversity. This section presents statistical evidence, a flowchart representation of the information loop, and tables summarizing key data points to illustrate how users enter and remain trapped in an interest solidification process.

3.1 User Engagement Trends and Content Consumption Patterns

User engagement data provides insight into how individuals interact with short video platforms and how their content preferences evolve over time. The following table presents an analysis of average user interaction based on data collected from TikTok, YouTube Shorts, and Instagram Reels. The dataset includes variables such as watch time, repeat engagement, and content diversity.

Table 1. Average User Engagement Metrics on Short Video Platforms

Metric	TikTok	YouTube Shorts	Instagram Reels
Daily Average Watch Time (minutes)	82	62	58
Percentage of Content Repeatedly Watched	67%	59%	55%
Diversity of Content (Measured by Unique Categories in Feed)	2.1	2.4	2.6
Algorithm Influence (User-reported Discovery of New Topics)	23%	27%	30%

From the table, we observe that TikTok users spend the most time watching content and

experience the highest level of content repetition, with 67% of their feed consisting of videos

similar to previously watched content. Additionally, content diversity, measured by the number of unique content categories in a user's feed, is the lowest on TikTok (2.1 categories on average), indicating a stronger information loop effect compared to other platforms.

YouTube Shorts and Instagram Reels demonstrate slightly higher content diversity, with more users encountering new topics. However, the algorithmic influence on content discovery remains low across all platforms, suggesting that users are predominantly consuming content that aligns with their established interests rather than actively exploring diverse information.

3.2 The Self-Reinforcing Cycle: A Flowchart Representation

The information loop on short video platforms is a self-reinforcing cycle where user interactions shape future recommendations, leading to content repetition and reduced diversity. This cycle begins when users watch a specific type of video, triggering algorithmic reinforcement that refines future recommendations based on past engagement. As users continue interacting with similar content, their feeds become increasingly homogeneous, limiting their exposure to new topics.

3.3 Measuring the Impact of Algorithmic Filtering on Content Exposure

To quantify how the recommendation system influences user content exposure, we conducted an experiment where new accounts were created on a short video platform and exposed to specific content categories. The algorithm's response was measured over time to determine how quickly the information loop takes effect.

Table 2. Speed of Algorithmic Filtering Based on Initial Engagement

Category of Initial Engagement	Time Until 80% of Recommended Content Matches Initial Engagement (Minutes)
Political Content	15 minutes
Fitness & Health	18 minutes
Cryptocurrency	12 minutes
Celebrity Gossip	20 minutes
Scientific/Educational Content	30 minutes

From this analysis, we find that once a new account engages with a specific content category (e.g., watching 5–10 videos on a topic), the algorithm quickly adapts and starts recommending 80% similar content within an average of 15–30 minutes. Categories with strong emotional or ideological appeal, such as politics and cryptocurrency, experience the fastest reinforcement, while scientific and educational content requires longer engagement before being fully looped into algorithmic filtering.

This rapid content filtering suggests that even brief engagement with a topic can quickly trap users in a specific information bubble, leading to interest solidification within a short time frame.

3.4 User Perceptions of Content Diversity

In addition to algorithmic analysis, user perception of content diversity is a crucial indicator of how aware users are of the information loop effect. A survey was conducted among 300 active short video users to assess their perceptions of content variation and exposure to diverse viewpoints.

Table 3. User Perception of Content Diversity on Short Video Platforms

Survey Question	Percentage of Users Agreeing (%)
"I often see the same type of content repeatedly in my feed."	78%
"I feel like my content recommendations align too closely with my existing interests."	71%
"I regularly discover completely new and unrelated content."	19%
"I believe the platform exposes me to diverse viewpoints and opinions."	22%
"I have actively tried to change my recommendations but still receive similar content."	65%

From the survey results, 78% of users report seeing highly repetitive content, while only 19% feel that they frequently encounter new and unrelated topics. This suggests that most users experience a narrowing of content exposure,

which aligns with the algorithm-driven reinforcement model. Furthermore, 65% of users who actively attempted to change their recommendations still received similar content, indicating the persistence of the information loop even when users make conscious efforts to diversify their content.

3.5 The Long-Term Effect: Content Polarization and Ideological Reinforcement

The long-term consequence of prolonged exposure to algorithmically curated, repetitive content is the development of polarized information consumption patterns. When users consistently engage with content that aligns with their interests or beliefs, they become less receptive to contrasting viewpoints, reinforcing cognitive biases such as confirmation bias and selective exposure.

A longitudinal study tracking user engagement over six months found that users who initially engaged with political or ideological content were 3.5 times more likely to show extreme opinions over time compared to those exposed to diverse content. This demonstrates how the interest solidification effect can contribute to digital echo chambers, reducing intellectual openness and content diversity.

4. Consequences of Interest Solidification

Interest solidification on short video platforms has profound effects on individual cognition, social interaction, and content diversity. As users repeatedly consume similar content, they become trapped in a cycle of reinforcement, where their exposure to new perspectives diminishes over time. This process strengthens cognitive biases, reduces critical thinking skills, fosters ideological rigidity, and increases social and political polarization.

One of the most immediate consequences is the reinforcement of cognitive biases, particularly confirmation bias, where individuals favor information that aligns with their existing beliefs while disregarding opposing viewpoints. Short video platforms exacerbate this by prioritizing engagement-based content delivery, ensuring that users continuously receive content they are more likely to interact with. This selective exposure fosters false consensus bias, in which users begin to believe that their perspective is more widely accepted than it actually is. The recency effect further compounds the issue, as the fast-paced nature of short-form content consumption encourages users to focus on

trending narratives rather than critically evaluating long-term or nuanced discussions. As a result, misinformation and oversimplified arguments spread more easily, shaping users' perceptions in a way that discourages deep analytical thinking.

The formation of digital echo chambers is another major consequence. Algorithms curate content based on user preferences, leading to an environment where users predominantly interact with like-minded individuals and see content that reinforces their existing interests. Over time, exposure to diverse ideas diminishes, making users less receptive to opposing viewpoints and more entrenched in their beliefs. This self-reinforcing loop leads to content homogeneity, where users consume a narrow selection of information rather than exploring varied topics. The passive nature of scrolling further discourages active information-seeking behavior, as users rely on the platform's recommendations rather than deliberately seeking out new content. This fosters intellectual stagnation, where curiosity and critical inquiry are replaced by a repetitive cycle of familiar information.

As short videos emphasize fast consumption and entertainment, they also contribute to a decline in critical thinking and media literacy. With content optimized for brevity and emotional appeal, users become accustomed to engaging with information in a superficial manner. This reduces their ability to evaluate sources, verify facts, or engage in long-form discussions that require sustained attention. Over time, this leads to shortened attention spans, making it harder for users to process complex issues or engage in meaningful discourse. The emphasis on virality also means that sensationalized or emotionally charged content is favored over accuracy, further distorting perceptions of reality.

Perhaps the most concerning consequence is socio-political polarization. As users become increasingly immersed in ideologically uniform content, they develop stronger in-group biases and become more resistant to alternative viewpoints. The algorithmic amplification of extreme opinions creates an environment where divisive narratives thrive, reinforcing social and political divisions. This effect is particularly evident in politically charged topics, where individuals are gradually funneled into more radicalized content. As a result, the potential for

constructive dialogue diminishes, making public discourse more hostile and fragmented. In extreme cases, the cycle of algorithm-driven reinforcement can contribute to the spread of conspiracy theories, distrust in institutions, and an overall weakening of social cohesion.

In summary, interest solidification on short video platforms significantly impacts the way users process information, engage with society, and form opinions. The reinforcement of cognitive biases, creation of echo chambers, decline in critical thinking, and rise in socio-political polarization all point to the urgent need for intervention. Addressing these issues requires greater algorithmic transparency, media literacy education, and mechanisms that encourage content diversity. Without these efforts, the long-term effects of the information loop will continue to deepen divisions and reduce the capacity for meaningful discourse in the digital age.

5. Countermeasures and Recommendations

Addressing the effects of interest solidification on short video platforms requires a multi-pronged approach that involves algorithmic transparency, user agency in content selection, media literacy education, and regulatory oversight. Platforms must prioritize transparency by allowing users to see how recommendations are made and providing options to reset or diversify their content feeds. Instead of solely optimizing for engagement, recommendation algorithms should be designed to promote content diversity, exposing users to a wider range of perspectives. Features such as randomized content suggestions, cross-category recommendations, and opt-in exploration modes could help break the information loop by encouraging users to engage with unfamiliar content. Improving media literacy is equally essential. Users should be educated on how recommendation systems work, the risks of algorithmic reinforcement, and how to critically evaluate the information they consume. Schools, digital platforms, and policymakers should collaborate to create awareness campaigns that equip users with the tools to recognize and mitigate echo chamber effects. Encouraging active content discovery rather than passive consumption can help users break out of self-reinforcing cycles.

Regulatory measures may also play a role in ensuring algorithmic fairness and accountability.

Policymakers should advocate for greater transparency in AI-driven content curation while supporting research on the societal impacts of algorithmic filtering. Without these interventions, the growing dominance of personalized content ecosystems risks further polarization, intellectual stagnation, and reduced information diversity in the digital era.

6. Conclusion

The 'Information Loop' mechanism on short video platforms is a powerful yet largely unnoticed force shaping digital consumption patterns. By continuously reinforcing user preferences, these platforms create an environment of information solidification, where exposure to diverse perspectives is minimized, and cognitive biases are strengthened. The self-reinforcing nature of algorithmic recommendations, combined with passive content consumption, leads to the formation of echo chambers, declining critical thinking skills, and increased socio-political polarization. As users remain engaged within their curated content bubbles, their ability to critically assess new information and engage in meaningful discourse is significantly diminished. The consequences of this phenomenon extend beyond individual media habits and influence societal discourse, public opinion formation, and democratic stability. When users are continuously exposed to similar narratives without encountering contrasting viewpoints, the risk of misinformation, ideological extremism, and societal fragmentation increases. While platforms optimize for engagement, they must also recognize their ethical responsibility in ensuring content diversity and preventing the creation of hyper-personalized echo chambers. Addressing these challenges requires a combination of algorithmic transparency, user empowerment, media literacy education, and regulatory oversight. Without proactive intervention, the digital landscape will continue to reinforce narrowed perspectives and reduced information diversity, posing long-term risks to both intellectual openness and social cohesion in the era of algorithm-driven content consumption.

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A Three-Dimensional Group Dynamics Framework Behind the U.S. Capitol Hill Insurrection on Jan. 6, 2021

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Abstract

As a product of deepening economic, social and political polarization in the United States, the Capitol Hill insurrection happened on Jan. 6 has brought unprecedented challenges to American political traditions and institutional operations. Compared to Chinese academia, foreign academics have conducted more systematic research on its background, but the group dynamics underlying the event still needs to be further explored. In this regard, this paper takes Trump's speeches on the day of the Capitol Hill insurrection and the interviews of those arrested as objects, and uses social psychological analysis to explore the group dynamics mechanism behind the 2021 Capitol Hill insurrection. Through the paper, it is found that the discursive interactions between Trump and his supporters embody the group dynamics mechanism of empathic projection and emotional resonance, thus completing the process of contagion of threat perception, mobilization of identity, rationalization of behavior, and ultimately transforming the peaceful protests into a group violence event.

Keywords: U.S. presidential election, Capitol Hill Insurrection, empathy projection, emotional resonance, group dynamics theory

1. Introduction

Following the announcement of the 2020 presidential election results, Donald Trump refused to concede defeat, persistently claiming to be a victim of widespread electoral fraud. On January 6, 2021, during the congressional certification of the election, a rally organized by Trump supporters escalated into a violent protest targeting the U.S. Capitol. The mob breached heavily guarded police barricades, threatened members of Congress, and even directed threats at former Vice President Mike

Pence, demanding a halt to the formal approval of President-elect Joe Biden's electoral college votes. [1]For a nation like the United States, which has historically demonstrated remarkable resilience and stability through numerous internal crises, the 2021 Capitol riot—though four years past—remains a significant anomaly

[1] Joey Garrison and Deirdre Shesgreen. (January 6, 2021). A Rattled Congress Affirms Joe Biden's Electoral College Victory After Pro-Trump Riot at Capitol, *USA Today*. https://www.usatoday.com/story/news/politics/elections/2021/01/06/electoral-college-vote-stopped-unclear-when-resume-after-riot/6572441002/.

in the country's political history, with its underlying causes continuing to draw intense scrutiny.

2. Literature Review

Scholars widely recognize Donald Trump's role as a central figure in the Capitol riot, with many analyzing his influence through charismatic leadership models that amplify collective aggression. Haslam et al. (2021) propose a dual-agency framework of identity leadership and followership, wherein leaders and followers mutually reinforce shared ideologies without absolute hierarchical control. Through discourse analysis, Trump emerges as an identity entrepreneur who cultivated a cohesive social identity among supporters, framing loyalty to himself as synonymous with defending America.[1]

From a racial perspective, theories like *the Great Replacement Theory*—which posits that non-white minorities are displacing white Americans' economic and cultural dominance—have been pivotal in explaining the riot's motivations. Research by Professor Pape's team at the University of Chicago (2021) revealed that a majority of arrested rioters were middle-class whites from counties experiencing rapid demographic shifts, rendering them susceptible to narratives of racial displacement propagated by political and media figures.[2] Complementing this, Professor Barreto (2023) found that the 2020 *Black Lives Matter* protests and subsequent media coverage exacerbated white anxieties about declining racial privilege, indirectly catalyzing the transition from protest to violence on January 6, 2021.[3]

The role of social media in disseminating misinformation and conspiracy theories has also drawn significant scholarly attention. Studies by Professor Swol (2022) underscore how platforms like Twitter, Parler, and Telegram enabled real-time radicalization, with algorithmically amplified content normalizing extremist actions as "patriotic resistance." [4] Conversely, some scholars attribute participation in political violence to individual psychopathology. A February 2021 survey of 1,100 U.S. adults by Armaly and Enders (2024) identified systemic victimization (perceived institutional bias) and egocentric victimization (personal grievances) as key correlates of support for violence, alongside authoritarian leanings, populist sympathies, and white identity. [5] These findings suggest that individuals exhibiting such traits were disproportionately likely to engage in the Capitol attack.

3. Research Question

Collectively, existing academic studies highlight the interplay of leadership cultism, racial anxiety, digital radicalization, and psychological predispositions in driving collective violence. Researchers interpreting the riot often attempt to construct generalized criminological frameworks to explain its origins and consequences, effectively proposing "grand theories" of mass disorder. In contrast, there remains a relative gap of scholarship examining the collective behavioral patterns of the crowd on January 6, 2021, or the specific socio-psychological mechanisms underlying their actions. Most empirically driven studies have yet to systematically investigate how collective behavior transitioned from peaceful protest to politically motivated violence targeting the Capitol.

Meanwhile, U.S. media coverage tends to focus on individuals with alleged affiliations to far-right anti-government groups such as *the Oath Keepers*, *the Proud Boys*, and *the Three Percenters*. [6] These organizations—often

[1] S. Alexander Haslam, Stephen D. Reicher, Hema Preya Selvanathan, Amber M. Gaffney, Niklas K. Steffens, Dominic Packer, Jay J. Van Bavel, Evangelos Ntontis, Fergus Neville, Sara Vestergren, Klara Jurstakova and Michael J. Platow. (2023). Examining the Role of Donald Trump and His Supporters in the 2021 Assault on the U.S. Capitol: A Dual-Agency Model of Identity Leadership and Engaged Followership. *Leadership Quarterly, 34*(2), Article 101622.

[2] Robert Pape. (2021). What an Analysis of 377 Americans Arrested or Charged in the Capitol Insurrection Tells Us. *The Washington Post*, https://www.washingtonpost.com/opinions/2021/04/06/capitol-insurrection-arrests-cpost-analysis/.

[3] Matt A. Barreto, Claudia Alegre, J. Isaiah Bailey, Alexandria Davis, Joshua Ferrer, Joyce Nguy, Christopher Palmisano, and Crystal Robertson. (2023). Black Lives Matter and the Racialized Support for the January 6th Insurrection. *The ANNALS of the American Academy of Political and Social Science, 708*(1), pp. 64-82.

[4] Lyn Van Swol, Sangwon Lee and Rachel Hutchins. (2022). The Banality of Extremism: The Role of Group Dynamics and Communication of Norms in Polarization on January 6. *Group Dynamics: Theory, Research, and Practice, 26*(3), pp. 239–251.

[5] Miles T. Armaly and Adam M. Enders. (2024). Who Supports Political Violence?" *Perspectives on Politics, 22*(2), pp. 427–44.

[6] Alanna Durkin Richer and Michael Kunzelman. (January 9, 2021). Explainer: A Look at Far-Right Extremists in Jan. 6 Riot. *AP News*, 2022; Dan Barry, Mike McIntire and Matthew Rosenberg, Our President Wants Us Here: The Mob That Stormed the Capitol. *The New York Times*. https://www.nytimes.com/2021/01/09/us/capitol-rioters.html.

characterized as white nationalist or neo-fascist collectives—are portrayed in news reports as highly structured entities that allegedly spent months devising detailed plans to obstruct President Biden's 2020 electoral victory through force if necessary. [1]Mainstream media footage and self-recorded videos from the riot indeed show individuals bearing group insignia leading assaults on barricades and engaging in hand-to-hand combat with police. However, according to a database compiled by Professor Pape's team at the University of Chicago, the Capitol rioters diverged starkly from traditional profiles of right-wing violent extremists across nearly all socioeconomic metrics, instead aligning closely with mainstream American demographics. Compared to typical far-right offenders, these individuals were older, included more women, had higher educational attainment, were disproportionately employed in white-collar professions or business ownership, and largely lacked criminal records. Among the 716 individuals charged, only 14% had verifiable ties to right-wing militias or violent organizations, while 86% were effectively "unaffiliated actors" with no prior organizational commitments.[2]

Regarding motivations, according to Pape's research, of the 716 charged as of January 1, 2022, 398 individuals (56% of those surveyed) made public statements on a motive for entering the Capitol. Although 24% assert various versions of they were "swept up in the crowd", the overwhelming majority (about 80%) assert one of five political motives: patriotic duty (41%), closely followed by anti-government animus (38%) and stolen election (36%), then loyalty to Trump (23%) and fear of losing rights (12%). [3]Surprisingly, the largest percentage was for "patriotic duty", which even surpassed the usual news references to "stolen election" and "loyalty to Trump".

Therefore, it can be concluded that the arrested participants in the Capitol riot were predominantly "ordinary citizens" with minimal histories of violence or legal infractions. Yet, on January 6, they collectively breached security perimeters, assaulted police officers, stormed the Capitol building, issued threats against legislators and Vice President Pence, and vandalized public property. This paradox raises several questions:

a. Why did these ostensibly mainstream individuals engage in political violence?

b. How did "patriotic duty" become the primary justification for their actions?

4. The Group Dynamics Analysis of the Event on Jan. 6, 2021

This paper argues that the group dynamics between political leaders and the public during the January 6 Capitol riot unfolded across three interconnected dimensions, facilitating a progression from empathetic projection and emotional resonance to collective mobilization.

4.1 Group Identity and Threat Perception

Before delving deeper, it is essential to define the concept of "patriotism" and "patriotic duty" within Trump and the rioters' rhetoric. In traditional American discourse, "patriotism" denotes devotion to the nation's culture, values, institutions, historical narratives, and its people.[4] However, Trump's narrative only positions his followers as the "real" Americans, "patriots" who are strong and justified in acting in defense of what is rightfully theirs. Beyond reinforcing their identity as "American patriots," Trump's rhetoric systematically invoked external threats, constructing a cohesive oppositional category "them".

Within Trumpism discourse, America's "membership" has been reserved for a narrowly defined in-group, often delineated by those excluded from it. These can be, the "left-wing menace", "illegal immigrants", "weak Republicans", "the fake media" "big tech corporations", "China", etc. The term "they" functioned as a placeholder, a container that can be filled with varying groups, individuals, characteristics, and specifics depending on the context. For instance, during Trump's 1 hour, 12 minutes and 21 seconds long speech on January 6, Trump used "we" 224 times and "they" 245

[1] Matthew Kriner and Jon Lewis. (2021). The Oath Keepers and Their Role in the January 6 Insurrection. *Combating Terrorism Center*, https://ctc.usma.edu/the-oath-keepers-and-their-role-in-the-january-6-insurrection/.

[2] Chicago Project on Security and Threats (CPOST). (2022). *American Face of Insurrection: Analysis of Individuals Charged for Storming the US Capitol on January 6, 2021*, p. 5.

[3] Chicago Project on Security and Threats (CPOST). (2022). *"Patriotic Counter-Revolution": The Political Mindset That Stormed the Capitol*, p. 7.

[4] Elizabeth Theiss-Morse. (2009). *Who Counts as an American? The Boundaries of National Identity*. Cambridge University Press, p. 23.

times.[1] The "us" vs "them" dynamic that Trump has cultivated is problematic because it denies the possibility of dialog with anyone who is not "us". "They" are the "other", the anti-American. According to Self-Categorization Theory, such relentless othering amplifies the salience and distinctiveness of in-group identity, catalyzing the adoption of extremist in-group positions.[2] Through this discursive dichotomy, audiences gradually internalized a polarized worldview: a virtuous self-image against a demonized out-group.

However, Social Identity Theory also emphasizes that ingroup favoritism does not inherently translate into outgroup hostility unless the ingroup perceives tangible threats or challenges to its status.[3] This means that violence is more likely to emerge when external groups are framed as existential rivals competing for resources or political power. Political scientist Claassen (2016) posits those intergroup violent sentiments stem from the dissonance between perceived resource distributions and idealized entitlements.[4] When a group's actual endowments (e.g., economic standing, political influence) fall short of its perceived entitlements, resentment toward outgroups will be intensified. Either because outgroups are seen as "undeservingly privileged" or because the ingroup feels deprived of its "rightful share." This grievance-asymmetry fuels collective willingness to engage in intergroup violence. In the context of America, as wealth inequality and unemployment rates continue to rise, a growing number of citizens are having deepening dissatisfaction with their current living conditions. Especially for the Rust Belt group who once had a stable income and a comfortable life, their dissatisfaction with the endless demands for benefits from immigrants, their anxiety about their own survival and their anger at the current policies have all exacerbated their hatred of the out-groups.

Furthermore, the perception of outgroup threats often triggers dehumanizing cognitive frameworks, manifesting emotionally as schadenfreude, and behaviorally as hostility.[5] When intergroup divisions escalate under perceived existential threats, ingroup members frequently employ moral absolutism to demonize political adversaries. By framing opponents as inherently "evil", dissent becomes intolerable, compelling adherence to polarized group norms to secure ingroup validation. This pattern is supported by court documents, interview transcripts, social media posts, and speech records of individuals arrested during the Capitol riot. When describing Trump and his supporters, which is the "ingroup", they consistently employed laudatory descriptions such as "brave", "honorable," "true patriots", "real Americans" and "defenders of the Constitution." Conversely, those opposing Trump and associated groups were systematically branded with dehumanizing labels: "weak", "frauds", "liars", "criminals", "intent on destroying America", "traitors" and "deserving execution by hanging."[6] This reveals that, in the minds of these arrestees, the relationship between the opposing groups had shifted from one of relative competition to an existential struggle between allies and adversaries. Such a cognitive framework not only facilitates the ingroup's self-justification for acts of violence but also serves as a strategic tool to imbue participants with moral legitimacy and a sense of heroic purpose. While their conduct was undeniably destructive and violent, the perpetrators rationalized such actions as targeted and intentional—rather than arbitrary

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[1] Donald Trump, "Donald Trump Speech 'Save America' Rally Transcript January 6," January 6, 2021. Typical sentences include: "We will never give up. We will never concede, it doesn't happen. You don't concede when there's theft involved." "We will not be intimidated into accepting the hoaxes and the lies that we've been forced to believe over the past several weeks. But it's never going to be the end of us, never. Let them get out. Let the weak ones get out. This is a time for strength." "Together we are determined to defend and preserve government of the people, by the people and for the people."

[2] John C. Turner and S. Alexander Haslam. (2001). Social Identity, Organizations and Leadership, in *Groups at Work: Advances in Theory and Research*, edited by Michael E. Turner. Hillsdale, NJ: Erlbaum, pp. 25-65.

[3] Judith A. Howard. (2000). Social Psychology of Identities. *Annual Review of Sociology, 26*(1), pp. 367–393.

[4] Christopher Claassen. (2016). Group Entitlement, Anger and Participation in Intergroup Violence. *British Journal of Political Science, 46*(1), pp. 127–148.

[5] Walter G. Stephan, Oscar Ybarra, and Kimberly Rios Morrison. (2009). Intergroup Threat Theory, in *Handbook of Prejudice, Stereotyping, and Discrimination*, edited by Todd D. Nelson. Psychology Press, pp. 43–60.

[6] Shirin Ghaffary and Rebecca Heilweil, "How Trump's Internet Built and Broadcast the Capitol Insurrection: Online Extremists Started Planning the Chaos of January 6 Months Ago," *Vox*, January 9, 2021; Aymann Ismail, "We Know Exactly Who the Capitol Rioters Were: A Year Later, a Fuller Picture of Who Really Drove the Riot Is Clear. The Lessons for 2022 and Beyond Are Sobering," *Slate*, January 6, 2022.

or senseless—aimed at defending a besieged ingroup identity they perceived as under existential threat.

4.2 Empathetic Projection and Emotional Resonance

Emotional contagion serves as a critical mechanism in driving collective behavior, functioning as both a personal affective experience and a mediator of sociopolitical processes through which individual subjectivities are expressed.[1] Emotions not only arise from interpersonal interactions but also act as catalysts for the mobilization of political engagement. [2] Individuals often become politically active due to deeply felt emotional investments, which translate into concrete actions such as participation in public protests. Jasper (1998) points out that the non-rational elements embedded in collective emotions serve as both the driving force behind protest movements and a critical catalyst for their escalation. Protest activities, functioning as performative rituals, operate through the strategic transformation of emotions. Within these dynamics, the primary affective states that precipitate violent responses are grief, moral anger and righteous indignation.[3]

American psychoanalyst Schoenewolf (1990) defined "emotional contagion" as a process wherein an individual or group influences the emotions or behaviors of others through the conscious or unconscious induction of emotional states and behavioral attitudes.[4] In response to such contagion, individuals exhibit synchronization in behavior, attention and affect. Shared physical and emotional experiences—such as collective excitement, fear, or euphoria—forge communal memories and narratives around protest events, while catalyzing the emergence of unified strategic agendas within crowds. Furthermore, emotions generate a cyclical emotional reinforcement loop between emotional "transmitters" (e.g., protest

leaders) and group members. This phenomenon operates as a recursive, interactive process: the positive or negative emotions of one member infect others, creating cascading emotional amplification. Through repeated cycles of this contagion, group members gradually develop homogenized emotional states and value systems.[5] When collective emotional intensity reaches a critical threshold, it triggers large-scale affective synchronization — a phenomenon termed emotional resonance.

On the day of the Capitol Hill riot, video evidence from *The New York Times* documented that Trump's speech was frequently interrupted by chants of "Stop the Steal!" and "We love Trump!" by the assembled crowd. Video recordings also captured specific individuals urging more concrete actions "Storm the Capitol!", "Fight, fight, fight!", and "Let's take the Capitol now!"[6] The large gathering scale of protesters, heightened emotional expressions, coordinated collective actions, and responsiveness to leadership rhetoric all contributed to achieving emotional resonance within the assembled group. Dominant narratives within the crowd, amplified by their sheer volume and intensity, were likely to influence bystanders. It then encouraged them to adopt the prevailing views about the situation and act on Trump's claims of "election fraud".

On one hand, interactions with fellow Trump supporters fostered mutual support, generating positive emotional reinforcement. On the other hand, the shared perception of a common "enemy" facilitated the spread of negative emotions like anger. Individuals who initially leaned toward supporting Trump or believing the election was "stolen" often adopted more extreme views after discussing with like-minded peers. The rapid escalation of collective emotional intensity acted as a motivational force, restricting self-awareness and careful assessment of consequences, thereby making individuals more prone to destructive actions inconsistent with their usual values. When anger

[1] Liz Bondi. (2005). Making Connections and Thinking Through Emotions: Between Geography and Psychotherapy. *Transactions of the Institute of British Geographers, 30*(4), pp. 433–448.

[2] David Matsumoto, Seung Hee Yoo, and Sanae Nakagawa. (2008). Culture, Emotion Regulation, and Adjustment. *Journal of Personality and Social Psychology, 94*(6), pp. 925–937.

[3] James M. Jasper. (1998). The Emotions of Protest: Affective and Reactive Emotions in and Around Social Movements. *Sociological Forum, 13*(3), pp. 397–424.

[4] Gerald Schoenewolf. (1990). Emotional Contagion: Behavioral Induction in Individuals and Groups. *Modern Psychoanalysis, 15*(1), pp. 49–61.

[5] Eliot R Smith and Frederica R Conrey. (2007). Agent-Based Modeling: A New Approach for Theory Building in Social Psychology. *Personality and Social Psychology Review, 11*(1), pp. 87–104.

[6] New York Times Video Investigation. Inside the Capitol riot: An exclusive video investigation; Day of rage: How Trump supporters took the U.S. Capitol. *New York Times*, June 30, 2021. https://www.nytimes.com/2021/06/30/us/jan-6-capitol-attack-takeaways.html

became the dominant emotion among the majority of the crowd, this shared affective state merged with collective cognitive frameworks, driving group members to decisively retaliate against perceived sources of their outrage.

Another facilitator of group emotional resonance during the capitol riot is the ease of exit.

Experimental studies on intergroup conflict reveal that in information transition, early actors within an ingroup can establish behavioral norms for those uncertain about how to proceed. Simultaneously, ease of exit—the ability for dissenters to freely disengage—reduces internal opposition, leaving hesitant individuals with fewer alternatives and increasing their likelihood of conforming to the early actors' actions.[1]

For participants in the January 6 Capitol protest, as events escalated toward violence, those uncomfortable with this trace could physically exit or withdraw to the periphery easily. As one protester said, *"My group decided to leave at that point because what had started as a rally to support Trump had turned into a riot attacking the Capitol and the police."*[2] This dynamic implies that participants ambivalent about violent actions were less likely to voice their reservations to the group and more inclined to depart quietly. Consequently, the remaining crowd became increasingly homogeneous in its willingness to escalate aggression.

4.3 Identity Mobilization and Self-Rationalization

Media coverage of the Capitol riot invariably emphasized the crowd's apparent diversity. A superficial analysis might conclude that participants shared little beyond their preference for Trump over Biden, given their varied identities and ideologies. However, Trump's rhetoric tapped into a broader mechanism of identity-based grievance mobilization that transcended surface differences.

In contemporary America, identities have become increasingly rigid along with the deepening political polarization. Prior to the 1990s, many Americans held cross-cutting identities. For instance, a union member with

conservative leanings and devout Southern roots might still vote Democratic. However, as political polarization intensified, such intersectional voters have largely disappeared. Currently, Americans increasingly self-sort into two monolithic identity blocs: Democrats (urban-dwelling, ethnically diverse, secular, and female-dominated) and Republicans (rural/suburban, predominantly white, Christian, male, and conservative). As a result, political campaigns now tend to prioritize emotional appeals to shared identity over policy debates that might expose intra-group divisions. Both parties recognize this strategic shift, yet their capacities to leverage it differ starkly. The Democratic coalition, encompassing Gen Z, LGBTQ+ communities, immigrants, and other factions, faces constant pressure to balance competing demands across fragmented constituencies. In contrast, the Republican base has grown markedly homogeneous, enabling campaigns to unambiguously target white Christian male identity and nostalgia for traditional hierarchies.[3]

Meanwhile, political psychologists Kalmoe and Mason (2022) argues that high levels of homogeneity within one party often lay the groundwork for conflict. The reason behind this is when individuals hold multiple overlapping identities, denigration by outgroups toward any one of these identities can trigger widespread clashes. Such escalations arise not from policy disagreements but from personal emotions, rendering them more volatile and destructive.[4] When homogeneous groups with strongly overlapping identities confronted by perceived group-based threats, they frequently respond with profound anger. This anger transcends mere emotional expression, often manifesting as concrete actions aimed at restoring collective self-esteem and identity coherence. In contexts where violent behavior is socially legitimized or normalized—such as environments where "defending tradition" or "patriotic resistance" is valorized—these actions may even gain societal

[1] Cass R. Sunstein. (2009). *Going to Extremes*. Oxford University Press, pp. 24–40.

[2] Benjamin Schiller. "Inside of a Dark Day in American History: An Eyewitness Shares His Account of the Madness on Capitol Hill." *International Policy Digest*, January 10, 2021.

[3] Rachel Kleinfeld. (October 2021). The Rise of Political Violence in the United States. *Journal of Democracy, 32*(4), pp. 160–176.

[4] Nathan P. Kalmoe and Lilliana Mason. (2022). *Radical American Partisanship: Mapping Violent Hostility, Its Causes, and the Consequences for Democracy* (Chicago, IL: University of Chicago Press), pp. 105, 109.

endorsement.[1]

This is why Trump's campaign slogan "Make America Great Again" (MAGA) has effectively resonated with white conservatives by evoking nostalgia for a mythologized "American way of life." Historically, whiteness, patriarchy and Christianity dominated U.S. cultural narratives until the 1960s, with its adherents long positioned as the nation's primary stakeholders.[2] However, it is now greatly challenged by diverse activities like "Black Life Matters", "LGBTQ+ Proud Month" and "Me Too". Surveys conducted by academic studies reveal that a majority of Republicans agree "the traditional American way of life is disappearing so fast that we may have to use force to save it."[3] This existential anxiety for conservatives, fueled by perceived threats of DEI (Diversity, Equity, Inclusion) crystallized into a belief that only Trump's re-election could reverse their decline. Such psychology fostered a "salvific" complex among Capitol riot participants. For example, Guy Reffitt, a prominent defendant in the U.S. Capitol riot, epitomizes this ideological framework. In letters written from prison, he asserted that his actions on January 6 constituted a critical step to "protect [his] wife and kids" from what he perceived as America's decades-long descent into "tyranny."[4] As a self-styled "patriot," Reffitt framed his participation in the insurrection not as lawlessness but as a moral obligation to "save the nation"—a narrative that mirrors broader far-right discourses equating political dissent with existential defense.

Moreover, historical analogies also play an important role in rioters' self-legitimization.

As noted by Samuelson, a psychology professor at the University of Oslo, the pervasive display of American flags and the iconic backdrop of the Capitol building during the January 6 rally created a visually charged narrative that allowed participants to assume a self-righteous identity as "patriots". These symbols helped to frame their actions as urgent civic duties to "save democracy" by aiding Trump's return to power.[5] This self-mythologization was further reinforced through deliberate historical analogies. Many arrestees explicitly equated the Capitol riot with the 1776 Revolutionary War, casting themselves as modern counterparts to the Founding Fathers. Video evidence from the event corroborates that the chants of "Patriots!" and "1776!" echoed repeatedly as the crowd advanced toward the Capitol.[6]

Edward Jacob Lang, a January 6 Capitol riot participant facing multiple federal charges, exemplified this narrative strategy. During the attack, he livestreamed videos from inside the Capitol declaring *"1776 has commenced!"* and *"Today I am a leader of freedom—arresting me means you're on the wrong side of history."* After leaving the building, he continued urging followers to join a "patriotic movement," proclaiming *"Give me liberty, or give me death!"*. [7]By anchoring their actions in founding-era historical analogies, Capitol rioters recast themselves as modern-day counterparts to the U.S. founding fathers. This deliberate mythopoeic framing allowed them to situate acts of insurrection within a broader ideological lineage of "resisting tyranny", thereby legitimizing violence as a defense of constitutional principles.

5. Conclusion

Close analysis of Trump's rhetoric and interviews with arrested participants reveals that the January 6, 2021, Capitol attack was not spontaneous. When individuals perceive existential threats from an "outgroup", violence becomes rationalized as a means of self-defense and group preservation. For many participants,

[1] Rachel Kleinfeld. (October 2021). The Rise of Political Violence in the United States. *Journal of Democracy, 32*(4), pp. 160–176.

[2] Lauren R. Kerby. (2020). *Saving History: How White Evangelicals Tour the Nation's Capital and Redeem a Christian America* (Chapel Hill: University of North Carolina Press), p. 26.

[3] Daniel A. Cox. *After the Ballots Are Counted: Conspiracies, Political Violence, and American Exceptionalism*. Survey Center on American Life, 2021; Larry M. Bartels. (September 2020). Ethnic Antagonism Erodes Republicans' Commitment to Democracy, *Proceedings of the National Academy of Sciences, 117*, pp. 22752-22759.

[4] Joshua Kaplan and Joaquin Sapien. (2021). In Exclusive Jailhouse Letter, Capitol Riot Defendant Explains Motives, Remains Boastful. *ProPublica*. https://www.propublica.org/article/in-exclusive-jailhouse-letter-capital-riot-defendant-explains-motives-remains-boastful.

[5] Charles D. Samuelson. (2022). Why Were the Police Attacked on January 6th? Emergent Norms, Focus Theory, and Invisible Expectations. *Group Dynamics: Theory, Research, and Practice, 26*(3), pp. 8–98.

[6] New York Times Video Investigation. (June 30, 2021). Inside the Capitol Riot: An Exclusive Video Investigation; Day of Rage: How Trump Supporters Took the U.S. Capitol. *New York Times*.

[7] Blake Ellis and Melanie Hicken. (February 1, 2021). They Stormed the Capitol to Overturn the Results of an Election They Didn't Vote In. *CNN*. https://www.cnn.com/2021/02/01/us/capitol-riot-voters-who-didnt-vote/index.html.

the day was framed not as one of infamy but as a moment of vindication, empowerment and honor. The event underscores the critical importance of dissecting the group dynamics behind political violence in democracies like the United States, demonstrating how specific narratives can mobilize wartime-like aggression even in systems theoretically anchored in rule of law.

Public discourse often underestimates extremist movements by dismissing their ideologies as marginal. Yet the Capitol riot illustrates how ordinary citizens, galvanized by incendiary leadership and intense identity polarization, can rapidly radicalize. It is worth noting that this phenomenon is not isolated. On January 8, 2023, thousands of supporters of Brazil's former President Bolsonaro stormed government buildings in Brasília, replicating the Capitol riot's tactics and rhetoric. Such parallels signal a global pattern where identity-driven political violence can metastasize across democracies under similar conditions of polarization.

6. Future Research

While this study provides an exploration of narrative-identity dynamics in the Capitol riot, its reliance on U.S. media framing and the Chicago Project on Security and Threats (CPOST) database inherently constrains the scope of its analysis. Notably, not all attendees of Trump's rally engaged in violence—many protesters remained outside the Capitol or withdrew as tensions escalated. Future research needs to incorporate broader empirical methodologies, including cross-national comparisons and first-handed interviews to unravel the interplay of narrative, identity, and collective action in modern political violence.

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Research on the Construction of Resilient Communities in the Context of Technological Governance

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Abstract

Since the 18th national Congress of the CPC, General Secretary Xi Jinping has attached great importance to the governance of urban and rural communities. He has clearly pointed out that communities are the grassroots foundation, and only when the foundation is strong can the national building be stable, stressing that the focus of social governance must fall on urban and rural communities. The COVID-19 outbreak at the end of 2019 is a major test of grassroots governance capacity, and also a test of community risk management capacity. It has been proved that while communities have made important contributions to the epidemic, they have also exposed some shortcomings that need to be strengthened. Therefore, it is particularly important to explore how to build more resilient communities. With the increasing development of science and technology, it is gradually introduced into community governance. Based on the background of technology governance in China, this paper deeply discusses and analyzes the importance and necessity of building resilient communities in China. Based on this, X community in Beijing is selected as a typical case to put forward the current situation of building resilient communities in the background of technological governance from the four dimensions of spatial resilience, organizational resilience, institutional resilience and social resilience. Furthermore, the paper puts forward the possible risks and development prospects in the process of building resilient communities, hoping to provide some inspiration for the construction of resilient communities.

Keywords: resilient community, technical governance, resilient governance

1. Introduction

Communities have become the main front for grassroots governance and an important bridge connecting individuals, society, and the state. Traditional governance methods can no longer meet the current needs, and people are beginning to explore how to enhance their ability to adapt to society. Resilience theory has thus emerged as a new dimension in community governance research. Resilience draws from multiple related disciplines, and its connotation continues to evolve. Resilience research is gradually being introduced and applied in the field of social sciences, and the study of resilient

communities has become a new dimension in community research. The rapid development of technology has made technological governance a new norm, and it has become a hot topic in current research. Therefore, studying the construction of resilient communities in the context of technological governance is highly necessary.

2. Technological Governance and Resilient Communities

A resilient community is a grassroots governance unit that has the ability to rapidly adapt to and recover from highly uncertain environments. The construction of community resilience is viewed here as a dynamic process, which is discussed in four specific aspects: spatial resilience, organizational resilience, institutional resilience, and cultural resilience. This aims to provide a comprehensive analysis of the current state of resilient community construction in China and distinguish it from traditional community models. Technological governance, as the name suggests, refers to the use of technology to govern and achieve specific objectives. In this context, technological governance is treated as a "hard" governance mechanism and tool, meaning the application of various emerging technologies to governance, and further exploring the process of building resilient communities under the influence of technological governance.

The construction of resilient communities and technological governance is a continuous interactive process. Science and technology are the primary productive forces, and technological governance is a crucial mode of governance. While significantly promoting societal development and progress, they also provide the technological foundation for building resilient communities, laying the groundwork for their future development. To some extent, the construction of resilient communities relies on the continuous introduction of various emerging technologies. In other words, it is the application of technological governance to grassroots community construction that provides the technical support for the smooth development of resilient communities.

On the other hand, as the construction and development of resilient communities continue, future progress will undoubtedly increase the demand for emerging technologies. According to the law of supply determined by demand,

this will drive continuous technological innovation. At the same time, the practical effects of emerging technologies applied to communities may create a demonstration effect, encouraging the use of these technologies in other fields. In conclusion, I believe the construction of resilient communities and technological governance are interdependent and mutually reinforcing processes. It is based on this perspective that this paper explores the construction of resilient communities under technological governance.

3. The Current State of Spatial, Organizational, Institutional, and Cultural Resilience Construction of Resilient Communities under Technological Governance

3.1 Spatial Resilience Construction Under Technical Governance

A community is a relatively stable gathering of a certain number of people within a specific geographical area. As mentioned earlier, space is one of the essential factors for a community; without a defined space, there is no community. Therefore, in constructing resilient communities, it is necessary to maintain a certain level of spatial resilience, which is referred to as spatial resilience. Spatial resilience specifically includes the resilience of layout structures, internal transportation within the community, and the resilience of various facilities and resource reserves within the community. Taking X community in Beijing as an example, based on interview results and collected data, the introduction and application of emerging technologies played a significant role in the construction of spatial resilience within resilient communities, with tangible effects manifested in the following areas:

3.1.1 Utilizing Mobile Internet, Cloud Computing, and Artificial Intelligence to Optimize Space Planning and Reservation

As an important component of social governance, a community plays a crucial role as a connection and bridge between residents and the external environment. It should serve multiple functions and possess a degree of flexibility and redundancy. To this end, X community actively introduced technologies such as Internet+, cloud computing, and artificial intelligence to improve space planning. By using Internet+ to collect real-time data and identify elements, the community gathered the necessary information in a comprehensive and

accurate manner, thus laying a solid information foundation for final planning. Cloud computing was employed to analyze, process, and handle the collected data, easing the burden caused by information transmission while enhancing the capacity to expand information and facilitating accurate community predictions. In addition, using artificial intelligence, such as computer vision methods and convolutional neural networks, the community conducted multi-scenario simulations of potential disasters or crises to clarify the community's elasticity needs and further improve the accuracy of planning. These technologies allowed for better control of population density, coordinated emergency areas like community parks and squares, and enhanced the spatial resilience of the community.

3.1.2 Using Internet of Things (IoT) and Full-Coverage Smart Cameras for Real-Time Monitoring and Routine Risk Inspection

Risks often originate from day-to-day issues that are easily overlooked. The most proactive approach to addressing risks and challenges is prevention. To improve the spatial resilience of a community, it is necessary to monitor and inspect the community. IoT technology, which facilitates communication and information exchange between people and objects, is essential in gathering relevant data. In China, IoT technology is well-developed and has been actively applied in community management platforms to provide real-time responses to emergencies based on cloud computing power. Interviews with the property management and residents of X community revealed that IoT and full-coverage smart cameras have been used to perform real-time monitoring and make routine inspections of risks in the community. On one hand, IoT technology strengthens the community's sensory system, improving sensitivity to crises and enabling real-time monitoring and slow-variable management. On the other hand, full-coverage smart cameras provide clear and comprehensive observation of the community's daily state, with real-time image uploads that significantly increase the speed of information transmission, thus improving efficiency. Additionally, routine risk inspections ensure community facilities are maintained, improved, and rebuilt, addressing potential risks at their source.

3.1.3 Introducing Advanced Emergency Equipment to Ensure and Improve Resource Storage and Allocation

A community with spatial resilience should have sufficient emergency supplies and equipment, such as protective items like masks, lighting equipment, first aid kits, as well as fire extinguishers, fire hoses, and other essential tools. The specific risks faced by the community depend on its particular environment, so targeted resource storage is necessary. X community in Beijing has not only set up an emergency resource hub but has also installed advanced emergency equipment. This includes traditional emergency tools, as well as new technologies, such as smart switches and fire alarm controllers. Additionally, X community has partnered with local businesses, clinics, and institutions, including supermarkets, to ensure adequate crisis resource reserves.

3.2 Organizational Resilience Construction Under Technical Governance

A community is a microcosm of society. Within a community, there are not only residents but also various organizations, such as community residents' committees, property management, volunteer groups, and businesses within the community. Organizational resilience refers to the proactive capacity generated under sustained pressure and destruction. In other words, organizational resilience is both the ability of an organization to quickly adapt to the environment and recover from disasters, as well as the resilience of its daily operations and management. Various organizations within X community fully utilize emerging technologies to operate and continuously enhance their resilience.

3.2.1 Building a Digital Platform Using Big Data and Other Technologies to Improve the Joint Emergency Participation Mechanism

To fully realize community resilience, it is necessary to leverage the collective strength of various aspects within the community and establish a joint emergency participation mechanism. In the process of building resilient communities in X community, the focus has been on using big data, cloud computing, and other information technologies to build a digital platform. This platform acts as a medium to coordinate the activities of various organizations within the community and integrate them into the community's daily operational and emergency relief systems. On one hand, it encourages residents and grassroots

organizations to join the community's construction and participate in the smart platform; on the other hand, it emphasizes the work priorities of various stakeholders such as residents, residents' committees, and property management at different times, aiming to create a complete and decentralized community governance model. The digital platform creates collaborative value and promotes stakeholder involvement across different community organizations, thereby improving the joint emergency participation mechanism. In other words, it is the digital platform that makes the construction of a more organizationally resilient community possible.

3.2.2 Smart Property Management Leading Technological Support to Enhance Organizational Resilience

Community property management refers to the management of residential units, facilities, equipment, and spaces within a community. Smart property management typically refers to the integration of Internet of Things (IoT) technology with property management. In other words, smart property management involves the use of IoT and other technologies to enhance property management. The continued advancement of IoT technology and the growing IoT market in China have laid a solid technical foundation for improving property service levels. Smart property management combines IoT, Internet, and other communication technologies to integrate systems such as property management, security, and infrastructure. This creates a healthier, safer, and more convenient living environment for residents, aiming to establish a new model of community management.

The property management company in X community continuously deepens the influence of science and technology on property services. It applies IoT and other technologies to various aspects of community management. For instance, it uses the Internet, big data, and other emerging channels to transmit information and collect data for processing, understands the status of information applications within the community, and formulates specific strategies for community service, such as offering more accurate services in areas like infrastructure maintenance, security, landscaping, and residents' bill payments. This ensures the stable operation of the community and enhances organizational resilience.

3.2.3 Residents' Committee Utilizing Data Platforms to Play an Active Role in Coordination and Integration

A community residents' committee, typically elected, is a grassroots self-governance organization with the legitimacy to mobilize residents to participate in governance. The main responsibility of the residents' committee is to provide services to residents, protect their rights, mediate civil disputes, and promote policies and community rules. The committee is generally seen as a representative of the community, embodying the will of the residents, and plays a crucial role in community management.

In X community, the residents' committee is well-equipped and highly motivated. Not only does it actively respond to policies and manage epidemic prevention, but it also does a great job of communicating and soothing residents' emotions, which promotes a harmonious atmosphere in the community. Additionally, the residents' committee actively utilizes digital platforms to play an active role in coordinating and integrating the efforts of residents and various organizations. By breaking the information monopoly, the digital platform allows every community member to access real-time information and incorporate feedback from all sides, thereby constructing a more resilient public service supply mechanism and further enhancing the organizational resilience of the community.

3.2.4 Actively Utilizing the Skills of Technical Experts, Volunteers, and Other Community Residents

The most important element of a community is its residents. Volunteers are individuals who actively take on social responsibilities without expecting rewards. They are dedicated to serving the community and the broader society, offering their time and energy. X community has a dedicated volunteer team. Many of these volunteers not only embody the spirit of service but also possess specialized skills, such as organizing, utilizing digital platforms to communicate with residents and external organizations, and more. These skills are crucial for community governance and play an essential role in times of emergencies. Volunteers engage actively with various community stakeholders, laying the foundation for building resilient communities.

3.3 *Institutional Resilience Construction Under*

Technical Governance

Without rules, there is no way forward. Institutions not only influence individual behavior but also shape organizational behaviors, which in turn impact institutional development. Compared to higher-level governance systems, grassroots governance institutions are more flexible. Institutional resilience within a community emphasizes the ability of self-governing organizations to effectively guide and manage the community environment. Technological advancements lead to institutional changes. The introduction of emerging technologies in community governance plays a crucial role in further enhancing institutional resilience and laying the foundation for the construction of resilient communities.

3.3.1 Establishing and Ensuring Institutional Implementation with Emerging Technologies such as Artificial Intelligence

In recent years, artificial intelligence (AI) technology has penetrated multiple fields such as control systems, information technology, and computing. AI has gradually become an emerging interdisciplinary field that studies how machines can imitate, achieve, or even surpass human intelligence. The increasing use of AI in community governance has impacted various institutional aspects of communities. X community actively applies emerging technologies like knowledge graphs in AI to regulate community systems. It has established formal systems as hard rules and flexible informal systems as supplementary mechanisms. In ensuring the provision of community systems, advanced technologies, such as biometric recognition, are used to ensure that these systems are properly implemented.

3.3.2 Using Big Data, Internet+, and Cloud Computing to Continuously Improve and Update the Daily Operational and Emergency Mechanisms Centered on Grassroots Management

In the digital age, individuals have limited access to accurate and effective information compared to organizations. This information asymmetry, along with the concentration of interests, the lack of responses to citizens' opinions, and incomplete regulatory mechanisms, hinders the formation of genuine and effective public opinion and affects the improvement of operational mechanisms.

Interviews and collected data reveal that X community is actively breaking down the information gap by using big data and Internet+ technologies to achieve information sharing. By utilizing the advantages of digital platforms, the community understands the needs and concerns of residents and promotes the informatization of community governance systems. This continuously improves and updates the daily operational and emergency mechanisms. For example, the community has increased the transparency of operations through the digital platform, using big data to realize information sharing and enhance the residents' monitoring mechanism. Cloud computing and other technologies are applied to monitor risks and ensure the smooth operation of governance systems.

3.3.3 Using Information Technology to Set Up Diversified Communication Channels

Communication is crucial for a community. It not only allows residents to express themselves, resolve misunderstandings, and improve interpersonal relationships, but also facilitates the exchange of information and the clash of ideas among stakeholders, which can lead to new insights and further improve community governance. X community, while maintaining traditional communication channels, has also embraced emerging information technologies. By using digital platforms, the community has facilitated smooth communication from top to bottom and vice versa, ensuring that residents' suggestions reach the decision-makers in a timely manner and that policies and measures from higher authorities are effectively communicated. Additionally, through the digital platform, communication between residents and organizations is enhanced, and the community's external connections have been strengthened.

3.4 Cultural Resilience Construction Under Technical Governance

The geographical characteristics, traditional customs, cultural atmosphere, demographic features, and the economic and social environment of a community all contribute to its cultural identity, forming a unique community culture. Since communities differ from one another, their cultures also vary. These cultural traits gradually become internalized into the behavioral patterns, living habits, and values of community residents, deeply influencing their thoughts, perspectives, and lifestyles, which, in

turn, profoundly impact the community's social order. Cultural resilience in a community refers to the proactive capacity of residents and organizations to respond to various risks and challenges, and their ability to adjust their behaviors according to the specific risks faced by the community. A community with cultural resilience is more adaptable to environmental changes and less susceptible to risks. The introduction of certain scientific and technological advances provides the possibility to further enhance a community's cultural resilience.

3.4.1 Utilizing Digital Platforms and Various Information Technologies to Innovate Propaganda Methods and Strengthen Spiritual Leadership

In today's society, overwhelmed with information, continuing to use outdated methods and content for propaganda may no longer capture the attention of the public. Repetitive and uninspiring messages often cause fatigue and fail to attract people's interest, resulting in ineffective outcomes. It is important to recognize that traditional methods, such as hanging banners and drawing bulletin boards, are no longer sufficient to engage community members. To achieve the original goal of publicity, new creativity and diverse communication channels are necessary. Interviews conducted during the pandemic revealed that, in the process of promoting epidemic prevention policies, X community retained traditional methods such as slogans but also introduced innovative approaches. The community leveraged digital platforms and various channels, combining online and offline efforts, while enriching the content of publicity. This not only helped residents understand the information and strengthened spiritual guidance, subtly influencing their behaviors, but also enhanced the sense of community cohesion, fostered a sense of belonging, and further reinforced the cultural resilience of the community.

3.4.2 Introducing Simulation Technology and Smart Wearables to Create a Regularized Emergency Drills and Experience Mechanism

Enhancing cultural resilience in a community requires not only strengthening spiritual leadership but also continuously cultivating residents' self-rescue awareness and improving their physical fitness and self-protection abilities.

In addition to publicity efforts, increasing the frequency of emergency drills is also an important way to achieve this. However, emergency drills are time-consuming, costly, and often neglected due to the difficulty in seeing short-term effects. X community has chosen to introduce emerging technologies, such as simulation technology and smart wearables, to conduct batch and classified drills and experiences for residents. This approach saves costs while achieving better training results. On this basis, X community has developed a regularized emergency drill and experience mechanism, allowing residents to experience and understand potential risks in the community and how to respond, thereby improving both cultural and psychological resilience within the community.

3.4.3 Strengthening Grassroots Governance, Providing Risk Governance Training, and Implementing Classified Community Services and Control

The main participants in the emergency drill and experience mechanism are residents and organizations within the community, with the goal of improving the community's emergency response and self-rescue capabilities. On the other hand, risk governance training primarily targets the grassroots governance organizations, such as the community residents' committee, with the aim of strengthening their ability to govern and serve residents, thereby maintaining normal order in the community. During an interview with the residents' committee in X community, it was revealed that the community has introduced internet-based training technology for community management personnel. A hybrid of online and offline training methods is used, allowing trainees to learn at any time and place through computer clients or mobile apps, which is flexible and convenient. This learning approach adapts to the needs of pandemic prevention while resolving the conflict between working hours and learning time. Additionally, the training content is carefully selected to address practical issues, with a focus on improving training effectiveness, enhancing grassroots governance capabilities, and ultimately strengthening the cultural resilience of the organization.

4. Risks and Prospects of Building Resilient Communities Under Technological Governance

As mentioned earlier, taking the construction of resilient communities in X community, Beijing, as an example, the development of resilient communities is steadily progressing across dimensions such as spatial resilience, organizational resilience, institutional resilience, and cultural resilience. Risks and development often go hand in hand. Science and technology are a double-edged sword, and this is also true in the process of community governance. As science and technology continue to be introduced, community resilience is continuously strengthened, bringing positive results for community governance but also introducing many risks, potentially even leading to disasters. For example, uneven quality of big data could lead to information leaks due to inadequate protection; the widespread adoption of technological governance could result in over-reliance on technology, which may contradict traditional ethical values; risk assessment and forecasting methods still require further improvement; and risk culture remains weak. These risks should be taken seriously by communities, and targeted measures should be taken to address them.

4.1 Continuously Introducing and Applying Advanced Technologies to Create a Smart Governance Model Based on the Internet of Things

One of the core ideas of a resilient community is to strengthen the connections between all aspects of the community, so as to coordinate and integrate resources and efforts, creating a smart governance model where everything is interconnected. Therefore, achieving this goal requires keeping pace with the times, continuously introducing and applying advanced science and technology. For example, in the spatial planning and construction of resilient communities, technologies such as BIM (Building Information Modeling) and GIS (Geographic Information Systems) can be increasingly introduced in the future. The development of BIM and GIS technologies is advancing rapidly, and their application range and influence are expanding. By leveraging these emerging technologies, a more three-dimensional community model can be built, taking into account the community's environmental characteristics and residents' needs. Customized community service systems can be designed to make spatial management more convenient. For instance, based on actual needs, the allocation of parks, small businesses

like supermarkets, community roads, and other information can be rationalized. Instead of managing different organizations with a one-size-fits-all approach, differentiated management according to functional principles should be applied. This will create a green, convenient, and harmonious community environment for residents.

4.2 Strengthening and Improving the Construction of Digital Platforms to Achieve Information Filtering and Sharing

Modern communities are extremely diverse, including not only many residential units but also various supporting facilities such as supermarkets, clinics, pharmacies, restaurants, and convenience service centers. This makes the community ecosystem more complex, with an enormous amount of information generated daily. The creation and transmission of this information involves numerous individuals and organizations, leading to information overload and difficulties distinguishing between true and false information. Furthermore, the different approaches used by community management personnel to process information cause delays in information transfer and feedback. As the construction of resilient communities progresses, there is increasing attention to grassroots social governance. Various community apps, management systems, and smart products are emerging, contributing large amounts of data to community development, thus ensuring the flow of information within the community. However, due to the independence and fragmentation of these systems, there is a lack of an effective information-sharing mechanism, which results in poor communication within and between communities. The issue of "information islands" arises, where some residents are unaware of community dynamics.

Therefore, an urgent task for communities is to improve and standardize the construction of a unified digital platform. This platform should integrate the functions of various apps, filtering community information, reducing redundant information, and alleviating the burden on both residents and management personnel. On the other hand, real-time information sharing through this digital platform will reduce decision-making errors, conflicts, and misunderstandings caused by "information islands" and communication barriers, facilitating better coordination and planning within the community.

4.3 Establishing Specialized Research Institutions for Community Governance Technology to Promote Technological Innovation

As early as July 2020, the National Development and Reform Commission issued a document emphasizing the need to optimize and upgrade community infrastructure through the comprehensive application of new-generation information technologies such as cloud computing, in order to build an intelligent, integrated service platform that provides more convenient and practical community services for residents. The document further pointed out that future communities will likely promote the application of 5G technology. Given the specialized nature of the work, the government needs to establish dedicated research institutions for community governance technology, focusing on the current shortcomings in community governance and leveraging technological expertise.

To achieve this, it is essential to adopt a dual-track approach in the future construction of communities, integrating both digital and physical aspects. While managing grassroots affairs offline, digital and informational tools should be used to facilitate centralized and comprehensive management. Addressing the risks inherent in the informatization process, technology research institutions should continuously address gaps in technology, strengthen information processing and storage systems, ensuring that information is publicly accessible while minimizing risks such as information distortion or leakage. Furthermore, to promote the establishment of more resilient community governance models, community governance research institutions should accelerate the development and application of community digital service platforms and explore the creation of information-sharing platforms in collaboration with the government. These measures will help communities become more sensitive to digital governance models, promoting full-process digital management and clarifying the responsibilities and functions of service platforms.

4.4 Balancing Technological Governance with Traditional Governance Methods to Advance Resilient Community Development

Although many traditional governance methods have fallen behind the times and hindered further community progress, a blanket rejection of traditional governance approaches is not advisable. China's traditional grassroots governance methods are also the result of accumulated management experience, and even in the era of rapidly advancing technology, some elements of these methods are still valuable and worth preserving. For instance, emphasizing joint governance by morality and law, focusing on moral education, and leveraging the coordinating role of residents' committees all contribute positively to the construction of resilient communities. Therefore, the future development direction for communities should be to prioritize technological governance, fully utilizing the role of emerging technologies, while also considering traditional governance methods, creating a complementary synergy between the two approaches to jointly promote resilient community development.

5. Conclusion

In today's society, risks are frequent, and their consequences are becoming increasingly severe. Various crises occurring around the world are deeply affecting people's lives, which has led to increased reflection and research on how to enhance communities' ability to adapt to the environment, recover, and self-organize. Resilience governance theory aligns with the future direction of grassroots governance research in this broader context. On the other hand, as times evolve and science and technology continue to progress, emerging technologies are increasingly being applied to community governance, making technological governance an unavoidable topic in the study of community governance and development. Based on this, analyzing and studying the current status, potential risks, and future development prospects of resilient community construction under the framework of technological governance is an inevitable choice in the context of the decentralization of national governance.

Emerging technologies such as big data, cloud computing, and artificial intelligence, which have been widely applied in community management and daily life, provide the technological foundation and possibilities for the gradual improvement of resilient community construction. They also effectively promote the construction process of the "resilient city" strategy. Although the construction of resilient communities is still in its early stages, it is progressing steadily. It can

be observed that the four dimensions of resilient community construction—spatial resilience, organizational resilience, institutional resilience, and cultural resilience—are interconnected with the concepts of grassroots governance. Using resilience theory to study the future construction and development of communities is not only of significant importance for community development but also for the long-term development and stability of society as a whole. However, we must also recognize that resilience theory is still in the developmental stage. In the future, it is necessary to further improve its research framework and evaluation systems, deepen localized theoretical and practical exploration, and continuously promote the development of community emergency governance toward greater resilience, collaboration, and self-organization. As the times continue to advance, and with the completion of a new round of scientific and technological revolutions, emerging technologies will increasingly be introduced into the construction of resilient communities, which will undoubtedly further enhance community resilience in the future.

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The Evolution of France's Nuclear Energy Strategy: Policy Adjustments and Future Challenges from 1945 to the Macron Era

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Abstract

France has been a global leader in nuclear energy since the 1970s, with nuclear power playing a central role in its electricity supply. However, France's nuclear energy strategy is not static, but has undergone many adjustments in different historical periods. This paper reviews the evolution of France's nuclear energy strategy from 1945 to the present, focusing on the adjustments of nuclear energy policy under the Macron government and their reasons. It is found that from 1945 to 2017, France's nuclear energy strategy experienced three transitions from initial exploration to large-scale development and then to optimization of energy structure. After Macron's administration, affected by energy security, climate environment and economic factors, the nuclear energy policy has gone through a process from "gradual reduction" to "steady maintenance" and then to "full restart". However, France still faces multiple challenges in promoting the development of nuclear energy, and it is still necessary to take measures in various aspects to ensure the stable development of nuclear energy in the future.

Keywords: nuclear energy, France, Emmanuel Macron

1. Introduction

As one of the countries with the most extensive use of nuclear energy in the world, France has long relied on nuclear energy to provide stable electricity supply. The evolution of its nuclear energy strategy is not only a microcosm of energy policy, but also an important embodiment of national strategic autonomy. Since the launch of nuclear energy development after World War II, France has vigorously promoted the development of nuclear power through the Messmer Plan to achieve energy independence. However, after the Fukushima nuclear accident in 2011, France entered a period of policy adjustment, and the Hollande government put forward the goal of reducing the proportion of nuclear power generation. After Macron came to power in 2017, a series of adjustments in nuclear energy policy occurred again under the influence of security of energy supply, carbon neutrality and economic reality, especially after 2022, the nuclear energy strategy has undergone a major shift. Based on this, this paper systematically combs through the

historical evolution of France's nuclear energy strategy, divides the period from 1945 to 2017 into three phases, and focuses on the analysis of the adjustments of nuclear energy strategy during the Macron government and the reasons behind them, and discusses the main challenges and response strategies faced by France in the process of promoting the development of nuclear energy, with a view to providing lessons for the formulation of energy strategies in France and other countries.

2. Historical Evolution of the France's Nuclear Energy Strategy (1945-2017)

The evolution of France's nuclear energy strategy has been influenced by multiple factors, including energy security, economic costs, environmental policy, the international situation, and public opinion, etc. Since the 1970s, nuclear energy has been the backbone of France's energy system, and France has become a global leader in the use of nuclear energy. Since then, against the backdrop of changes in the international nuclear safety situation and the rise of environmental protection, France's nuclear energy strategy has been adjusted, but its overall reliance on nuclear energy has been maintained. However, policy adjustments in the 2010s began to limit its development, and France began to seek to optimize and transform its energy structure. This chapter analyzes the evolution of French nuclear energy policy in three phases from 1945 to 2017.

2.1 1945-1972: The Early Years of Nuclear Energy Development in France

After the Second World War, with the support of the Marshall Plan and the European Economic Community funds, France realized economic recovery, and its energy demand increased greatly. However, France's scarcity of coal, oil, natural gas and other energy resources has forced it to import large quantities of energy to meet its growing energy needs, and in the 1950s and 1960s, the degree of dependence on oil and natural gas for external use once reached more than 90 per cent.

In 1945, the French President Charles de Gaulle established the Atomic Energy Commission (CEA, Commissariat à l'Énergie Atomique), this new commission's purpose was to accelerate the industrialization of nuclear technology. In 1956, France's first 40 MW nuclear power reactor "G1" was put into operation in the south of France, and two other reactors — "G2" and "G3" —

were put into operation in 1959 and 1960 respectively. In 1958, France introduced the economical and safe pressurized water reactor (PWR) technology from Westinghouse Electric Company of the United States. From the end of the 1960s, France further introduced the company's pressurized water reactor technology with a single unit power of 900000 kilowatts, and learned from Westinghouse in the areas of reactor design, equipment manufacturing, and nuclear power plant management. France basically mastered a full set of core technologies for nuclear power plants within a decade, marking the gradual shift of the center of gravity of French energy development to nuclear power.[1]

2.2 1973-2011: Large-Scale Development of Nuclear Energy and France's Emergence as a Nuclear Power

The first global oil crisis erupted in 1973 when the price of oil skyrocketed, causing a downturn in the world economy. The oil shock, triggered by geopolitical tensions in the Middle East, led to a four-fold increase in France's oil bill within two years (1972-1974). With American and Western support on the Israeli side, Iraq and Saudi Arabia threatened and eventually imposed an oil embargo.[2] The crisis has made it clear to France that over-reliance on imported energy is too risky for the French economy and represents a very unfavorable situation. The Government identified that France needed energetical independence. France has therefore begun to explore alternative energy sources and is determined to expand its nuclear power generation and to formulate plans for the large-scale development of nuclear power. On November 30, 1973, the French Prime Minister Pierre Messmer announced the acceleration of the French nuclear program in a speech on the channel ORTF. He also emphasized the need for a European energy policy and announced the construction of a uranium enrichment plant EURODIF in the southeast of France, which would be in operation from 1978 to 2012.[3]

In March 1974, the Prime Minister Pierre Messmer announced the launch of an ambitious nuclear development program accompanied by

[1] Jiang Tao. (2023). A brief history of nuclear power in France.
https://mp.weixin.qq.com/s/aO0U-aarFZkha3RyzgV8sQ

[2] Christoph. (2023). France's Nuclear Odyssey.
https://www.wtsenergy.com/frances-nuclear-energy/

[3] Le Gros, G. (2020). La naissance du parc nucléaire français: le plan Messmer. *Revue Générale nucléaire*, (5), 56–59.

a series of energy sobriety measures — a kind of green deal more than 45 years ahead of time — known as the "Messmer Plan". The Prime Minister stated: "It is true that France has not been very favored by nature in terms of energy resources. We have almost no oil on our territory, we have much less coal than England and Germany, and less gas than Holland. Our great chance is our electrical energy of nuclear origin".[1] The goal of the plan is to build 80 nuclear reactors by 1985 and 170 nuclear reactors by 2000, and ultimately to realize that all of France's electricity will be provided by nuclear power. Under the impetus of this program, the construction of nuclear power in France was successfully put on the fast track. In the 1980s, a total of 44 new nuclear reactors were put into operation in France. Since the 1980s, nuclear power has become the "main force" of France's energy supply, with oil-fired power generation falling from 39% of total power generation in 1973 to 2% in 1986, and nuclear power generation rising from 7% in 1975 to 75% in 1990. Years of technological accumulation have given France a mature nuclear industry system, forming a group of nuclear power enterprises including EDF, Areva and Framatome.

The fact that nuclear energy in France has developed so rapidly and with such great success is due to the combined efforts: a consistent national policy over time, a unique cultural climate, strong governmental awareness and popular cooperation, and the introduction of technology and innovation.

First, the French Government is firmly committed to vigorously developing nuclear energy. The release of the French nuclear power program actually triggered off a wave of strong opposition throughout the country at the beginning, with more than 400 scientists joining hands to boycott the program and request the Government to postpone the construction of nuclear power. However, despite the massive anti-nuclear wave and demonstrations, the French government was determined to develop nuclear energy. Even after the outbreaks of nuclear accidents at Chernobyl and Three Mile

Island, which led to a drastic brake on the nuclear power construction process in the whole of Europe, with most countries slowing down or even shelving their nuclear power development plans, France still continued to plough ahead in the field of nuclear power. Philippe de Ladoucette, then president of the French Energy Regulatory Commission, said, "Despite major nuclear accidents in the international community, France's nuclear energy development program will never be modified, and the fight for energy independence has been a French credo since the end of World War I."[2] Nuclear power requires long-term commitment, sustained political and institutional support.[3] Going back to the 20th century, successive French governments, regardless of political affiliation, have given firm and strong support to the policy of developing nuclear power, and this unique consensus has ensured the long-term continuity of the French nuclear power development policy, allowing the French nuclear power business to flourish.

The second is the uniquely French culture of love for large-scale projects and respect for technical experts. Claude Mandil, the General Director for Energy and Raw Materials at the Ministry of Industry, said that France has a tradition of large, centrally managed technological projects and they are popular. "French people like large projects. They like nuclear for the same reasons they like high-speed trains and supersonic jets."[4] And part of the reason for the popularity of nuclear power is that the status of scientists and engineers is much higher in France than in the United States. Many senior civil servants and government officials have been trained as scientists and engineers (as opposed to lawyers, as in the U.S.), and unlike U.S. federal administrators, who are often looked down upon, these technocrats form a special kind of elite. According to Mandil, respect and trust in

[1] Jan Bartak, Noël Camarcat. (n.d). Nuclear Power in France and its Contribution to Reaching EU's Climate Objectives. https://www.nucadvisor.com/post/nuclear-power-in-france-and-its-contribution-to-reaching-eu-s-climate-objectives

[2] Zhang Fuqiang, Yan Xiaoqing. (2019). French energy strategy — nuclear energy first. *China Energy News*. https://paper.people.com.cn/zgnyb/html/2019-03/18/content_1914701.htm.

[3] Jan Bartak, Noël Camarcat. (n.d). Nuclear Power in France and its Contribution to Reaching EU's Climate Objectives. https://www.nucadvisor.com/post/nuclear-power-in-france-and-its-contribution-to-reaching-eu-s-climate-objectives

[4] Jon Palfreman. (n.d). Why the French like nuclear energy. https://www.pbs.org/wgbh/pages/frontline/shows/reaction/readings/french.html

technocrats is widespread. "For a long time, in families, the good thing for a child to become was an engineer or a scientist, not a lawyer. We like our engineers and our scientists and we are confident in them."[1] In addition in the recent history of French science, many of the scientists who won Nobel Prizes, such as the Curie family, Anthony Henri Becquerel, and Jean Baptiste Perrin, won their awards for reasons related to nuclear research, which inclined the French to associate nuclear scientific research with a sense of national honor, and some even believed that the success of France's development of nuclear power could effectively wash away France's World War II defeat by Germany's shame, so the French public is also more willing to accept nuclear power out of a sense of honor. Moreover, France is an independent nation, and the French public will not be willing to keep relying on other countries to provide energy. Therefore, whether it is the unique preference for large-scale projects, the respect and love for technical experts, or the desire for national honor and independence, the majority of the French people are willing to accept and support nuclear energy.

Thirdly, the Government and the industry have made great efforts to publicize the program and to increase public acceptance of it. Following the launch of the "Messmer Plan", the Association of Scientists for Information on Nuclear Energy was set up on December 15, 1975, under the auspices of the Government to ensure that the French nuclear industry provides truthful and transparent information to the public. Moreover, French authorities have been trying to make people aware of the benefits and risks of nuclear energy. Brilliant TV commercials reinforce the link between nuclear energy and the electricity that makes modern life possible. Nuclear power plants invite people to visit them and six million French people have accepted the invitation. Today, nuclear energy is a family affair in France. However, there is also the view that public discourse in France has linked nuclear power to nationalism and to the strength of the French state. Because of the rhetoric, the government and the media have sometimes portrayed opposition to nuclear power as being against the public interest. This has legitimized both police suppression of protestors and the

expropriation of property when the government wanted to construct a power plant.[2] In conclusion, the French official campaign has had a remarkable effect and the public has become much more receptive to nuclear energy.

The fourth is the introduction and innovation of technology. In the 1970s, the French Government localized pressurized water reactor technology after obtaining a technology license from Westinghouse and carrying out digestion, absorption and re-innovation. In the ensuing 1980s, France achieved large-scale batch construction and standardized operation of nuclear power, with 40 pressurized water reactor nuclear power plants built and put into operation during the peak construction period of 1978-1988. Unified and standardized reactor technology brought about a significant reduction in investment and operating costs, with investment costs below 1000 euros per kilowatt, equivalent to half of the world's average investment level in nuclear power, and operating costs 40% lower than those in the U.S., thus making France one of the countries with the lowest prices for industrial and civilian electricity in the world.

2.3 2012-2017: Optimizing the Energy Structure and Reducing Reliance on Nuclear Energy

The Hollande government's adjustment of France's nuclear energy development strategy is an important turning point in France's energy policy, and its core objective is to reduce the proportion of nuclear energy and promote the diversification of the energy structure in order to meet the multiple challenges of safety, environmental protection and politics. This is the result of multiple factors, including the safety reflection after the Fukushima accident, domestic political games and international environmental pressure. Although its goals were not fully realized, this phase provided the policy framework for France's energy transition and triggered a deep debate on the role of nuclear energy and the future of sustainable energy. The policy swings of subsequent governments have also highlighted the complex position of nuclear energy in France's energy strategy.

In 2011, after the Fukushima nuclear accident, many countries in Europe turned negative towards nuclear power and put forward nuclear abandonment plans one after another, Germany

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[1] Jon Palfreman. (n.d.). Why the French like nuclear energy. https://www.pbs.org/wgbh/pages/frontline/shows/reaction/readings/french.html

[2] Wiliarty, S. E. (2013). Nuclear power in Germany and France. *Polity, 45*(2), 281-296.

being one of them. The Fukushima accident had a great impact on the global nuclear power industry, and Areva's loss in 2011 amounted to 2.4 billion euros. Under the influence of the anti-nuclear wave, the French government's confidence in the development of nuclear power has also been shaken.

In 2012, François Hollande, the Socialist candidate in the French presidential election, promised to gradually reduce the share of nuclear energy in France's electricity supply in order to accelerate the development of renewable energy. This commitment stems in part from his alliance with the French Green Party to garner support from environmental voters. During Hollande's administration, the French government has introduced a series of policies to try to reduce the share of nuclear energy in the energy mix and promote renewable energy.

In August 2015, the French government enacted "Energy Transition for Green Growth Act" and one of the goals is to diversify electricity generation and reduce the share of nuclear to 50% by 2025. The main context in which the Act was introduced is as stated in its preamble: Most of the energy that we consume today causes pollution, is expensive and is derived from increasingly scarce fossil resources. Energy transition is a plan for the post-oil era and a step towards a new French energy model, which is stronger and more sustainable in its response to key energy supply challenges, changes in prices, the depletion of resources and environmental protection requirements.[1] Moreover, the ageing of nuclear power plants is a growing problem. Most of France's nuclear reactors, built in the 1970s and 1980s, are approaching or have exceeded their original design life, and maintenance and upgrades are costly. In addition, the nuclear energy industry itself faces serious economic challenges. Areva experienced a severe financial crisis in the 2010s, with its flagship projects — the Flamanville 3 EPR reactor in France and the Olkiluoto 3 reactor in Finland — both suffering huge losses due to schedule delays and cost overruns.[2] These

factors forced the French government to revisit its nuclear energy strategy.

In 2016, the Hollande government announced the official closure of France's oldest nuclear power plant, the Fessenheim plant, even though it could still be operated for many years, a move that signaled a substantial move to reduce the government's reliance on nuclear energy. However, due to opposition from EDF and the local government, the closure process has been delayed until 2020 for finalization.[3] The Hollande government has also vigorously promoted renewable energy, particularly wind and solar, in an attempt to bridge the electricity gap following nuclear energy cuts. However, France's wind and solar industries are underinvested and growing much slower than expected, and in the short term the country remains indispensable to the supply of nuclear energy. Moreover, the French power grid has long been based on nuclear power, making it difficult to quickly adapt to the volatility of renewable energy. In addition, some regions are opposed to the construction of wind farms, and administrative approvals are hampered. As a result, the development of renewable energy has not been able to quickly fill the gap created by nuclear energy cuts, despite the government's goal of reducing the proportion of nuclear energy.

3. Adaptation of French Nuclear Energy Strategy Under the Macron Government (2017–Present)

After the election of Emmanuel Macron as President of France in 2017, nuclear energy policy continued the basic direction of the Hollande administration, which continued to push forward with the Energy Transition Program. Macron initially expressed support for the goals of the Energy Transition Law and planned to gradually reduce the proportion of nuclear power generation. However, the government's position on nuclear energy policy began to be adjusted in the face of growing demand for electricity in France and the failure of renewable energy development to meet expectations. In particular, after the outbreak of the Russia-Ukraine conflict in 2022, the issue of France's energy security came to the fore, and the government's attitude toward nuclear energy

[1] Loi de transition énergétique pour la croissance verte, Le gouvernement français, le 13 décembre 2016, https://www.ecologie.gouv.fr/politiques-publiques/loi-transition-energetique-croissance-verte

[2] Mycle Schneider, Antony Froggatt. (2019). The World Nuclear Industry Status Report 2019. https://www.worldnuclearreport.org/The-World-Nuclear-Industry-Status-Report-2019-HTML

[3] Mycle Schneider, Antony Froggatt. (2020). The World Nuclear Industry Status Report 2020. https://www.worldnuclearreport.org/The-World-Nuclear-Industry-Status-Report-2020-HTML

underwent a major shift. Since 2017, nuclear energy policy has gone through a process from "gradual reduction" to "steady maintenance" to "full restart' after 2022". This chapter analyzes the changes and major shifts in France's nuclear energy policy under the Macron administration and examines the main factors that have influenced policy adjustments.

3.1 2017-2022: Swings and Adjustments in Nuclear Energy Policy — From "Gradual Reduction" to "Steady Maintenance"

After Macron came to power, his initial energy policy basically continued the approach of the Hollande government: continue to cut back on nuclear energy and vigorously develop renewable energy sources. In 2019, the French government released its Multi-Annual Energy Plan (Programmations Pluriannuelles de l'Énergie, PPE), which still emphasized reducing the proportion of nuclear energy in electricity generation from 75% to 50%, only postponing its realization from 2025 to 2035 and proposing the gradual closure of 14 nuclear reactors by 2035.[1]

Despite the Government's commitment to reducing the share of nuclear energy, many practical challenges have been encountered in the actual implementation process. First, the development of renewable energy is lagging behind and has not met expectations. Although France has vigorously promoted the development of wind and solar energy, the pace of their development has not been able to meet the electricity shortfall following the reduction of nuclear energy, owing to insufficient investment, land planning constraints and technological immaturity. Second is that the closure of nuclear power plants has led to a tight supply of electricity in France, especially during the winter peak season, the French power grid is not flexible enough, and France has to rely on neighboring countries to import electricity, weakening its energy independence. Then there is EDF's long-standing problems of high debt and rising maintenance costs for its aging nuclear plants, the closure of which means the company's revenues are falling, further exacerbating its financial woes. These challenges led Macron to gradually slow down the pace of nuclear energy cuts, and policy adjustments became inevitable. Against this backdrop, the French government has begun to reassess the role of nuclear energy in France's energy structure, and is gradually adjusting its nuclear energy policy from "gradual reduction" to "steady maintenance" and providing more support for the nuclear energy industry.

3.2 After 2022: The Great Policy Shift — A Full Restart of Nuclear Energy Development

Between late 2021 and early 2022, turbulence in global energy markets and soaring natural gas prices exacerbated uncertainty about France's energy supply. Especially after the outbreak of the Russia-Ukraine conflict, European gas supplies were severely affected, the energy crisis intensified, and the French government faced unprecedented pressure on its energy security. The French government's attitude has begun to change significantly, and it has begun to consider the possibility of building new nuclear power plants in order to ensure the stability of future power supply. The French government has become more aware of the key role of nuclear energy in guaranteeing energy independence. In this context, the Macron Government has finally decided to completely reorganize its nuclear energy policy.

In October 2021, Emmanuel Macron has presented the "France 2030" investment plan — a plan that follows 10 objectives to better understand, better live, better produce in France by 2030. The first Objective is to bring small, innovative nuclear reactors with better waste management to France and 1 billion euros will be invested between now and 2030.

In his energy policy speech in Belfort on February 10, 2022, Macron formally announced the nuclear renaissance plan, with France building six new EPR2 (Evolutionary Power Reactor 2) nuclear reactors and starting up eight others over the next few decades to achieve energy independence and a low-carbon transition. He suggested that he would like to extend the operational life of some of France's operating nuclear reactors, if conditions permit, and that France needs to parallel the development of renewable and nuclear energy. Macron's statement formally declared that France has "embraced" nuclear power again, marking a fundamental shift in France's nuclear energy policy from "reducing the proportion of nuclear energy" to "strengthening the nuclear energy industry". "What our country needs is the rebirth of France's nuclear industry," Macron

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[1] Programmations pluriannuelles de l'énergie (PPE), Le gouvernement français, le 7 mars 2019, https://www.ecologie.gouv.fr/politiques-publiques/prog rammations-pluriannuelles-lenergie-ppe

said, "The time has come for a nuclear renaissance."[1]

In April 2022, Macron formally proposed a motion to nationalize 100% of EDF, aiming to strengthen France's energy independence. In July, French Prime Minister Borne further clarified the relevant plans in a speech to Parliament, in which she proposed that, in order to cope with the rise in energy prices, to ensure energy autonomy, and to properly deal with the knock-on consequences of the Russia-Ukraine conflict, the French government explicitly incorporate 100% nationalization of EDF into the national reform plan, with full control of the initiative of power production. Bruno Le Maire, Minister of the Economy, Finance and Industrial and Digital Sovereignty, said this decision would give EDF the resources it needs to accelerate the implementation of the new nuclear program called for by the President of the Republic, and the deployment of renewable energies in France.[2]

In June 2023, the French National Assembly passed the "Law on the acceleration of procedures related to the construction of new nuclear facilities near existing nuclear sites and to the operation of existing facilities", completing an important legislative effort to revitalize nuclear power. Under this bill, France will remove the objective of reducing the share of nuclear power in the electricity mix to 50% by 2035, as well as the cap on nuclear energy capacity at 63.2 GW.[3]

In November 2024, the French Government published a new version of its National Low-Carbon Strategy and a draft Multi-Annual Energy Plan, marking a major shift in its nuclear energy policy, emphasizing the promotion of the construction of new units while maintaining the operation of existing units and proposing nine specific actions, including strengthening the

capacity for innovation in nuclear science and technology, comprehensively improving the performance of the operation of existing units, and planning for the expansion of nuclear energy on a larger scale, etc.[4]

3.3 Analysis of the Factors Influencing the Adaptation of France's Nuclear Energy Strategy

The evolution of France's nuclear energy policy has been influenced by multiple factors.

Firstly, in terms of energy security, France and Europe as a whole are facing serious energy security challenges due to the ongoing geopolitical conflicts in recent years, especially the Russia-Ukraine conflict. With the deterioration of Russian-European energy relations, the price of natural gas in France has risen sharply, and the cost of natural gas imports in 2022 has increased by nearly 70% compared to 2021. Therefore, in order to reduce its dependence on imported energy and reduce the risks associated with fluctuations in external energy supply, France needs to strengthen its own autonomous energy supply capacity. In this context, the government has reassessed its energy structure and considers nuclear energy to be a central pillar in guaranteeing the stability of France's electricity supply. Compared with the intermittency of renewable energy sources (such as wind and solar), nuclear energy can provide a continuous and stable supply of electricity and enhance France's energy self-sufficiency, which has become an important impetus for the Macron government's policy shift.

Secondly, in terms of climate and environment, in recent years, France has been deeply affected by the negative impact of various extreme weather events. In the face of the increasingly severe climate crisis, Macron has strengthened his determination to promote the realization of carbon neutrality at the domestic level and to enhance his leadership in climate governance at the international level. [5] Nuclear energy is a low-carbon energy source that emits very little carbon dioxide or other greenhouse gases

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[1] Liz Alderman. (2022). France Announces Major Nuclear Power Buildup. https://www.nytimes.com/2022/02/10/world/europe/france-macron-nuclear-power.html

[2] Pourquoi le gouvernement souhaite-t-il nationaliser EDF? le 22 juillet 2022, https://www.lafinancepourtous.com/2022/07/22/pourquoi-le-gouvernement-souhaite-t-il-nationaliser-edf/

[3] LOI n° 2023-491 du 22 juin 2023 relative à l'accélération des procédures liées à la construction de nouvelles installations nucléaires à proximité de sites nucléaires existants et au fonctionnement des installations existantes, Le gouvernement français, le 22 juin 2023, https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000047715784

[4] Zhang Yan, Wu Hao Song. (2024). France identifies nine actions for future nuclear power development. *Foreign Nuclear News*, (12), 1.

[5] Li Xinlei, Liu Qianru. (2024). France's nuclear energy revitalization strategy in the context of the climate-energy complex crisis: pathways, impacts and challenges. *Journal of China University of Petroleum (Social Science Edition)*, (04), 47-60. doi: 10.13216/j.cnki.upcjess.2024.04.0006.

during its production. The development of nuclear energy can work with renewable energy to reduce carbon emissions in France's energy structure, which is one of the most important ways for France to realize its carbon neutrality goal. Moreover, in the context of the global response to climate change, the active development of nuclear energy and other low-carbon energy sources will help France to show a positive posture in international climate cooperation, enhance its image and influence in global climate governance, strengthen its voice in the international energy and environmental fields, better participate in the formulation of international rules and regulations, and promote global energy transformation and sustainable development.

Finally, in terms of the economy, the nuclear energy industry is not only an important part of the French energy system, but also vital to the French economy and job market, providing a large number of jobs. Moreover, the nuclear energy industry involves many high-tech fields, such as nuclear reactor technology, nuclear fuel cycle and radiation protection. Increasing investment in nuclear energy can drive the technological innovation and upgrading of the relevant high-tech industries in France, enhance the technological level and industrial competitiveness of France in the fields of nuclear technology, material science, machinery manufacturing, etc., create more high value-added employment opportunities, and promote the transformation of the French economy into high-end manufacturing and scientific and technological innovation. In addition, France has advanced nuclear technology and rich experience in nuclear power construction and operation. The Macron government hopes that through the development of new-generation nuclear energy technology, such as small modular reactors, it can promote French nuclear technology and related products to the international market, expand overseas business, increase the export of nuclear power equipment and technology, bring more economic benefits to French enterprises, and at the same time enhance France's position in the global nuclear energy market.[1]

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[1] Vivienne Walt. (2021). Nuclear plants insulate France from the energy crisis. Now Macron is doubling down on them in a $35 billion moonshot plan. https://fortune.com/2021/10/12/nuclear-power-insulates-france-energy-crisis-macron-doubling-down-on-it-35-billion-moonshot/

4. Conclusion

Although the Macron Government vigorously promotes the development of nuclear energy, it still faces multiple difficulties and challenges in the specific promotion process.

First of all, France is facing a shortage of talents and funds. In recent years, due to changes in the global nuclear power development trend, the French nuclear industry orders have declined, resulting in the loss of a large number of skilled workers, and France once huge nuclear power construction team has shrunk significantly. For Macron's proposed new multiple nuclear power units and other nuclear energy development program, the talent stock is seriously insufficient. In the nuclear reactor design, construction, operation and maintenance of various aspects, all need specialized technical personnel. The lack of sufficient talent will not only affect the speed of the new project, but also may bring potential risks to the safe and stable operation of nuclear power plants. In addition, the construction of nuclear power plants is a highly capital-intensive project, which requires huge capital investment in every aspect, from the preliminary planning and design, equipment procurement, to construction and later operation and maintenance. Such high costs make new nuclear power plant projects face enormous financial pressure.

Secondly, there are obvious political differences and public perception bias on the issue of nuclear energy development in France. Some political parties and groups are opposed to the development of nuclear energy because of concerns about safety and waste disposal. This political stalemate has made it possible for new nuclear power plant projects to encounter numerous obstacles in the approval and planning process, leading to delays in project progress. Some local governments, influenced by local people and political forces, are not highly motivated to push forward nuclear power projects, and may even boycott them, due to the influence of local people and political forces. Moreover, some French people are still very worried about nuclear safety, especially the disposal of nuclear waste and the aging of nuclear reactors. This public perception bias may lead to protests and obstruction by local residents during the construction process, increasing the difficulty and social cost of the project.

Finally, there are also differences within the European Union on nuclear energy. France is one of the main advocates of nuclear energy in Europe, but within the EU, some countries (such as Germany and Austria) have long opposed nuclear energy. France needs to seek more support at the EU level to ensure that nuclear energy investment and development is not restricted. And there are also risks in the nuclear fuel supply chain, as some of France's nuclear fuel comes from countries such as Kazakhstan and Niger, where political instability could affect uranium supply.

In the face of these challenges, France should accelerate the innovation of nuclear energy technology, relying on the "France 2030" and other investment plans, and continuously increase the financial support for the research and development of nuclear energy technology; France should also strengthen the cultivation of nuclear energy talents, and promote the cooperation between colleges and universities and enterprises to set up a training program for nuclear energy professionals, so as to attract young engineers to enter the field of nuclear industry. The French government should also actively carry out communication and coordination among domestic political parties, and let all parties fully realize the importance of nuclear energy development to France's energy security, economic development and response to climate change through policy interpretation and expert demonstration. In addition, as 2025 will mark the 61st anniversary of the establishment of diplomatic relations between China and France, France can also deepen its cooperation with China in nuclear energy, emphasize the exchange of talents and technologies, and encourage French and Chinese enterprises to cooperate in various fields of energy.

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How Language Barriers Contribute to Social Isolation and Depression Among International Students in China

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Abstract

This paper examines how language barriers contribute to social isolation and depression among international students in China. As the number of international students in China continues to grow, linguistic challenges remain a significant issue that impedes their social integration and psychological well-being. The study discusses the mechanisms through which language barriers lead to social isolation, the relationship between isolation and depression, and the coping mechanisms employed by students. It highlights the importance of enhancing language training programs, promoting culturally sensitive mental health services, and creating opportunities for social integration. Additionally, the paper emphasizes the need for institutional policies that ensure inclusiveness and accessibility of mental health resources. Effective collaboration between universities, mental health organizations, and government agencies is essential for addressing the mental health needs of international students in China.

Keywords: language barriers, social isolation, depression, international students

1. Introduction

The rapid internationalization of higher education has led to a significant increase in the number of international students pursuing education in China. According to data from the Ministry of Education of the People's Republic of China, the number of international students studying in China surpassed 500,000 in 2023, making China one of the most popular study destinations globally (Ministry of Education of China, 2023). However, despite the growth in international student enrollment, challenges related to cultural adjustment and mental health remain prevalent, with language barriers being one of the most critical factors contributing to these issues.

Language barriers are broadly defined as difficulties in understanding or expressing thoughts and ideas due to differences in language proficiency, accents, or cultural references. For international students in China, these barriers manifest in various contexts, including academic interactions, social communication, and everyday activities such as shopping, seeking healthcare, or using public services. Limited proficiency in Mandarin Chinese can significantly hinder students' ability to integrate into local society, access essential

resources, and form meaningful relationships. According to a survey conducted by Li and Chen (2024), 62% of international students in Chinese universities reported experiencing moderate to severe difficulties in communicating with locals, particularly in non-academic settings. This communication barrier often results in social exclusion, heightened stress levels, and frustration.

The psychological implications of language barriers are profound. Studies have shown that language barriers are associated with increased stress, anxiety, and feelings of isolation among international students (Wang & Liu, 2024). The inability to communicate effectively not only impedes academic performance but also undermines emotional well-being by creating a persistent sense of exclusion and inadequacy. Furthermore, the stress resulting from language-related difficulties can accumulate over time, leading to more severe mental health issues such as depression. A longitudinal study conducted by Zhang et al. (2023) involving 400 international students in Beijing revealed that students who reported significant language barriers were 1.8 times more likely to experience depressive symptoms compared to those who reported minimal language difficulties.

From a theoretical perspective, acculturation theory provides a useful framework for understanding how language barriers contribute to social isolation and depression. Acculturation refers to the process by which individuals adapt to a new cultural environment, which often involves learning the language, norms, and values of the host society (Berry, 1997). Language proficiency is a fundamental component of this process, influencing the extent to which individuals can engage with the host culture and establish social networks. Failure to achieve adequate language proficiency can result in marginalization, which is characterized by low involvement in both the host and home cultures, thereby increasing the risk of isolation and psychological distress.

Moreover, the Social Isolation Model highlights how inadequate language skills can directly impact social networks. According to this model, language barriers can restrict individuals' ability to participate in social activities, form friendships, and access support systems, which are crucial for mental health (Lin & Zhang, 2024). This perspective emphasizes the importance of addressing language-related challenges to promote the well-being of international students. Additionally, the Cultural Distance Hypothesis suggests that greater linguistic and cultural differences between students' home countries and the host environment can exacerbate psychological distress and hinder social integration (Ward & Kennedy, 1999).

Understanding the context of language barriers and their implications for mental health is essential for developing effective interventions and support systems. The following sections will explore how language barriers specifically contribute to social isolation, the relationship between social isolation and depression, and the coping mechanisms employed by international students in China.

2. The Role of Language Barriers in Social Isolation

Language barriers significantly contribute to the social isolation experienced by international students in China. The inability to communicate effectively in Mandarin Chinese restricts students' participation in various social interactions, from casual conversations to more structured group activities. Studies indicate that inadequate language proficiency often leads to feelings of exclusion and loneliness, especially when students are unable to fully express themselves or comprehend the nuances of local communication (Liu & Wang, 2024).

Social isolation can manifest in multiple forms, including emotional isolation, social withdrawal, and a lack of a supportive peer network. Emotional isolation occurs when international students feel they are unable to share their thoughts and emotions due to linguistic limitations. According to a survey by Chen and Zhang (2024), approximately 58% of international students reported avoiding social gatherings due to language-related anxiety. Such avoidance behaviors can lead to prolonged isolation, which may exacerbate feelings of depression and anxiety.

Additionally, language barriers often prevent international students from developing meaningful relationships with locals. Research by Zhou et al. (2024) suggests that international students who struggle with language proficiency are more likely to socialize primarily within their own cultural or linguistic groups, thereby limiting opportunities for broader social integration. While these ethnic enclaves can provide emotional support and a sense of

community, they may also reinforce social isolation from the mainstream society.

Furthermore, language barriers can negatively impact academic interactions, which are crucial for social integration. Classroom participation, group discussions, and collaborative projects often require a level of language proficiency that many international students find challenging. According to a qualitative study conducted by Huang and Li (2024), international students frequently reported feeling marginalized during classroom interactions, leading to a diminished sense of belonging.

Cultural distance also plays a significant role in social isolation. Students from countries with linguistic and cultural backgrounds vastly different from China's may encounter more difficulties in adapting to local communication styles. This cultural distance, compounded by language barriers, can result in heightened perceptions of discrimination and exclusion (Ward & Kennedy, 1999).

The consequences of social isolation due to language barriers are not only emotional but also behavioral. Studies have shown that socially isolated students are less likely to engage in extracurricular activities, seek social support, or utilize available mental health resources (Wang & Liu, 2024). As a result, their ability to establish supportive networks and build resilience is significantly compromised.

Understanding the role of language barriers in contributing to social isolation is critical for designing interventions that promote better integration and mental health outcomes among international students in China. The following section will discuss how social isolation resulting from language barriers is closely related to the development of depressive symptoms.

3. Social Isolation and Its Relationship to Depression

Social isolation, resulting from language barriers, is a significant predictor of depressive symptoms among international students in China. The lack of meaningful social interactions, limited peer networks, and cultural disconnection contribute to a heightened risk of developing mental health issues. According to a study by Wang et al. (2024), approximately 45% of international students who reported frequent social isolation also exhibited moderate to severe depressive symptoms.

The relationship between social isolation and depression can be explained through the framework of interpersonal theory, which suggests that inadequate social connections contribute to feelings of loneliness, low self-esteem, and emotional distress (Joiner, 2005). When language barriers restrict opportunities for forming friendships and participating in social activities, students are more likely to experience a diminished sense of belonging, further exacerbating depressive symptoms.

Moreover, social isolation not only affects students' emotional health but also limits their access to coping resources. International students who lack supportive social networks are less likely to engage in social activities, seek emotional support, or access mental health services (Liu & Chen, 2024). As a result, their ability to cope with stress and psychological challenges is severely compromised, leading to further isolation and depressive symptoms.

Additionally, social isolation has been found to impact cognitive processes, including negative thought patterns and rumination, which further worsen depressive symptoms. Students who feel isolated are more likely to dwell on negative experiences, particularly when their efforts to communicate are met with frustration or failure. According to a survey conducted by Zhang and Li (2024), over 50% of international students who reported high levels of social isolation also experienced recurrent negative thoughts and feelings of hopelessness.

The cumulative effects of social isolation and depression can hinder academic performance, social integration, and overall well-being. Many international students who experience prolonged depressive symptoms encounter difficulties maintaining motivation, concentrating on their studies, and establishing meaningful connections with peers. Without adequate support systems, these students face an increased risk of academic failure and mental health deterioration.

Furthermore, the relationship between social isolation and depression is often exacerbated by cultural factors. International students who come from collectivist societies, where social bonds are highly valued, may experience heightened psychological distress when unable to form meaningful relationships in their host environment (Hofstede, 1984). For these students, the inability to communicate

effectively can result in a deep sense of alienation and frustration.

Addressing these issues requires a holistic approach that not only targets language proficiency but also promotes social inclusion and culturally sensitive mental health interventions. The following section will discuss various coping mechanisms and institutional support systems that can mitigate the adverse effects of language barriers on mental health.

4. Coping Mechanisms and Institutional Support Systems

Addressing the psychological impact of language barriers requires a combination of individual coping strategies and institutional support systems. International students in China often employ various coping mechanisms to navigate linguistic challenges, including language learning efforts, peer support networks, and emotional resilience-building techniques. Peer support, particularly from individuals sharing similar linguistic or cultural backgrounds, can provide a crucial buffer against feelings of isolation and stress (Chen & Liu, 2024).

Universities play a significant role in mitigating the negative effects of language barriers. Many institutions have implemented language training programs aimed at improving students' proficiency in Mandarin Chinese. Additionally, some universities offer bilingual counseling services designed to address the specific mental health needs of international students (Huang & Zhao, 2024). However, accessibility and effectiveness of such services remain inconsistent across institutions. Language training programs, while helpful, are often criticized for lacking cultural relevance and practical application, which reduces their effectiveness in promoting meaningful social integration.

Furthermore, culturally sensitive mental health services are essential for promoting the well-being of international students. Incorporating cultural competence into counseling programs can enhance students' willingness to seek help and improve the overall effectiveness of interventions. Culturally responsive interventions that consider students' cultural values, beliefs, and communication styles have been shown to be more effective in reducing anxiety and depression (Wang & Zhang, 2024). Institutions are also encouraged to create environments that promote social integration through structured activities and intercultural events.

Digital platforms for language learning and mental health support are increasingly being adopted as effective tools for overcoming linguistic barriers. Online resources that provide language practice opportunities and virtual counseling services can be particularly useful for students who feel uncomfortable seeking face-to-face assistance. Additionally, mobile applications that offer real-time translation services and mental health support systems can play a significant role in enhancing students' coping abilities.

Despite these efforts, challenges remain. International students often report difficulties in accessing mental health services due to limited availability, cultural stigma, and a lack of awareness regarding existing resources (Chen & Liu, 2024). Furthermore, language barriers themselves can discourage students from seeking help, particularly when counseling services are only available in Mandarin Chinese. Therefore, a comprehensive approach that addresses both linguistic and cultural barriers is essential to improve mental health outcomes for international students in China.

The following section will present recommendations for enhancing institutional policies and practices aimed at improving the mental health outcomes of international students in China.

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The Role of Cultural Activities in Enhancing Social Support and Neighborhood Cohesion Among the Elderly

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Abstract

China's rapidly aging population presents significant social challenges, particularly concerning social support and neighborhood cohesion among elderly individuals. As traditional family structures weaken due to urbanization and modernization, community-based cultural activities have emerged as an effective means to enhance social engagement and psychological well-being among the elderly. This study explores the role of cultural activities in strengthening social support networks, fostering intergenerational relationships, and improving emotional resilience among aging individuals. By examining both formal and informal cultural participation, as well as accessibility barriers, this research identifies key factors influencing elderly involvement in cultural activities. Policy recommendations are proposed to enhance government support, develop elderly-friendly public spaces, and expand digital literacy programs for senior citizens. Additionally, the study highlights the importance of intergenerational programs and sustainable community initiatives in ensuring the long-term benefits of cultural engagement. Future research directions are suggested, focusing on the impact of cultural activities on mental health, cognitive function, and the role of technology in elderly cultural participation. By promoting a more inclusive and accessible cultural landscape, this study contributes to the broader discourse on active aging and community cohesion in China's aging society.

Keywords: elderly cultural participation, social support, neighborhood cohesion, intergenerational relationships, community engagement, active aging, digital inclusion

1. Background and Significance

China is undergoing one of the most significant aging trends globally. According to the National Bureau of Statistics of China, as of 2022, the population aged 60 and above exceeded 280 million, accounting for 19.8% of the total population. By 2050, this proportion is expected to reach nearly 35%, making China one of the most rapidly aging societies in the world. This demographic shift not only presents economic and healthcare challenges but also exacerbates issues related to social support and neighborhood cohesion among the elderly.

Traditionally, family has been the primary source of social support for the elderly in China. However, with accelerated urbanization, increased migration, and the shift from extended family structures to nuclear families, many

elderly individuals now live apart from their children. This has led to a growing number of "empty-nest" elderly, particularly in urban areas, where social isolation and loneliness have become prevalent concerns. According to research, social isolation can have severe psychological and physiological effects, contributing to higher risks of depression, cognitive decline, and chronic illnesses among elderly individuals.

Social support is crucial for elderly well-being, encompassing emotional companionship, practical assistance, and informational guidance. Strong social networks contribute to higher life satisfaction, better mental health, and increased longevity. Studies in China have shown that elderly individuals with strong social ties are more likely to engage in healthy lifestyles and report greater happiness compared to those who are socially isolated. However, as traditional family-based support weakens, community-based and neighborhood support systems are becoming increasingly vital.

Neighborhood cohesion, defined as the sense of trust, connectedness, and mutual support among neighbors, plays a critical role in elderly well-being. In China's urban communities, danwei (work-unit) culture and collective living arrangements once fostered strong neighborhood ties, but the shift toward market-driven urbanization has weakened these social structures. In rural areas, despite stronger traditional social networks, rapid youth migration to cities has left many elderly individuals with limited local support networks.

Enhancing neighborhood cohesion among the elderly can promote greater security, social interaction, and emotional well-being. Research suggests that elderly individuals who participate in community activities and neighborhood programs report higher levels of happiness and a stronger sense of belonging.

Cultural activities have emerged as a key strategy for enhancing social support and neighborhood cohesion among the elderly. In China, the government actively promotes cultural engagement as part of its aging-friendly policies, recognizing its benefits for physical and mental health. Cultural participation, such as square dancing (广场舞), calligraphy, traditional opera, and storytelling, provides elderly individuals with opportunities to build social connections, preserve cultural identity, and stay physically active.

Research indicates that elderly individuals who engage in community-based cultural activities experience lower levels of depression, higher cognitive function, and improved social integration. Cultural participation not only enhances individual well-being but also strengthens community bonds, fostering a sense of shared identity and collective belonging.

Although cultural activities have been widely promoted in China, research on their specific impact on social support and neighborhood cohesion remains limited. Most studies focus on the physical and psychological benefits of cultural participation, with fewer addressing its role in enhancing elderly social networks and community relationships.

This study aims to explore how cultural activities contribute to strengthening social support and fostering neighborhood cohesion among elderly individuals in China. By examining various forms of cultural engagement, participation patterns, and the challenges elderly individuals face, this research seeks to provide policy recommendations for promoting inclusive and accessible cultural programs that enhance elderly well-being and social connectedness.

2. Theoretical Foundations

2.1 Social Support and Cohesion Theories Related to Aging

Social support theory explains how relationships and community ties contribute to elderly well-being. In the Chinese context, social support traditionally comes from family, community networks, and institutional care. However, with changing societal structures, there is a growing emphasis on community-based support systems.

Social support can be classified into emotional, instrumental, informational, and appraisal support. Emotional support includes companionship and empathy, while instrumental support involves practical assistance, such as caregiving and transportation. Informational support provides guidance on health and social services, and appraisal support involves encouragement and affirmation. Studies suggest that elderly individuals with strong social networks report lower levels of loneliness and higher life satisfaction.

Neighborhood cohesion theory highlights the

importance of trust, reciprocity, and shared values in fostering community bonds. In China, traditional community structures—such as courtyard living (四合院) in Beijing and rural clan-based communities—historically promoted strong neighborhood cohesion. However, modern urbanization and increased mobility have weakened these connections.

Neighborhood cohesion is particularly important for the elderly, as it enhances security, facilitates resource sharing, and provides emotional comfort. Research suggests that elderly individuals living in high-cohesion neighborhoods engage more frequently in community activities and report better psychological well-being than those in low-cohesion environments.

Cultural activities provide an effective mechanism for reinforcing social support and neighborhood cohesion. By creating shared experiences, strengthening interpersonal relationships, and fostering intergenerational exchanges, cultural engagement helps mitigate social isolation among elderly individuals.

2.2 The Impact of Cultural Participation on Social Capital and Collective Identity

Social capital refers to the networks, relationships, and shared norms that facilitate cooperation and mutual support. In China, Confucian traditions of collectivism and reciprocity have historically shaped the formation of social capital. Cultural participation plays a key role in strengthening bonding, bridging, and linking social capital among elderly individuals.

Bonding social capital refers to strong ties within close-knit groups, such as family networks, religious communities, and senior clubs. Cultural activities, such as tea ceremonies, calligraphy groups, and community storytelling, reinforce these intimate connections.

Bridging social capital connects diverse groups across different social backgrounds, fostering cross-generational and cross-community interactions. Programs such as intergenerational heritage projects and traditional art workshops enable elderly individuals to share knowledge with younger generations, promoting cultural continuity and mutual understanding.

Linking social capital refers to relationships that connect individuals with formal institutions and resources. Elderly participation in government-sponsored cultural programs enhances their access to community resources, health services, and policy support.

Cultural participation also strengthens collective identity, fostering a sense of belonging and shared cultural heritage. In China, where traditional festivals, folk arts, and historical storytelling hold significant cultural value, engaging in these activities helps elderly individuals preserve their identity and pass down cultural traditions.

Studies have shown that elderly individuals who actively participate in cultural activities report higher self-esteem, greater emotional resilience, and stronger community engagement. In particular, community-wide cultural festivals have been linked to higher levels of neighborhood trust and increased civic participation.

By integrating social support theory, neighborhood cohesion theory, social capital theory, and collective identity theory, this study provides a comprehensive framework to understand how cultural activities enhance elderly well-being. These theories collectively explain why cultural participation is an effective means of strengthening social support, reducing isolation, and fostering inclusive communities for aging populations in China.

3. Types of Cultural Activities

3.1 Various Forms of Cultural Engagement, Including Music, Art, and Festivals

Cultural activities play a crucial role in enhancing the well-being of elderly individuals, providing them with opportunities for social interaction, cognitive stimulation, and emotional expression. In China, the tradition of engaging in cultural activities as a means of fostering social cohesion and maintaining mental and physical health is deeply rooted in society. According to the China National Bureau of Statistics (2022), over 40% of urban elderly and 55% of rural elderly participate in some form of cultural activity, demonstrating its widespread appeal.

Music-related activities are among the most popular forms of cultural engagement for the elderly in China. Many cities and rural communities organize square dancing (广场舞), where elderly individuals gather in public spaces to dance to traditional and modern music. Studies indicate that square dancing enhances

physical health, reduces stress by 35%, and improves social connectedness by 28% among elderly participants (Liu et al., 2021). Additionally, community choirs and folk music groups provide avenues for elderly individuals to stay socially active while preserving traditional Chinese musical heritage.

Art-based activities such as calligraphy, painting, and paper cutting are widely embraced by elderly individuals, particularly in urban retirement communities and cultural centers. Calligraphy, in particular, is linked to improved cognitive function and emotional regulation (Zhao et al., 2020), and studies show that elderly individuals who practice calligraphy regularly experience a 23% reduction in symptoms of anxiety and depression compared to non-participants (Xu et al., 2019).

Traditional festivals and public cultural events also provide essential opportunities for elderly participation. Chinese cultural festivals, such as the Spring Festival, Mid-Autumn Festival, and Chongyang Festival (Double Ninth Festival, 重阳节), encourage elderly individuals to engage in storytelling, poetry recitations, and temple fairs. Research has found that elderly individuals who actively participate in festival-related activities report higher levels of life satisfaction and stronger intergenerational bonds (Chen & Wang, 2020).

Intergenerational cultural programs have gained increasing attention in China as a way to bridge the gap between younger and older generations. Initiatives such as heritage workshops, oral history projects, and traditional craft training allow elderly individuals to share their knowledge with younger participants, fostering mutual respect and a sense of purpose. A survey conducted by the China Association of the Elderly (2021) found that 72% of elderly individuals engaged in intergenerational programs felt a stronger sense of belonging and emotional well-being.

3.2 Differences Between Formal and Informal Participation

Formal cultural participation in China primarily takes place within government-funded institutions, community cultural centers, senior universities (老年大学), and organized social clubs. These structured programs are designed to provide elderly individuals with access to cultural education, artistic training, and social events. Senior universities, in particular, have

gained significant popularity, with over 8 million elderly individuals enrolled in courses ranging from traditional arts to digital literacy (Ministry of Education of China, 2022). These institutions provide an organized setting where elderly individuals can engage in lifelong learning and structured cultural activities under professional guidance.

In contrast, informal cultural participation occurs at the grassroots level, often in public parks, neighborhood courtyards, and community centers, where elderly individuals spontaneously engage in group singing, poetry reading, mahjong, and traditional storytelling. Informal participation allows for greater flexibility and inclusivity, enabling elderly individuals to socialize at their own pace without financial or institutional constraints. However, the lack of structured organization may limit the resources available for large-scale participation.

Studies show that while 56% of urban elderly prefer formal cultural activities, a higher percentage of rural elderly (63%) engage in informal activities, highlighting the influence of economic and infrastructural differences (Yang et al., 2020). Informal cultural participation is often seen as more accessible, particularly in areas where institutional support for elderly cultural engagement is limited.

3.3 Accessibility and Inclusivity of Cultural Programs for the Elderly

Despite the benefits of cultural engagement, not all elderly individuals in China have equal access to cultural programs, and several barriers exist. One of the primary challenges is geographical disparity. Elderly individuals in rural areas have fewer opportunities to participate in organized cultural programs due to limited government investment in community infrastructure. A study by Zhang & Li (2021) found that only 37% of rural elderly individuals regularly participate in cultural activities, compared to 68% in urban areas. Addressing this gap requires policies that expand cultural resource allocation to rural communities and promote mobile cultural programs that can reach underserved populations.

Financial barriers also limit participation. While many formal programs charge tuition or material fees, elderly individuals from lower-income backgrounds may find participation economically unfeasible.

According to a 2021 survey by the China Development Research Foundation, 28% of elderly respondents cited financial constraints as a primary reason for non-participation in cultural programs. To address this, local governments and NGOs have begun implementing subsidized or free cultural programs for low-income elderly individuals.

Another significant challenge is digital inclusion. With the increasing digitization of cultural resources, many elderly individuals struggle to access online cultural activities due to limited digital literacy. A Pew Research (2022) study found that only 41% of elderly individuals in China over the age of 70 regularly use smartphones for cultural activities, such as online learning or virtual museum tours. Government initiatives, such as smartphone training programs for seniors, have been introduced to help bridge this gap, allowing more elderly individuals to engage in remote cultural participation.

Social inclusivity is also an issue, particularly for elderly individuals from ethnic minority backgrounds or those with disabilities. Some cultural programs fail to accommodate linguistic diversity, accessibility needs, or specific cultural traditions, limiting the participation of certain elderly groups. Policy reforms have called for more inclusive cultural programming, ensuring that elderly individuals from all backgrounds can engage in meaningful cultural activities.

By addressing these accessibility and inclusivity challenges, China can enhance the cultural participation of its aging population, ensuring that elderly individuals—regardless of economic status, geographical location, or physical ability—can benefit from the social and psychological advantages of cultural engagement.

4. Cultural Activities and Social Support

4.1 Facilitating Interpersonal Connections and Reducing Social Isolation

Social isolation has become a pressing concern for elderly individuals in China, particularly in urban areas where family structures have shifted and mobility patterns have changed. A growing number of elderly individuals — especially the "empty-nest" elderly — live alone or away from their children due to urban migration. This lack of daily interaction can lead to emotional distress, depression, and a decline in overall well-being. Cultural activities, as socially engaging experiences, provide elderly individuals with opportunities to connect with others, helping to reduce loneliness and strengthen their social networks.

Community-based cultural activities such as square dancing, folk singing, and public poetry recitations have become effective means for elderly individuals to maintain daily social interaction. Research in China has shown that participation in square dancing not only improves physical fitness but also enhances social connectedness, with elderly participants reporting a 30% increase in their sense of belonging to the community. Similarly, group-based art classes and storytelling events encourage elderly individuals to form new friendships and rekindle old relationships, creating a supportive and interactive social environment.

For elderly individuals living in rural areas, cultural activities such as temple fairs, traditional opera performances, and local festival celebrations serve as essential gathering points where social ties are reinforced. Unlike urban elderly, rural elderly often face geographical isolation, and these cultural events provide them with much-needed opportunities for social bonding and emotional support. Studies indicate that elderly individuals who regularly participate in cultural events are significantly less likely to report feelings of loneliness compared to those who do not participate.

4.2 Strengthening Intergenerational and Peer Relationships

Cultural activities play a crucial role in bridging the generational gap, particularly in a rapidly modernizing society where traditional values and family dynamics are evolving. Intergenerational cultural programs, such as heritage workshops, traditional handicraft classes, and oral history storytelling, allow elderly individuals to pass down knowledge and customs to younger generations. This transmission of cultural heritage not only strengthens family bonds but also instills a sense of purpose and fulfillment in elderly individuals.

In China, festivals such as the Mid-Autumn Festival and the Chongyang Festival serve as occasions for intergenerational bonding. Many community centers organize cross-generational performances, art displays, and storytelling

sessions, providing a platform for elderly individuals to interact with younger family members and local youth. Studies suggest that elderly individuals who actively engage in intergenerational cultural programs experience a 20% increase in self-esteem and emotional well-being, as these interactions affirm their social roles and relevance in modern society.

Peer relationships among the elderly are equally important in promoting social support. Elderly individuals who participate in senior clubs, reading groups, or drama performances often develop strong peer networks, which serve as alternative support systems when family-based support is limited. These peer relationships create a sense of mutual care, companionship, and emotional sharing, helping elderly individuals cope with life transitions such as retirement, widowhood, or health issues. In many cases, elderly peer groups evolve into self-organized support networks, where members assist each other with daily needs, medical visits, or emotional counseling.

4.3 Psychological and Emotional Benefits of Participation

Beyond facilitating social connections, cultural participation offers significant psychological and emotional benefits for elderly individuals. Engaging in artistic and cultural activities provides a sense of self-fulfillment, cognitive stimulation, and stress relief. Studies show that elderly individuals who participate in calligraphy, painting, or music therapy exhibit higher levels of cognitive function and emotional stability compared to those who do not engage in such activities.

Calligraphy, for instance, has long been considered a meditative and therapeutic practice in Chinese culture. Many elderly individuals use calligraphy as a means of self-expression and emotional regulation, with research indicating that regular practice can reduce anxiety and improve focus by up to 25%. Similarly, elderly individuals engaged in group-based music activities, such as choirs or traditional opera performances, report enhanced emotional well-being, reduced stress, and increased life satisfaction.

Participation in cultural activities also helps combat depression and age-related mental health challenges. A survey conducted by the China Academy of Social Sciences (CASS) found that elderly individuals who regularly engage in

community-based cultural activities report a 40% lower risk of depression compared to those who lead socially isolated lives. Engaging in artistic expression allows elderly individuals to redirect their emotions positively, creating a sense of personal achievement and emotional resilience.

Moreover, cultural participation serves as a powerful tool in memory retention and cognitive health, particularly for elderly individuals at risk of mild cognitive impairment (MCI) or dementia. Studies indicate that elderly individuals engaged in storytelling, poetry recitation, or memory-based games show improved recall ability and slower cognitive decline compared to non-participants. These activities provide mental stimulation while also fostering social bonds and emotional stability, making them an effective preventive strategy against cognitive deterioration.

Cultural activities play a multifaceted role in strengthening social support systems for elderly individuals in China. They serve as social platforms for reducing isolation, reinforcing intergenerational and peer relationships, and enhancing psychological well-being. Given the rapid demographic shift and evolving family structures, it is essential to recognize the value of cultural engagement in ensuring a fulfilling and socially connected aging experience. Encouraging broader participation in cultural activities can help foster a more inclusive and supportive society for elderly individuals, reinforcing both community ties and individual well-being.

5. Community Engagement and Cohesion

5.1 Cultural Activities as a Platform for Social Bonding and Collective Identity

Cultural activities serve as a powerful medium for fostering social bonding and strengthening collective identity among elderly individuals, particularly in the context of China's evolving social landscape. As urbanization and modernization have transformed traditional neighborhood structures, cultural participation has become an essential tool for rebuilding social trust and enhancing community cohesion.

In Chinese society, the concept of "community" (社区) plays a significant role in social interactions, especially for elderly individuals who increasingly rely on their local environment for social engagement. Cultural activities, such as square dancing, traditional opera

performances, and community storytelling sessions, provide elderly individuals with a shared space to connect, interact, and build a sense of collective belonging. These activities create a shared identity, reinforcing cultural traditions while simultaneously fostering new social networks that compensate for the weakening of traditional family-based support systems.

Participating in cultural activities also strengthens group solidarity and mutual support networks. In many urban communities, elderly groups self-organize to engage in painting classes, poetry recitations, and folk music groups, forming long-term friendships and providing emotional and practical support to one another. Research suggests that elderly individuals who regularly participate in cultural activities report higher levels of trust in their neighbors and are more likely to engage in community assistance programs than those who do not participate.

Beyond personal relationships, cultural activities help preserve and transmit cultural heritage, reinforcing a sense of intergenerational continuity. Elderly individuals involved in traditional Chinese arts, such as calligraphy, embroidery, and shadow puppetry, often take on the role of cultural transmitters, passing down skills and knowledge to younger generations. This not only enhances their own sense of purpose and self-worth but also strengthens community bonds by fostering intergenerational respect and cultural continuity.

5.2 Role of Public Spaces, Community Centers, and Local Organizations

The success of cultural activities in fostering community engagement and cohesion largely depends on the availability and accessibility of public spaces, community centers, and local organizations. In China, urban and rural environments differ significantly in their approach to supporting elderly participation in cultural activities.

Public spaces such as parks, plazas, and temple courtyards have historically served as gathering points for community activities. In urban areas, parks have become essential venues for elderly cultural participation, hosting daily activities such as Tai Chi, singing groups, and collective dance performances. These public spaces provide an informal yet inclusive environment where elderly individuals can interact freely,

without the constraints of membership fees or structured schedules. Research indicates that neighborhoods with well-maintained public spaces experience higher levels of elderly participation in cultural activities, leading to stronger community ties and increased civic engagement.

Community centers and senior universities play a formal role in facilitating cultural engagement by offering structured programs, educational courses, and specialized cultural events for elderly participants. Many Chinese cities have established elderly activity centers, where individuals can learn new skills, engage in artistic expression, and participate in social events. These centers bridge the gap between informal social interactions and institutional support, providing elderly individuals with a stable and resource-rich environment for cultural engagement.

Local organizations, including nonprofit groups, volunteer associations, and government-backed initiatives, also play a crucial role in promoting cultural activities for elderly individuals. Many grassroots organizations have developed programs aimed at encouraging elderly participation in public events, cultural performances, and intergenerational mentorship programs. Additionally, government policies such as China's Healthy Aging Initiative (健康老龄化战略) emphasize the importance of community engagement through cultural and recreational activities, offering funding and policy support to ensure the sustainability of such programs.

However, challenges remain in ensuring equitable access to cultural activities across different regions. While urban areas benefit from well-developed community infrastructure, rural elderly individuals often face limited access to formal cultural programs and designated public spaces. To address this, mobile cultural initiatives, such as traveling performance groups, rural cultural festivals, and digital learning platforms, have been introduced to extend cultural engagement opportunities to remote areas.

Cultural activities serve as a crucial pillar in fostering community cohesion, strengthening social bonds, collective identity, and intergenerational relationships among elderly individuals. The role of public spaces, community centers, and local organizations in

facilitating elderly participation is essential in ensuring equitable access and sustained engagement. As China continues to navigate its aging population challenges, enhancing community-based cultural engagement will be critical in building a more inclusive and socially connected society for the elderly.

6. Challenges and Barriers

Despite the numerous benefits of cultural activities in enhancing social support and neighborhood cohesion among elderly individuals, various challenges and barriers hinder their full participation. These obstacles can be categorized into physical, economic, social, and policy-related factors, which vary depending on urban-rural differences, personal circumstances, and institutional support. Addressing these barriers is crucial to ensuring that all elderly individuals, regardless of their background, have access to meaningful cultural engagement opportunities.

6.1 Physical and Health Limitations

One of the most significant barriers to elderly participation in cultural activities is physical health constraints. Many elderly individuals suffer from mobility impairments, chronic illnesses, and sensory limitations (e.g., hearing or vision loss), which make it difficult to take part in activities that require physical movement, travel, or prolonged engagement. For example, while square dancing and Tai Chi are among the most popular cultural activities for Chinese elderly individuals, those with arthritis, cardiovascular diseases, or osteoporosis may find them physically demanding.

In addition, mental health conditions such as dementia, depression, and cognitive decline affect participation rates. Studies show that elderly individuals with mild cognitive impairment (MCI) are less likely to engage in social and cultural activities, despite evidence suggesting that such engagement can help slow cognitive deterioration. However, most cultural programs are not specifically designed to accommodate individuals with special health needs, leading to exclusion from community participation.

6.2 Economic Constraints

Financial difficulties also present a barrier, particularly for low-income elderly individuals. Many cultural activities, particularly those organized by private institutions or formal senior centers, require membership fees, tuition costs, or material expenses (e.g., for painting supplies, musical instruments, or costumes for performances). A survey by the China Development Research Foundation (2021) found that 28% of elderly respondents cited financial constraints as a primary reason for non-participation in cultural programs.

Urban elderly individuals may have better access to government-subsidized programs, but in rural areas, economic hardship often limits participation, as elderly individuals must prioritize daily living expenses over recreational or cultural engagement. While free or low-cost community-based activities exist, they often lack sufficient resources, space, or professional guidance, leading to lower quality and reduced participation appeal.

6.3 Social and Psychological Barriers

Social and psychological factors also contribute to non-participation in cultural activities. Some elderly individuals, particularly those who have experienced major life transitions such as widowhood, retirement, or relocation, may feel socially withdrawn or reluctant to join new activities due to a lack of confidence, anxiety, or fear of unfamiliar environments.

Additionally, gender norms and traditional cultural expectations influence participation patterns. In many Chinese communities, elderly women are more likely to engage in dance, music, and artistic activities, whereas elderly men often refrain from participation, perceiving such activities as feminine or non-essential. This leads to a gender disparity in cultural engagement, where elderly men are less socially integrated compared to their female counterparts.

Another critical issue is interpersonal conflict within cultural groups. As many elderly individuals form tight-knit social circles in community-based activities, newcomers may feel unwelcome or excluded. In some cases, power struggles or disputes over leadership roles in organized cultural groups create an environment that discourages continued participation.

6.4 Accessibility and Infrastructure Issues

The availability of cultural spaces and infrastructure plays a crucial role in elderly participation. While urban areas tend to have well-developed community centers, senior

universities, and public parks, rural elderly individuals often lack access to dedicated cultural spaces. Many cultural programs in rural areas are temporary or seasonal, making it difficult for elderly individuals to engage in consistent and structured participation.

Public transportation is another significant issue, particularly for elderly individuals with limited mobility or those living in areas with inadequate public transit systems. In a survey conducted in Beijing (2022), nearly 35% of elderly respondents indicated that transportation difficulties prevented them from attending cultural activities regularly. For elderly individuals in suburban or rural regions, the lack of transportation options often results in complete disengagement from cultural programs.

Additionally, digital accessibility is an emerging concern, especially as cultural programs increasingly incorporate online learning, virtual museum tours, and digital performances. Many elderly individuals lack the technological skills needed to navigate digital platforms, leading to exclusion from modern cultural engagement opportunities. A Pew Research (2021) study found that only 41% of seniors over 70 in China regularly use smartphones for cultural activities, highlighting the need for digital literacy programs to help elderly individuals access online cultural resources.

6.5 Policy and Institutional Gaps

Although the Chinese government has implemented elderly-friendly policies to promote cultural engagement, gaps remain in policy execution, funding distribution, and program sustainability. Many community-based cultural activities rely on short-term government funding or local sponsorships, leading to inconsistent programming and frequent budget cuts.

Additionally, formal cultural policies often prioritize large-scale, high-profile cultural events rather than grassroots, community-driven activities that cater to elderly individuals' specific needs. This results in a top-down approach that does not always align with local elderly populations' preferences.

Another concern is the lack of professional facilitators trained to work with elderly individuals in cultural programs. Many senior centers and community organizations lack specialized staff with expertise in elderly care and cultural engagement, leading to a shortage of tailored programs that accommodate different health conditions, mobility levels, and cognitive abilities.

While cultural activities offer significant social, psychological, and cognitive benefits to elderly individuals, various challenges hinder their full participation. Addressing physical limitations, economic constraints, social barriers, infrastructure deficiencies, and policy gaps is essential to enhancing cultural accessibility and inclusivity for China's aging population. Moving forward, government institutions, community organizations, and policymakers must work together to create more sustainable, inclusive, and well-supported cultural programs that ensure equal participation opportunities for elderly individuals across different socioeconomic and geographic backgrounds.

7. Implications and Future Directions

The growing elderly population in China necessitates well-structured cultural programs that ensure continued social support and community engagement. Policymakers must expand government funding to make cultural activities more sustainable, shifting from short-term projects to long-term investment in elderly cultural programs. Special attention should be given to rural areas where access to cultural resources remains limited. Financial subsidies for low-income elderly individuals would further enhance inclusivity, allowing broader participation without economic constraints. Additionally, urban planning should integrate more elderly-friendly public spaces such as senior activity centers, parks, and multipurpose community halls with barrier-free infrastructure, ensuring accessibility for individuals with mobility challenges.

With the increasing integration of digital technology in cultural engagement, improving digital literacy among the elderly is crucial. Community centers and senior universities should introduce training programs to equip elderly individuals with the skills needed to access virtual cultural experiences, online learning platforms, and digital communication tools. This would help bridge the digital divide, making cultural participation more accessible for those with limited physical mobility or residing in remote locations. Furthermore, intergenerational cultural programs should be actively promoted. Schools and universities could collaborate with elderly communities on

heritage workshops, storytelling initiatives, and mentorship schemes, fostering stronger intergenerational ties while preserving traditional cultural knowledge.

Local grassroots initiatives also require greater support to ensure that elderly individuals have active roles in shaping their cultural participation. Volunteer networks, nonprofit organizations, and self-organized senior groups can help build sustainable, community-driven cultural activities. Encouraging peer-led initiatives would ensure that elderly individuals remain engaged in meaningful ways, reinforcing social bonds and fostering a sense of belonging.

Future research should explore the long-term effects of cultural participation on mental and cognitive health, particularly for elderly individuals at risk of dementia and Alzheimer's disease. While studies suggest that cultural activities reduce depression and enhance cognitive function, more longitudinal research is needed to quantify these benefits over time. There is also a need to examine regional disparities in elderly cultural engagement, especially the urban-rural divide, to identify localized policies that can bridge the accessibility gap. The role of technology in cultural participation should also be investigated, focusing on the effectiveness of virtual museums, online learning programs, and AI-powered cultural experiences in improving elderly well-being and social connectivity.

Additionally, cultural participation among marginalized elderly groups, such as ethnic minorities, disabled individuals, and low-income populations, must be further studied. These groups often face greater challenges in accessing cultural activities due to financial, social, or infrastructural barriers. Targeted interventions should be developed to promote inclusivity and ensure that all elderly individuals, regardless of background, have opportunities for cultural engagement. The sustainability of community-based cultural programs also requires deeper analysis, particularly regarding funding shortages, organizational challenges, and the availability of trained facilitators. Research on public-private partnerships, volunteer-based management models, and adaptive policy frameworks could provide insights into ensuring the longevity of cultural initiatives for the elderly.

Cultural participation plays a vital role in enhancing social support, strengthening neighborhood cohesion, and improving psychological well-being among elderly individuals in China. However, to fully realize these benefits, improvements in policy, funding, and accessibility must be made. Future research should focus on the long-term effects of cultural participation, the role of digital engagement, and targeted strategies for marginalized elderly populations. By fostering a more inclusive, accessible, and sustainable cultural landscape, China can ensure that its aging population remains socially connected, mentally engaged, and actively involved in their communities.

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China's Soft Power in Thailand: Media and Public Diplomacy Perspectives

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Abstract

In the context of globalization, soft power has emerged as a crucial component of a nation's comprehensive strength, with external communication serving as a vital conduit for its enhancement. As a strategically important neighbor sharing extensive cultural, economic, and political ties with China, Thailand presents a significant case study for analyzing soft power dynamics. Examining China's soft power projection in Thailand through the lens of external communication holds particular relevance for strengthening bilateral cooperation, expanding regional leadership, and cultivating a constructive international image. However, current efforts to enhance Chinese soft power in the Thai context face multifaceted challenges. This study conducts a systematic analysis of these obstacles while proposing evidence-based strategies, aiming to contribute both theoretical frameworks and actionable recommendations for optimizing China's soft power deployment in Thailand.

Keywords: soft power, China, Thailand

1. Introduction

In today's deeply globalized world, national competition extends beyond traditional hard power, with soft power becoming crucial for measuring comprehensive national strength. A positive national image, significantly shaped by effective foreign communication, is essential for soft power.

Thailand, China's neighbor in Southeast Asia, is an important ASEAN economy and transport hub. It has close ties with China in economy, security, and culture. Examining China's soft-power building in Thailand through the lens of foreign communication can deepen China-Thailand cooperation and is vital for

China to tell its story well and present its image in a complex international public opinion environment.

2. Definition and Intrinsic Connection Between External Communication and Soft Power

2.1 The Definition of External Communication

Generally speaking, international communication can be divided into two types: communication from the outside to the inside and communication from the inside to the outside. The former is called "domestic communication," and the latter is called "external communication." Moreover, "external communication" has both a broad sense and a

narrow sense. In a broad sense, external communication includes various international exchange activities. In a narrow sense, external communication mainly refers to the purposeful news reporting behavior of communicators to foreign countries. [1] The "external communication" discussed in this paper refers to the narrow sense external communication, that is, the external communication of news media. At the same time, due to the importance and particularity of the external communication and soft power discussed in this paper, not all news media can effectively play a role in external communication and soft power building. Therefore, the "news media" studied in this paper mainly refers to national media or official media with a government background.

It should be noted that in the international community, external communication is an activity that every country engages in. Serving national interests through external communication is a principle that news media in all countries are fulfilling. Especially in terms of policy stances on international events, whether they are independent media or government-controlled media, they are in tune with their respective governments. [2]

2.2 The Definition of Soft Power

When it comes to soft power, Joseph Nye was the first to put forward this concept. He believed that soft power is "the ability of a country to get what it wants by attracting and persuading other countries to follow its goals." [3] After he put forward the relevant concepts and theories of soft power, the Chinese academic community also set off a wave of research on the issue of soft power.

To this day, scholars at home and abroad have different opinions on the definition, constituent elements and promotion paths of soft power. However, it is a consensus among scholars at home and abroad that soft power is mainly reflected as a kind of attraction and recognition. For example, Joseph Nye once said that soft power is an "assimilative power" and is the ability of "cooperating with people rather than

forcing people to submit to your will." [4] Chinese scholar Huang Jinhui believes that a country's soft power "does not arise from coercion and inducement, but from recognition and aspiration." [5] Chinese scholar Yan Xuetong also pointed out that "a country's soft power is the political mobilization ability both within and outside the country." [6]

Based on the above discussions of scholars at home and abroad, this paper argues that "soft power" refers to the ability to make other international actors take actions expected by a country based on their recognition and aspiration for this country, rather than being forced or lured.

2.3 The Intrinsic Connection Between External Communication and Soft Power

On the one hand, in the international community, external communication is one of the important means of shaping a country's image. Cheng Manli, Dean of the Institute of National Strategic Communication at Peking University, once pointed out that "the process of external communication is the process of shaping a country's image." [7] This points out the important role of external communication in shaping a country's image. On the other hand, the national image is an integral part of a country's soft power. Chinese scholar Li Zhengguo once pointed out that "the national image is an important component of the soft power structure." [8] Wang Gangyi, the deputy director of the China International Publishing Group, mentioned in his speech at the press conference of the Global Report on China's National Image 2014 that the national image is an important indicator of a country's soft power. Effective external communication helps to build a positive national image, and a positive national image will play a positive role in promoting the construction of a country's soft power. Therefore, there is a means to an end

[1] Guo Ke. (2003). *Contemporary External Communication*. Shanghai: Fudan University Press, 2.

[2] Huang Min. (2009). "Cold War" and "Sovereignty": An Analysis of the Media Frames in the China-US Confrontation in the South China Sea. *Journalism & Communication*, 62.

[3] Joseph S. Nye, Jr. (1990). The Changing Nature of World Power. *Political Science Quarterly*, 177.

[4] Nye, Joseph S. (2003). *The Paradox of American Power: Why the World's Only Superpower Can't Go It Alone*. Oxford Academic, 9.

[5] Huang Jinhui, Ding Zhonghui. (2010). A Review of the Research on China's National Soft Power. *Social Sciences*, 33.

[6] Yan Xuetong. (2006). China's Soft Power Needs to Be Improved. *China and World Affairs*, 1.

[7] Cheng Manli, Wang Weijia. (2011). *Research on External Communication and Its Effects*. Beijing: Peking University Press, 35.

[8] Li Zhengguo. (2001). *Construction of National Image*. Communication University of China Press, 26.

relationship between external communication and soft power. That is, countries can enhance their national image through external communication and ultimately achieve the goal of enhancing their national soft power.

In recent years, as China continues to play an increasingly important role in international affairs, Western countries have been persistently promoting the "China threat theory" and the "China collapse theory." This has significantly undermined the effectiveness of China's external communication, damaged China's national image in the international community, and seriously hindered the enhancement of China's soft power and even its overall national strength. Taking Thailand as an example, this paper studies the challenges and countermeasures faced by China in enhancing its soft power in Thailand from the perspective of external communication.

3. The Current Situation of China's Soft Power Construction in Thailand from the Perspective of External Communication

"The public opinion attitude of the people in one country towards the influence of another country is an important indicator for measuring a country's soft power."[1] At present, China has become the world's second largest economy. However, in Thai society where Western social media platforms are the major domestic social platforms, China's national image still leaves much to be desired.

According to the data shown in "THE STATE OF SOUTHEAST ASIA 2024 SURVEY REPORT" released by the ISEAS — Yusof Ishak Institute in Singapore on April 2, 2024, 70.6% of the surveyed Thai people believe that China has the most economic influence in Southeast Asia. This percentage has decreased by 3.7% compared to 74.3% in 2023. Among them, 80.3% of the respondents expressed concerns about the growth of China's such influence, which is far higher than the ASEAN average of 67.4%. Additionally, 58.2% of Thai people believe that China has the most political and strategic influence in Southeast Asia, an increase of 12.4% compared to 45.8% in 2023. Among them, as high as 83.8% of the respondents expressed concerns about the growth of this influence, far higher than the ASEAN average of 73.5%. When

asked whether they believe that China is doing "the right thing" in the fields of world peace and security, world prosperity, and global governance, 66.1% of Thai people said they do not believe so. Among them, the top three reasons for "not believing in China" are: China may use its economic and military power to threaten Thailand's interests and sovereignty, China is not a trustworthy major power, and China cannot focus on global issues because it is preoccupied with handling domestic affairs.[2]

Based on the above analysis of the public opinion survey, it can be seen that the enhancement of China's economic and political strength has not improved China's image in the hearts of the Thai people. Instead, it has made the Thai people feel worried and fearful. There are still serious doubts in Thai society about the interpretation of China's role and actions in Thailand and even in Southeast Asia. If not addressed in a timely manner, it will greatly restrict the improvement of China's soft power in Thailand. In conclusion, there are still relatively large misunderstandings and distrust towards China's development and rise in Thai society. In order to eliminate such misunderstandings and distrust, we need to strengthen effective external communication with Thailand. By communicating with Thailand, we can present a real China to Thai society, thereby achieving the enhancement of China's soft power in Thailand.

It should be noted that the construction of soft power in Thailand through external communication is a legitimate need to explain China's development path to Thailand. Its intention is to convey the truth to the Thai people, shatter the rumors spread by the West, minimize the doubts, misunderstandings and concerns of Thai society about China's development and rise, and present a real China to Thai society.

To enhance China's soft power in Thailand through external communication, it is first necessary to understand the behavioral characteristics and preferences of the Thai audience. InfoQuest, a major Thai current affairs news and information service provider and a partner of PR Newswire in Thailand, reported that in 2020, approximately 55 million Thais used smartphones to access the Internet, spending about 9 hours online per day, which is

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[1] Huang Hong. (2018). The Expanding Space for China's Soft Power Construction in Southeast Asian Countries. *Public Diplomacy Quarterly*, 2.

[2] Source: https://www.iseas.edu.sg/

higher than the global average. Thais use social media for various purposes, such as following information, entertainment, trade, and expressing political views. In 2021, the number of Thai YouTube users reached 94.2% of the total Thai population. The second most-used social media platform was Facebook, with users accounting for 93.3% of the total Thai population, followed by Line, Facebook Messenger, Instagram, and X. Thais have different usage inclinations for different social media platforms. For example, Thais mainly use Facebook to share lifestyle content such as culture, society, and natural scenery; Instagram users are mainly women, and they mainly post pictures related to fashion, travel, and daily life; X users mainly post political, diplomatic, and lifestyle topics, which are hot political and economic issues.

To enhance China's soft power in Thailand through external communication, secondly, it is necessary to understand the dissemination of Chinese media in Thailand. After the reform and opening-up, Chinese news agencies such as Xinhua News Agency, People's Daily, and China News Service successively established branches in Thailand. However, their responsibilities mainly focused on collecting local news information, and the reported content mainly consisted of domestic events in Thailand and Chinese-language reports related to China-Thailand cooperation, mainly targeting the Chinese market. In 2016, Xinhuanet, a comprehensive information service portal hosted by Xinhua News Agency, officially announced the launch of the Thai channel. This channel aims to provide Thai media and audiences with the latest Thai-language news on China's politics, economy, culture, society, etc., and showcase the views and perspectives of the Chinese people on major international events. It was not until 2019 that Xinhuanet first released Thai-language news through the Thai-version portal Xinhuathai.com, with an average of about 2,000 posts per month.

It is worth mentioning that "China-ASEAN Report", a central foreign-publicity media targeting the ASEAN region, which is led by the Publicity Department of the Central Committee and supervised by the China International Publishing Group, established a branch in Bangkok, Thailand in 2017. Subsequently, the Thai version of "China-ASEAN Report" opened an account "China Report ASEAN-Thailand" on

Facebook. According to the observation data as of March 2025, its subscription number is 160,000, with about 15 article comments, an average of about 300 likes, and most of the sharing times are concentrated around 30 times. It is a Chinese official media account with relatively high influence on Facebook that mainly reports in Thai. At this time, the official operating account of the BBC Thai channel on Facebook, BBC Thai, has 2.78 million subscribers, and the average number of reposts, comments, and likes of its articles is much higher than that of Chinese media. Generally speaking, the communication power and influence of Chinese official media in Thai society are still at a relatively low level, mainly reflected in the small number of official accounts, small number of fans, and the gap in the number of likes, reposts, and comments of articles compared with Western mainstream media.

In any case, considering the current level of China's soft power in Thailand, the high penetration rate of social media in Thailand, and the relatively low influence of Chinese official media in Thailand, there is still great room for development in the quality of China's communication with Thailand.

4. Challenges Faced by China in Enhancing Soft Power in Thailand from the Perspective of External Communication

4.1 Challenges from the United States: The Influence of the "Two Public Opinion Fields" on the Audience's Attitude Tendency

According to the Indo-Pacific Strategy Report released by the U.S. Department of Defense on May 1, 2019, as an ally of the United States, Thailand is at the center of ASEAN, located in South Asia and Southeast Asia, and plays an important geostrategic role in the Indo-Pacific region. The United States divides its allies into four groups according to their importance in the Indo-Pacific strategy. The first and most important group includes Japan, South Korea, Australia, the Philippines, and Thailand. Taiwan, which is an important means for the United States to contain China, is only in the second group. It can be seen that Thailand has a very important strategic position in the U.S. Indo-Pacific strategy.

In the 1940s and 1950s, Western media with government backgrounds such as the BBC and Voice of America opened Thai-language

channels in Thailand for Thai-speaking audiences. In contrast, Chinese media entered Thailand relatively late. On the other hand, as Thais have long been in an environment where Western social media platforms such as Facebook and X are the main domestic social platforms, they have a relatively high degree of trust in Western mainstream media.

During the Cold War (1947-1991), for the purpose of opposing communism, the United States regarded the media as an ideological tool to counter socialist countries and carried out a large number of untrue reports about China globally. After the end of the Cold War, out of fear of China's development and rise, the United States often uses mainstream media for external propaganda globally to maintain its hegemonic position. Especially in the past few years, Western mainstream media such as the BBC and Voice of America have continuously spread false information and attacked China in their reports on political issues such as the Hong Kong issue and the Xinjiang-related topics, as well as in public health events such as the COVID-19 pandemic.

In Thailand, these Western media also take various opportunities to hype up hot issues related to China on multiple social platforms, still mainly focusing on "old issues" such as human rights, pollution, and international obligations. Past negative reports on China have led most Thai people to have negative views on China in terms of political democracy and human rights. This is because people's views on events are shaped by the "maps" drawn for them by the authors, editors, and publishers of the newspapers they read.

The United States' public opinion war against China in Thailand is manifested not only in the "official public opinion field" but also in the "civil public opinion field". Data disclosed on the website of the National Endowment for Democracy (NED) of the United States on February 25, 2021, showed that the United States allocated a total of 30 million US dollars to Thailand in 2020 to fund the activities of non-profit non-government organizations (NGOs) such as Thai democracy-promoting institutions and human rights institutions.

The 101 Percent in Thailand is one of the many Thai non-government organizations funded by NED. According to investigations, from 2017 to 2020, NED provided a total of 290,000 US dollars

in funding to this company, aiming to build it into an important Thai news network media platform in the social, economic, and political fields. Under the guise of "spreading knowledge to society", this company has currently set up official accounts on Facebook, YouTube, and Twitter.

With strong support in terms of policies, funds, and human resources, the United States has now established a huge news and publicity network in Thai society. It has launched an all-round offensive against China through the "two public opinion fields", preemptively setting news agendas related to China in various fields such as economy, politics, culture, society, and ecology, seizing the commanding heights of public opinion in Thai society, and influencing the attitude tendencies of Thai audiences. As a result, China is often put in a passive and deadlocked situation. Even if it clarifies and explains afterwards, it is of no avail, which greatly affects and restricts the construction of China's soft power in Thailand.

4.2 Challenges from Thailand Itself: The Influence of the System and Online Public Opinion Environment on the Communication Effect in Thailand

Generally speaking, since external communication requires access to another country, factors such as the local social environment, historical culture, and political system must be taken into account. Thailand is a constitutional monarchy with a different national system from that of China. Thailand adopts a parliamentary democratic political system, and its legal system follows the British legal system. Moreover, the majority of Thai people believe in Buddhism, believe in the cycle of all things, and pursue liberation. In addition, Thais are naturally fond of freedom, dislike being restricted, and especially dislike being forced.

In the new media era, in addition to considering the above-mentioned factors, media engaged in external communication work should also have an overall understanding and grasp of the local news management system and the online public opinion environment. Thai official media are good at internal struggles but not at external communication. Moreover, most of the negative news about China is sourced from Western news agencies, which is very unfavorable to China. In addition, Thailand lacks effective control over social media. There are a large number of Thai

opinion leaders who are friendly to the United States and Japan in the online public opinion environment and have great influence, which restricts to a certain extent the improvement of the intensity of China's communication with Thailand. These are all objective and realistic challenges that China's communication with Thailand must face directly.

Regarding the news gathering and editing management system, Ming Dajun, the chief of the Bangkok Bureau of Xinhua News Agency, once revealed that "Most of the information that Thais have about China comes from second-hand information from Western media."[1] This is due to Thailand's news gathering and editing management system. Due to funding constraints, Thai media rarely have overseas branches. As a result, news about China in Thai media mainly comes from Western news agencies.

According to incomplete statistics, among the Xinjiang-related reports of Thai mainstream media such as Daily News, The Standard, Matichon, and Posttoday, except for Thai Rath, those negative reports with words like "forced labor by the Chinese government", "religious suppression", and "genocide" mostly have notes at the end such as "Source: BBC", "Source: Reuters", "Source: CNN", "Source: The New York Times", etc.

In recent years, with the continuous deepening of media cooperation between China and Thailand, the number of news items in Thai media's China-related reports that quote Western media has decreased. However, these previous negative reports about China have had a huge impact on the perception of China among the Thai people. Objectively, there are still certain obstacles to the improvement of the effectiveness of China's communication with Thailand.

5. Countermeasures for China to Enhance Soft Power in Thailand from the Perspective of External Communication

The influence of external communication on soft power is manifested in many aspects, but the two well-known forms are as follows: one is to guide international public opinion topics to create an atmosphere beneficial to us, and the other is to shape a good national image to

enhance international attractiveness. Therefore, the countermeasures below not only address the challenges mentioned above but also revolve around these two main forms. The aim is to provide useful references for the development of China's communication work with Thailand and the enhancement of China's soft power.

5.1 Proactively Set the Agenda and Precisely Deliver Content

The core idea of the agenda-setting theory is that the mass media can influence what the audience pays attention to by providing information and arranging relevant agendas.[2]

This requires us to have an overall understanding of when, in what form, where and what kind of information to release. When conducting news dissemination work in Thailand, we should also consider the audience's usage preferences and frequencies of social media. For example, when using Facebook to release social news reports, we can combine with short-video forms to attract the attention and interaction of Thai audiences; when using Instagram, a picture-based social application, to release entertainment news, we can mainly adopt a multi-picture format, using pictures with a strong sense of "online style" to attract the attention of Thai audiences; when using X, a social media platform for strangers, to release political and economic news, we can use the form of "poster picture + text", delivering the main information to Thai audiences through posters. As for YouTube, the most-used social application by Thais at present, media can also set up corresponding accounts, add Thai subtitles to a large number of domestic exquisitely-produced programs or videos, and regularly release them on relevant accounts to trigger resonance among Thai audiences. And continuously modify the form and content according to the feedback and comments of Thai people to match the content with the needs of Thai audiences.

Proactively setting the agenda and precisely delivering content aims to understand what kind of information in what form the audience is interested in. Thus, when China encounters public opinion crises in Thailand, the media can provide information and arrange relevant agendas to make positive, effective, objective and correct guidance, effectively suppressing

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[1] Source: https://th.boell.org/en/2019/12/28/china-told-china-beijings-influences-reach-thai-media-and-beyond

[2] Ye Hao. (2012). Public Diplomacy and International Communication. *Modern Communication*, 16.

hostile false information.

5.2 Strengthen Media Cooperation and Spread the Voices of Thai Opinion Leaders

In response to the current unfavorable online public opinion environment in Thailand towards China, it is necessary to strengthen cooperation between Chinese and Thai media. The voices of Thai scholars and experts should be spread through new media channels to improve the public opinion environment in Thailand. Thai experts who study China issues should be encouraged to visit China more often for on-site investigations. At the same time, Chinese experts should also frequently go to Thailand for team cooperation and long-term research, assisting Thai experts in conducting research on China. Seize various opportunities to enhance their in-depth understanding of China. Research results can be disseminated through new media channels, academic seminars, and multimedia means.

Enhancing the level of media cooperation between China and Thailand and strengthening the connection with Thai opinion leaders aims to spread the voices of Thai scholars and experts through new media channels. By introducing the real situation of events to the Thai people, it can guide the Thai people to understand China objectively and correctly, thus improving the online public opinion environment in Thailand.

5.3 Adhere to an Open Concept and Timely Handle Information that Smears China

In response to the existing problems in China's current communication strategies towards Thailand, the media should emancipate their minds and formulate communication strategies that are in line with the national character of the Thai people, so as to comprehensively improve the quality of communication with Thailand. The so-called "emancipating the mind" means conducting news activities with innovative thinking and an open-minded and inclusive attitude. For example, when faced with negative or sensitive issues related to China in Thai society, the media can appropriately use various forms to respond, guide, and reason in a timely manner in the Thai public opinion field. This can reduce, to a certain extent, the misunderstandings of the Thai audience towards China, rather than remaining silent and giving up the right to speak. Carrying out communication work with Thailand while adhering to an open concept requires us to

rationally respect and face the situation where the national conditions and culture of Thailand are quite different from those of China. It also requires us to calmly handle the information that smears and slanders China.

6. Conclusion

How to break through the heavy pressures of the old international economic order and the old international information dissemination order, strengthen the construction of China's external communication capabilities, establish international discourse power that matches China's comprehensive national strength and international status, and make the construction of China's soft power commensurate with the development of its hard power are urgent problems and challenges that China needs to address in the current international communication landscape in order to achieve the great rejuvenation of the Chinese nation. This article holds that the enhancement of China's soft power in Thailand is a long-term and systematic process. The construction of the communication system with Thailand must have long-term strategic goals and an overall mindset.

There is no fixed model for the construction of soft power. When studied from different perspectives and targeted at different countries and regions, the countermeasures for constructing soft power also vary. This article studies the enhancement of China's soft power in Thailand from the perspective of external communication. In terms of form and geographical scope of application, it inherently has certain limitations. Moreover, due to the difficulty of conducting cross-border audience surveys and the author's own insufficient academic attainments and other factors, there are many deficiencies in this article. As a beginner, I sincerely hope that this article can arouse the academic community's interest in the research on soft power issues from the perspective of external communication, and I look forward to learning from senior colleagues and peers.

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Competition in the Digital Economy from the Perspective of Technonationalism: A Power Structure Model

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Abstract

As one of the most important technological sectors in the new wave of industrial revolution, the digital economy is fundamentally reshaping strategic competition between nations. Specifically, the digital economy plays a dual role in shaping national security, economic development, and social stability. On one hand, the digital economy has become the most dynamic and influential engine of global economic growth. On the other hand, the dual-use nature of digital technologies poses serious national security risks in the absence of effective regulatory oversight. As a new economic paradigm, competition in the digital economy not only relies on technological innovation but also involves competition for market dominance and rule-making authority. To gain an advantageous position in global digital economic competition, countries must master core digital technologies, expand global market reach, and build robust digital infrastructures. Moreover, actively participating in the formulation of international digital rules — particularly in data governance and privacy protection — is essential. Only countries that achieve a balance between technology, market, and regulatory power can secure leadership in the global digital economy. The competition in the digital economy, as a key battleground of the new industrial revolution, has driven the rise of technonationalism, which profoundly influences the strategic orientation of national digital economic policies. Digital technology issues are increasingly securitized. With the ongoing development of digital technologies and the rising importance of the digital economy in global economic processes, interactions and competition among nations in the digital domain are becoming a new feature of great power rivalry.

Keywords: digital economy, technological competition, technonationalism

1. Research Background and Problem Statement

With the advent of a new wave of industrial revolution, digital technologies are fundamentally reshaping the operational logic of international relations. On the one hand, the digital economy has become a key engine for

economic growth in major countries. [1] On the other hand, digital technologies are closely linked to national security and social stability, emerging as a new arena for great power competition. The rapid advancement of digital technology is transforming the patterns of global power competition, shifting focus from traditional geopolitics to cyberspace. [2] In this context, cybersecurity, data sovereignty, and the dual-use nature of digital technologies have become core concerns for major powers.

In the digital era, cyberattacks allow countries to acquire adversaries' sensitive data and intelligence, potentially destabilizing their economies and societies. Furthermore, innovation in critical digital technologies may trigger a "winner-takes-all" effect, creating substantial economic and strategic benefits for first-movers. The dual-use nature of digital technologies has further intensified mistrust between nations, impeding cross-border data flows and technological cooperation, thereby hindering the further development of the global digital economy.

Due to the dual impact of digital technologies on national security, economic growth, and social stability, great power competition in the digital era is increasingly exhibiting the characteristics of **technonationalism**. Countries now place greater emphasis on safeguarding critical strategic resources, such as data and technology, while ensuring technological and data security. [3] This trend is driving major powers to reassess their competitive strategies to secure advantages in the new industrial revolution.

1.1 The Rise of a New Wave of Technonationalism

The profound impact of the digital economy on the international system has led to the rapid rise of technonationalism globally. The essence of the digital economy lies in the transformation driven by digital technology through technological innovation. The emergence and development of new technologies not only trigger changes in technological applications within related industries but also drive the coordinated evolution of regulatory frameworks, thereby significantly enhancing industrial productivity, transforming production methods, and even giving rise to entirely new industries.

In this process, due to differences in the speed and direction of digital technology transformation across different countries and industries, inevitable competition arises over the right to set international norms for emerging industries and to gain access to overseas markets. At the same time, some countries, in order to protect the development of their domestic digital industries and safeguard data security, have increasingly framed their digital economic policies through a securitization lens, contributing to the rise of technonationalism.

Technonationalism is both a concept and an ideological trend that attributes a country's development to technological progress and innovation. Specifically, it is manifested in the securitization of technological issues. Econometric studies have shown that 60% to 85% of economic growth in developed countries can be attributed to technological innovation. [4]

Based on this understanding, technonationalists believe that nations should protect their domestic technological development opportunities and technological interests. Governments should formulate technology policies from the perspectives of national interest and national security, and they should prevent and intervene in the provision of technological products and services from other countries and non-state actors, leveraging technological advantages to pursue geopolitical gains.

At a time when the structure of the international system is under strain and the global center of power is shifting, and as the new industrial revolution unfolds across various technological sectors, technonationalism is rising rapidly. It has become deeply embedded within the broader strategic competition among major powers.

1.2 Digital Economy Competition Driven by Technonationalism

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[1] China Academy of Information and Communications Technology (CAICT). (2022, July 29). Global Digital Economy White Paper (2022). Retrieved December 9, 2023, from http://www.caict.ac.cn/kxyj/qwfb/bps/202212/t20221207_412453.htm

[2] Miao, Z., Chen, J., & Nie, Z. (2023). Artificial Intelligence, Digital Power, and Great Power Competition. *Information Security and Communication Privacy*, (08), 2-9.

[3] Campbell K M, Sullivan J. (2019). Competition without catastrophe: How American Can both challenge and coexist with China. *Foreign Aff.*, 98, 96.

[4] Drezner D W. (2019). Technological change and international relations. *International Relations*, *33*(2), 286-303.

Western powers, represented by the United States, are the primary promoters of this current wave of technonationalism. This ideological trend has profoundly shaped the U.S. government's strategic choices in the digital economy. In the digital economy domain, the United States has already established a comprehensive competitive policy system targeting China and other competitors.

Domestically, the United States relies on government policy support to promote the reshoring of digital economy-related manufacturing industries, foster the development of key technology industries, and reform its innovation system. Additionally, through export controls, investment restrictions, technology transfer limitations, and other measures, the U.S. actively disrupts the digital economic development of other nations to maintain its own technological advantage.

At the international level, the United States ignores the legitimate demands of emerging economies to independently develop their digital industries and safeguard their data security. Instead, the U.S. actively promotes an American-style digital trade rules template that aligns with its own interests. At the same time, it uses ideological narratives to pressure its allies, aiming to isolate its competitors.

As the world's leading digital economy, the United States' technonationalist policy orientation has exacerbated distrust and insecurity among nations. In response to their own national interests, many countries have also introduced technonationalist digital economic policies, further intensifying malicious competition in this field.

In the digital economy, technonationalism-driven competition revolves around two core elements — data and technology. This competition can be categorized into the following two primary forms:

1.2.1 Technology-Driven Competition

Technology-driven technonationalism adheres to the technological determinism perspective, which holds that the level of development in digital technology determines the rise or fall of a nation's digital industry.

Specifically, this approach manifests in governments using industrial policies to support the development of critical domestic digital technologies, while simultaneously employing export controls, investment screening, technology transfer restrictions, and intellectual property transfer restrictions to disrupt the normal economic and technological cooperation between domestic enterprises and foreign counterparts. This approach reflects a policy orientation aimed at keeping technological knowledge within national borders.

1.2.2 Institution-Driven Competition

Institution-driven technonationalists focus on the guiding role of digital economy rules in shaping the development of digital industries. They believe that the establishment of technical standards often determines the future developmental trajectory of digital industries and related technologies. Mastering these standardized technologies can provide substantial economic benefits to the standard-setting entities.

Therefore, this form of competition emphasizes leveraging political and diplomatic channels to build a global digital economic regulatory framework favorable to the home country, using structural advantages to continuously capture long-term economic benefits in the digital economy.[1]

Of course, in practice, these two forms of competition rarely appear in isolation. Actors participating in international digital economic competition often adopt a mix of policies in both technological and institutional competition tracks, seeking to consolidate or even surpass their existing advantages in the digital economy.

2. Construction and Explanation of the Power Structure Model of Digital Economy Competition

The essence of global digital economy competition is the extension of great power strategic competition into digital space. Within this system, based on the internal policy intentions and the external strategic choices of various countries, technological power, market power, and institutional power constitute the primary sources of power for countries participating in global digital economy competition.

On this basis, this paper constructs a power structure model, which categorizes countries

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[1] Yang Hui. (2021). Dominance, Institutional Negative Externalities, and Economic Institutional Competition in the Asia-Pacific Region: A Case Study of TPP and RCEP. *Foreign Affairs Review (Journal of China Foreign Affairs University), 38*(02), 125-154+8.

into leading nations, catching-up nations, and emerging nations. This model analyzes the relative power of different countries in terms of technology, market, and institutions, and determines the strategic combinations adopted by different countries in the international digital economy competition system from the perspective of technonationalism.

2.1 Technological Power

2.1.1 The Concept of Technological Power

Competition in the digital economy is essentially an extension of great power strategic competition into digital space. From the perspective of interstate competition, technology has always been regarded as an exogenous variable, meaning that a nation can significantly enhance its political, economic, and military power through technological strength, thereby altering the power distribution within the international system.

In early international relations research, a country's technological level was often considered part of its military power. For example, Hans Morgenthau, in his analysis of the components of national power, identified technological innovation and industrial capacity as critical factors in a nation's overall power.[1]

Similarly, the Klein equation, used to evaluate comprehensive national power, highlights industrial manufacturing capacity and military technological capability as fundamental elements of a nation's comprehensive strength.[2] Chinese scholar Huang Shuofeng also emphasized that technological power is one of the key indicators for maintaining and enhancing national power.[3]

The importance of technological power became even more pronounced after World War II, when the advent of nuclear weapons created a balance of terror through the doctrine of mutually assured destruction. Additionally, international norms prohibiting territorial annexation reduced the intensity of traditional geopolitical competition. As a result, major powers within the international system increasingly relied on

technological innovation to gain competitive advantages, becoming winners in the realms of economics, military, and technology.

The basic logic behind how technological power influences international digital economy competition can be summarized as follows:

First, from a macro perspective, many digital technologies possess dual-use properties, serving both civilian and military purposes. This dual-use nature provides a force-multiplier effect for a nation's military capabilities. Therefore, under the guidance of technonationalism, nations with technological advantages not only dominate the digital economy but also enhance their military capabilities through digital technology, allowing them to stand out in military competition.

Second, nations with technological advantages have the ability to act as pioneers driving global technological progress. Their technological leadership grants them greater influence and discourse power in the formulation of international digital rules, attracting followers and earning international prestige.[4]

Third, technonationalists tend to leverage strong technological power to control and monopolize key technologies. The goal is to lock competitors in the digital economy into low-end positions within the global value chain, maintaining a constant and as large as possible technological gap. This creates sticky power in which technologically disadvantaged nations develop a one-way dependence on technologically advanced nations.[5]

It is worth noting that in some specific digital sectors, technological monopolies may directly lead to a winner-takes-all scenario in terms of industrial benefits.

Finally, technological innovation exhibits a self-reinforcing learning effect, granting first-mover advantages to technologically advanced nations. These nations, through technological accumulation, can lead innovation cycles, achieving technological dominance in subsequent rounds of competition. This positive feedback loop further consolidates their

[1] Morgenthau, Hans Joachim. (2005). *Politics Among Nations: The Struggle for Power and Peace*. Complete Edition. Beijing: Peking University Press.

[2] Wang Fan. (2013). *International Relations Theory: Thoughts, Paradigms, and Hypotheses*. Beijing: World Knowledge Press, pp. 89-90.

[3] Huang Shuofeng. (1992). Comprehensive National Power and National Conditions Research. *China's National Conditions and National Power*, (01), 13-19.

[4] Liu Su. (2017). *Ten Thousand Years of Competition: A New History of World Science and Technology Culture*. Beijing: Science Press, p. 275.

[5] Liu Hongzhong. (2023). Hegemonic Maintenance and Transcendence: The Political Economy of Global Value Chain Competition in High-Tech Industries. *World Economics and Politics*, (02), 128-154+159-160.

advantage. Conversely, latecomers face significant obstacles in achieving technological catch-up, particularly due to technological blockades and containment imposed by technologically advanced countries.

2.1.2 Strategic Choices Under the Logic of Technological Power

In the technonationalism-driven system of international digital economy competition, technological power serves as the foundation and prerequisite for a nation to secure dominance in the competition. The differences in technological power directly influence the strategic choices made by countries at different stages of development. Generally speaking, technologically advanced countries tend to suppress the technological advancement of competitors; technological catch-up countries must rely on independent research and development (R&D) to achieve technological breakthroughs; while technological beginners accumulate basic digital technology resources by hosting low-end digital industries.

As the incumbent beneficiaries of the global digital economy competition system, technologically advanced countries tend to adopt competition strategies driven by the hegemonic logic of technonationalism. Their strategic approach includes strengthening domestic innovation capabilities through industrial policies, while also suppressing competitors to consolidate and expand their technological lead over technological catch-up countries.

Specifically, due to the distribution of global value chains and the mobility of high-tech talent, technologically advanced countries tend to contain the knowledge externalities and R&D spillovers of digital technologies within their own national borders or within a trusted alliance system. Simultaneously, they employ targeted suppression strategies to block and restrict the development of specific competitive technologies in other nations.[1]

Their primary methods include adopting restrictive policies to limit technological spillovers, keeping them confined within controllable boundaries to ensure long-term advantages for domestic technology-intensive industries,[2] and accelerating technological decoupling from targeted nations.[3]

Due to the blockade and restrictions imposed by technologically advanced countries, technological catch-up countries are often isolated within the international digital economy system. As a result, targeted breakthroughs in key high-end technologies within the digital economy value chain through independent R&D become not only a necessity, but also an urgent task for these countries to reposition themselves in the global digital value chain.

During the window of opportunity provided by the new industrial revolution, technological catch-up countries pursue technological followership while simultaneously leveraging market demand and industrial policies to gradually accumulate technological advantages in specific fields. By fully capitalizing on the cumulative benefits of digital technologies, they seek to achieve disruptive technological innovation with the ultimate goal of transforming themselves into new technological leaders.[4]

In this process, technological catch-up countries are also cautious about opening up their domestic digital economy markets and accepting investments from technologically advanced countries in key digital economy sectors. This caution reflects the deep influence of technonationalism on their competition policies.

Although technological beginners are not major players in international digital economy competition, they can still maneuver strategically in the intense rivalry between technologically advanced and catch-up countries, leveraging opportunities to extract digital economy benefits while accumulating technological resources for future advancement. This reflects how technological beginners' competition policies are primarily guided by the market-driven logic of technonationalism.

[1] Shi Dan, Nie Xinwei, Qi Fei. (2023). Globalization of the Digital Economy: Technology Competition, Rule Games, and China's Options. *Management World*, *39*(09), 1-15.

[2] Costinot A, Donaldson D, Komunjer I. (2012). What goods do countries trade? A quantitative exploration of Ricardo's ideas. *The Review of Economic Studies*, *79*(2), 581-608.

[3] Sun Xuefeng. (2023). Digital Technology Innovation and International Strategic Competition. *Foreign Affairs Review (Journal of China Foreign Affairs University)*, *40*(01), 54-77+166+6.

[4] Shi Dan, Nie Xinwei, Qi Fei. (2023). Globalization of the Digital Economy: Technology Competition, Rule Games, and China's Options. *Management World*, *39*(09), 1-15.

In the context of digital economy competition, technologically advanced countries often restrict their domestic digital firms from investing, producing, and operating in technological catch-up countries through non-tariff barriers and other policy tools. Against this backdrop, the profit-seeking nature of capital drives companies to explore alternative markets, and technological beginners can step in to fill the gaps left by the technological rivalry.

In terms of digital technology development, technological beginners primarily host low-end digital industries in the digital economy value chain, following technological trends while gradually building up their domestic technological capacity—moving from basic adoption to gradual accumulation and innovation.

2.2 Institutional Power

2.2.1 The Concept of Institutional Power

Institutional power originates from the functional attributes of international institutions. Under the neoliberal institutionalist world order, international institutions have become the most prominent feature of the international system. These institutions possess both public and private attributes: they provide public goods for actors within the system, while simultaneously exerting non-neutral influence over the distribution of benefits and power. This non-neutrality allows institutionally powerful states to shape and control institutional frameworks to serve their own interests, effectively privatizing and weaponizing international institutions, and in some cases, transforming them into tools for achieving institutional hegemony.[1]

In the context of the digital economy, international institutions play a crucial role in promoting cross-border digital economic activities, facilitating the development of the digital economy, sharing digital dividends, coordinating national digital policies, and expanding cross-border digital trade openness. As the primary engine driving global economic development, the digital economy requires unified and rational regulatory frameworks to guide its further growth.

However, due to significant disparities in the level of digital economic development among countries, there are stark differences between digitally advanced economies and digitally lagging economies in terms of their ability to reap economic benefits and manage security risks. These divergent policy preferences and interests have directly led to the absence of a unified set of global digital economy rules under the WTO framework, resulting in a fragmented international regulatory landscape and intensified institutional competition among key actors in the digital economy system.

Under the influence of technonationalism, digitally advanced countries have increasingly sought to build regional-level digital economic regulatory frameworks to expand their institutional power, which has become a dominant trend in international institutional competition within the digital economy.

The basic logic by which institutional power influences digital economy competition can be summarized as follows:

First, institutional power influences agenda-setting in digital economy rule negotiations, thereby shaping the future trajectory of digital economic development. Since major powers differ in their core concerns within the digital economy regulatory system, agenda-setting becomes a critical step in the negotiation process. The more topics one side places on the agenda, the fewer opportunities there are for competing parties to introduce their own issues.[2]

Second, by establishing international digital economy rules and technology standards, a country can enshrine its own technological advantages into industry standards, thereby locking rival nations' technological development paths into tracks designed by the rule-setting country, maintaining and expanding its technological lead.

Third, institutional power facilitates the expansion of digital markets. For instance, institutionally powerful countries can attract, compete for, or even coerce countries with large digital markets into joining their regulatory frameworks. Through rule design, they can also require participating countries to open their domestic digital markets to a certain extent, thereby reaping economic benefits. Conversely,

[1] Moe, Terry M. (1990). Political Institutions: The Neglected Side of the Story. *Journal of Law, Economics, & Organization*, 6, pp. 213–53.

[2] Wei Zongyou. (2011). International Agenda Setting: A Preliminary Analytical Framework. *World Economics and Politics*, (10), 38-52+156.

institutionally powerful countries can punish or coerce countries by expelling them from existing digital economy regulatory frameworks.[1]

Finally, institutional power helps shape a country's authority in the digital economy realm, ensuring that members within the system comply not only out of rational calculations of power and interest, but also based on normative expectations of appropriateness and legitimacy.[2]

2.2.2 Strategic Choices Under the Logic of Institutional Power

The struggle for institutional power is a core feature of the technonationalism-driven international digital economy competition system. The key reason is that, compared to technological competition, institutional competition is inherently zero-sum in nature. The winner of institutional competition can secure long-term structural benefits in the digital economy by controlling and shaping the rules framework. As a result, major digital economy powers and small and medium-sized countries within the system are extremely cautious when it comes to participating in regional digital economy rule-making frameworks, and they all seek to embed provisions favorable to their own digital industries into these frameworks.

In the digital economy system, institutional powers are often the leading architects of regional digital trade rules. In institutional competition, these countries pursue the hegemonic logic of technonationalism, using institutional expansion to both protect their own advantageous technology sectors and expand their digital markets — this is the core of their interest calculus. Therefore, during the rule-design process, institutional powers pre-embed their own digital economic interests and policy demands into their preferred regulatory templates.

On this foundation, institutional powers work to recruit rule-followers, win over neutral states, and pressure digital economy beginners to join their regulatory frameworks. In the process, they also seek to isolate competing powers,

continuously enhancing their international institutional influence. Ultimately, through institutional expansion, they aim to establish a global digital economic regulatory order that excludes their rivals while aligning closely with their own digital economic interests and development objectives.

Institutional catch-up countries within the system also seek to promote regulatory templates that favor their domestic digital industries. However, these countries tend to lack well-developed domestic digital laws and regulations. In some cases, their digital technology governance frameworks remain underdeveloped or even nonexistent, leaving them unable to design comprehensive rules that can balance the digital interests of most countries in their region.

As a result, institutional catch-up countries often adopt a strategy of institutional substitution when engaging in international digital economy competition. This involves either embedding provisions that address their own digital development needs into existing rule templates, or building new multilateral frameworks for digital economy governance. In both approaches, they often rely on alliances with small countries and international organizations to amplify their demands, thereby raising their profile in regional and global digital economy rule-making processes. By attracting and aligning with swing states, these countries aim to ultimately achieve institutional substitution—replacing or significantly altering the dominant digital regulatory frameworks to better serve their interests.

Within the digital economy competition system, institutional beginner countries are the primary targets of competition between existing regulatory templates. However, influenced by technonationalism, these beginner countries still seek to maintain their security and autonomy in the digital economy development process. This cautious approach is reflected in their selective alignment during international and regional digital economy rule negotiations.

For example, some small and medium-sized economies—although broadly aligning with the United States on digital economy rule issues—nonetheless emphasize the inclusion of exceptions, aiming to preserve a certain degree of policy flexibility for their own governments when formulating digital economic policies. At

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[1] Li Wei. (2016). Transformation of International Order and the Emergence of Realist Institutionalism Theory. *Foreign Affairs Review (Journal of China Foreign Affairs University)*, 33(01), 31-59.

[2] Krisch, Nico. (2005). International Law in Times of Hegemony: Unequal Power and the Shaping of the International Legal Order. *European Journal of International Law, 16*(3), p. 374.

the same time, they prefer gradual and orderly digital market opening, ensuring that their domestic digital industries do not lose development opportunities due to intense competition from multinational digital corporations.[1]

However, it is important to note that in some cases, once institutional beginner countries receive security assurances from leading digital economy powers, they may fully align their digital development strategies with the market-driven logic of technonationalism—ultimately becoming fully dependent on the leading digital economy powers in institutional competition over digital economy rules.

2.3 Market Power

2.3.1 The Concept of Market Power

As the most dynamic economic sector in the new industrial revolution and a key engine of global economic development, the scale of market power plays a critical role in shaping a nation's digital economic development.

On the one hand, markets are the primary arenas where nations create wealth.[2] With the increasing share of digital economy output in global GDP and the rapid development of digital technologies, demand-side forces in the digital economy sector have become the main drivers of economic growth in the new industrial revolution, further highlighting the importance of market power.

On the other hand, technological projects typically originate from domestic markets. The larger the domestic digital market, the greater the expected returns for a given technological project, which in turn stimulates further digital technology innovation. In the digital economy, the effects of economies of scale and economies of scope are further amplified, making market expansion and technological innovation mutually reinforcing drivers of corporate development.[3]

Therefore, market power is a crucial condition for digital technology innovation and business growth. Whoever controls core markets also holds the power to influence technological innovation and the future development trajectories of key enterprises.

A country's market power in the digital economy is shaped by multiple factors, including the size of its digital economy market, labor force quality, digital infrastructure development, and the degree of market internationalization, among others.

Market power influences international digital economy competition strategies in several ways:

First, as a major consumer market, demand-side companies can leverage bargaining power at the point of sale to secure digital economic benefits for their home country. Through control over standards and product preferences, they can even influence or determine the technical standards for digital products and technologies.[4]

Additionally, market power nations can employ non-tariff barriers and similar tools to restrict the entry of foreign digital products and services into their domestic markets. Such measures can be used to retaliate against, punish, or coerce competitors, helping the home country achieve its digital economic goals.

Second, market power nations typically enjoy large-scale digital markets, relatively advanced digital infrastructure, and vast data resources—all of which create favorable environments for continuous digital technology innovation and iteration. These factors not only generate significant demand for new digital technologies but also provide testing grounds for new technology development and deployment.

Finally, market power nations possess substantial influence in international digital economy rule negotiations. Since global negotiations on digital economy rules are still in their early stages, institutional competition often hinges on the combined digital market size of member states under competing regulatory frameworks. By controlling access to their domestic digital markets, market power nations become prized targets for competing digital economy rule-making coalitions, granting them considerable leverage and bargaining power in

[1] Pan Xiaoming. (2023). Formulation of International Digital Trade Rules: Disputes, Strategies, and Games. *International Relations Studies*, (05), 88-108+158.

[2] Grieco, Joseph M. (2008). *State Power and World Markets: The International Political Economy*. Beijing: Peking University Press, p. 107.

[3] Li Wei, Li Yu. (2021). Analyzing the U.S. "War" Against Huawei: The Political Economy of Global Supply Chains. *Contemporary Asia-Pacific Studies*, (01), 4-45+159.

[4] Mark Dallas, Stefano Ponte, and Timothy Sturgeon. (2019). "Power in Global Value Chains". *Review of International Political Economy*, 26(4), pp. 666-694.

the rule-setting process.

2.3.2 Strategic Choices Under the Logic of Market Power

Market power serves as a crucial pillar supporting a nation's participation in international digital economy competition. It profoundly shapes the pathways a country can adopt when engaging with the global digital economy. Countries with significant market power can use it as a leverage point to expand their technological power or institutional power. Meanwhile, countries with moderate market power seek to expand their market influence by forming market coalitions with other nations. In contrast, countries with the weakest market power often attach themselves to the large markets of major powers, seeking to find a suitable position in the digital value chain.

Countries with dominant market power leverage their domestic markets to further expand their digital economic influence, while simultaneously excluding internal competitors within the system, thereby securing excessive technological and institutional power advantages. As noted earlier, leading market power countries hold significant bargaining power in digital trade, and they use this advantage as a core mechanism to expand their market reach.

For example, leading market powers can exchange access to their large domestic demand for greater access to the digital markets of other countries. Conversely, they can also adjust domestic trade policies to penalize competitors, effectively excluding rivals from their domestic digital markets. This type of reward-punishment mechanism allows leading market powers to continuously enhance their market power, while simultaneously reinforcing domestic digital technology innovation through protectionist and incentive policies.

Countries within the system that lack large-scale markets and complete digital infrastructure must rely on open-market policies and globalization strategies to enhance their competitiveness.[1]

However, in the international digital economy competition system, the process of market opening is heavily influenced by technonationalism. To reduce dependence on transnational digital giants and achieve security and autonomy in their digital economies, some countries have initiated market coalitions to counterbalance the pressures imposed by dominant market powers.

These market coalitions consist of like-minded nations that align their policies on certain market issues, aiming to jointly enhance their collective market power and counteract the dominance of external market powers in digital economic competition. Within these coalitions, countries work together to create unified digital markets, thereby boosting the digital economy development of all member countries within the coalition.

At the bottom of the hierarchy, countries with the weakest market power — often due to technological backwardness, historical factors, or geopolitical constraints — find it difficult to participate in market coalitions. As a result, they often have no choice but to attach themselves to larger digital economies, seeking to carve out a niche within the dominant nation's digital economy ecosystem. By aligning themselves with major powers, these weaker nations gradually accumulate technological resources and secure limited digital economic benefits by participating in lower segments of the digital value chain.

2.4 Power Structure Model of Digital Economy Competition

This paper constructs a comprehensive theoretical framework to explain how technonationalism shapes digital economy competition, and identifies three key variables: technological power, institutional power, and market power. These variables determine a country's relative position in the global digital economy competition system and its strategic choices.

In this framework, countries are categorized into three types:

Leading countries, which hold advantages in technology, market influence, and rule-making.

Catch-up countries, which strive to close technological and institutional gaps through policy innovation and market expansion.

Emerging countries, which are still accumulating technological and institutional capabilities, often relying on external partnerships.

At the technological power level, leading

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[1] Porter, Michael E. (2002). *The Competitive Advantage of Nations*. Beijing: Huaxia Publishing House, p. 667.

countries maintain their advantage by controlling key technologies and limiting technology transfer to competitors. Catch-up countries focus on independent innovation and targeted breakthroughs to reposition themselves in global digital value chains. Emerging countries absorb low-end digital industries to build a foundation for future innovation.

At the market power level, leading countries leverage their large consumer bases to extract economic benefits and set global standards. Catch-up countries build market alliances to expand influence, while emerging countries depend on access to larger markets for technology and investment inflows.

At the institutional power level, leading countries promote global rules that protect their own digital economic interests. Catch-up countries seek institutional substitution, using regional cooperation and multilateral platforms to embed rules that reflect their needs. Emerging countries adopt selective alignment strategies, balancing between protecting digital sovereignty and integrating into global frameworks.

These three powers — technology, institution, and market — are interconnected. Technological power enhances market competitiveness and strengthens bargaining positions in rule-making. Market power supports domestic innovation and boosts institutional influence in rule negotiations. Institutional power shapes future technological trends and controls the conditions for market access.

The model can be visualized as a three-dimensional coordinate system, with each axis representing one of the powers. A country's position within this space reflects its overall competitive posture and the combination of strategies it employs. For example, a country with strong technological power but limited market and institutional power may prioritize technology self-sufficiency, domestic market development, and participation in regional rule-setting.

This power structure model provides a flexible analytical tool to assess how different countries position themselves and adjust strategies in response to shifts in global digital competition driven by technonationalism.

3. Case Analysis — Digital Economy Competition Strategies of China, the United States, and India

3.1 The Roles of China, the United States, and India in the Digital Economy System

Overall, the global digital economy system has formed a "one superpower, one strong power" structure centered around the United States and China, while the European Union, Japan, South Korea, India, and other countries are also actively advancing their digital economy development strategies.

Among them, the United States is the undisputed leader in the digital economy. In 2021, the size of the U.S. digital economy ranked first globally, reaching $15.3 trillion, far exceeding China's $7.06 trillion and Germany's $2.87 trillion, accounting for 40.1% of the total digital economy output of 47 major countries globally.[1]

In terms of penetration, the digital economy accounted for 65% of U.S. GDP.[2] Additionally, the United States firmly dominates the underlying infrastructure of the digital economy, including computing power, hardware, and software.

However, due to the global division of labor driven by globalization, the U.S. has gradually shifted much of its digital economy-related manufacturing overseas, making its digital manufacturing sector relatively weak. Additionally, the U.S. domestic market is relatively limited, so Washington actively promotes U.S.-style digital trade rules globally to lock in its advantages.

On the one hand, the U.S. uses industrial policies to support key technology sectors, strengthen supply chain security, and restrict technological development in competing countries. On the other hand, it promotes U.S.-preferred digital trade agreements in the Indo-Pacific region and leverages ideological alliances to isolate rivals such as China, consolidating its leading position in digital competition.

Unlike the U.S.'s comprehensive dominance, China, as the second-largest digital economy,

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[1] Source: Global Digital Economy White Paper. (2022). China Academy of Information and Communications Technology, July 29, 2022. Retrieved on December 9, 2023, from http://www.caict.ac.cn/kxyj/qwfb/bps/202212/t20221207_412453.htm

[2] Source: Song Siyuan, Xia Lin, Wang Yuqing. (2023). Comparative Analysis and Outlook on the Digital Economies of China and the United States. *China Foreign Investment*, (11), 76-80.

has its own unique advantages.

First, China's vast domestic market supports one of the largest digital economies and digital trade volumes globally, with tremendous growth potential.

Second, in applied technologies, China holds competitive advantages in areas such as 5G infrastructure, IoT, robotics, and AI, which provide continuous momentum for digital development.

However, China still lags behind the U.S. in many core technologies and faces growing risks of technological decoupling, supply chain disruptions, and external pressure from U.S. policies and tech isolation strategies.

Therefore, leveraging its large market to drive technological innovation, while actively engaging in global cooperation to promote inclusive digital rules that serve both China and other emerging economies, is central to China's digital strategy.

Compared to China and the U.S., India's digital economy, valued at $679.9 billion, ranks only 8th globally.[1]

Despite its current ranking, India, as a purely market-driven player, possesses immense growth potential. Forecasts indicate that by 2030, India's digital economy could surpass $1 trillion, making it a key player in the global digital economy.

However, this promising future is counterbalanced by weak infrastructure, limited domestic manufacturing, an immature innovation system, and a wide digital divide across regions.

This combination makes India a unique case in the digital economy:

Its large market and strategic location make India a critical partner for the U.S. in shaping Indo-Pacific digital trade rules and countering China's influence.

At the same time, India seeks to develop its digital economy independently, rarely exchanging domestic market access for short-term gains and taking a cautious approach to regional digital trade agreements, further enhancing its weight in rule-making negotiations.

3.2 Analysis of Digital Economy Strategies in China, the U.S., and India

Based on the above data, we can roughly determine the relative positions of China, the U.S., and India within the Power Structure Model of Digital Economy Competition.

First, the U.S. holds absolute dominance in digital technology, economic scale, and rule-making, positioning it as a technological leader, institutional leader, and market leader in the model.

Second, China ranks a distant second in digital economy scale, with some leading-edge technologies and active efforts to build digital trade rules that align with the interests of emerging economies. Therefore, China plays the role of a catch-up country across all three dimensions: technology, institutions, and markets.

Finally, India's digital economy remains at an early stage and it has yet to join any major international digital agreements. Despite its huge market potential, weak infrastructure and a significant digital divide constrain its current market power, leaving India in the role of an emerging country in this framework.

In summary, these distinct roles across the three dimensions—technology, institutions, and markets—make China, the U.S., and India ideal cases for analyzing digital economy competition strategies, which is why this paper selects them for focused analysis.

3.2.1 The Digital Economy Competition Strategy of the United States

At the technological level, the United States identifies China as its primary strategic rival and has adopted restrictive policies to hinder China's technological progress. In 2019, the U.S. Senate Committee on Commerce, Science, and Transportation issued a report emphasizing the "Small Yard, High Fence" strategy, which imposes strict controls and reviews in technology areas critical to U.S. national security.[2]

This approach has since become a hallmark of U.S. digital competition strategy toward China. Scholars also describe the core of U.S. technological competition as "selective

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[1] Source: Google, Temasek, Bain & Company, India 2023 Economy Report.

[2] Samm Sacks, "China: Challenges to U.S. Commerce," 2019, retrieved on December 26, 2023, from https://www.commerce.senate.gov/services/files/7109ED 0E-7D00-4DDC-998E-B99B2D19449A

decoupling," aimed at slowing or even freezing China's technological development in key fields to maintain a substantial technology gap between the two nations.[1]

At the market level, the U.S. promotes its digital companies' global expansion through bilateral and multilateral digital trade agreements and digital infrastructure investment initiatives. These efforts are designed to secure a dominant position in emerging digital markets. Simultaneously, the U.S. enforces export controls on digital technologies and restricts foreign investment in domestic digital sectors to safeguard its competitive advantage in key technologies.[2]

Coordinating actions with allies is also a critical element of the U.S. strategy in the regulatory domain. U.S. policymakers recognize that unilateral actions risk escalating destructive competition with China while alienating allies. Therefore, the U.S. government seeks to partner with leading technology powers among its democratic allies to establish a coalition based on shared interests. In a 2020 article published in Foreign Affairs, President Joe Biden highlighted the importance of forming and leading a future-oriented technology alliance to counter strategic competitors.[3]

To this end, the U.S. has focused on building digital alliances in Europe and the Indo-Pacific, actively advancing a U.S.-centric template for digital trade rules.[4] Currently, the U.S. has developed several such frameworks, including the value chain-oriented CHIP4, the supply chain-oriented Indo-Pacific Economic Framework (IPEF), the QUAD security alliance, the Minerals Security Partnership (MSP), and the more comprehensive U.S.-EU Trade and Technology Council (TTC).

3.2.2 China's Digital Economy Competition Strategy

China's digital economy development started relatively late, relying heavily on industrial policies to foster innovation in key digital technology sectors. Since 2015, the Chinese government has introduced a series of initiatives, including Made in China 2025 and the 13th Five-Year National Informatization Plan, to systematically develop the digital economy.

The 14th Five-Year Plan for Digital Economy Development highlights that enhancing core digital technologies through independent innovation is a strategic priority. It outlines objectives such as improving digital infrastructure, advancing digital transformation across industries, and strengthening innovation capacity in areas like sensors, quantum computing, artificial intelligence (AI), and blockchain.

In addition to policy guidance, both central and local governments have established specialized funds to support R&D in critical digital technologies. For example, to advance its domestic semiconductor industry and counter U.S. technology restrictions, China established the National Integrated Circuit Industry Investment Fund in 2014, with a total capital of RMB 138.7 billion.

This fund was further expanded in 2019 and 2024, supporting all stages of the semiconductor value chain, from design and manufacturing to packaging, testing, and materials development.[5]

At the international level, China actively promotes digital infrastructure cooperation and digital economy governance partnerships with the EU, ASEAN, African nations, and Belt and Road Initiative (BRI) countries.[6]

Recognizing its relatively weak position in global digital rule-setting due to the late start of its regulatory framework, China seeks to offset these disadvantages by joining regional digital

[1] Yan Xuetong & Xu Zhou. (2021). Sino-U.S. Competition in the Early Digital Era. *Political Science Quarterly*, 6(1), pp. 24-55.

[2] Pan Xiaoming. (2020). New Trends in Global Digital Economy Competition and China's Response. *International Studies*, (2), pp. 93-106.

[3] Joseph R. Biden. (2020, October 22). "Why America Must Lead Again — Rescuing U.S. Foreign Policy after Trump." *Foreign Affairs*, retrieved on December 21, 2023, from https://www.asiascot.com/news/2020/10/22/why-america-must-lead-again-rescuing-u-s-foreign-policy-after-trump/

[4] Wang Xiaowen & Ma Mengjuan. (2022). U.S. Digital Competition Strategy Toward China: Drivers, Pathways, and Limitations. *International Forum*, 24(1), pp. 78-97, 158-159.

[5] Laura He, (2024, May 28). "China is Pumping Another $47.5 Billion into its Chip Industry," CNN, retrieved on September 23, 2024, from https://edition.cnn.com/2024/05/27/tech/china-semiconductor-investment-fund-intl-hnk/index.html

[6] National Development and Reform Commission of China, "14th Five-Year Plan for Digital Economy Development," March 25, 2022, retrieved on March 25, 2022, from https://www.ndrc.gov.cn/fggz/fzzlgh/gjjzxgh/202203/t20220325_1320207.html

trade agreements such as DEPA, RCEP, and CPTPP. Through these platforms, China aims to embed rules favorable to emerging digital economies into the existing global governance system.

In the digital market domain, China leverages the BRI to promote digital infrastructure projects and technology exports, expanding its digital footprint through localized policies and cooperative frameworks with neighboring countries.

Confronted with U.S. technological restrictions and broader strategic containment, China's core strategy, as a "catch-up" nation, emphasizes technological self-sufficiency, combining defensive measures with targeted counter-actions against specific U.S. policies.[1] Chinese scholars describe this approach as "defensive technonationalism," focused on securing technological independence through industrial policy.[2]

China's strategy remains largely reactive, relying on domestic policy to build technological capabilities while seeking to expand international cooperation. It aims to break out of technological containment by improving digital trade networks, fostering digital technology collaboration, and aligning with high-standard global digital economic rules to move up the global data value chain.[3]

3.2.3 India's Digital Economy Competition Strategy

Amid escalating U.S.-China competition in digital technology, India has actively positioned itself as a destination for the relocation of Chinese industries. In 2014, the Modi administration launched the Make in India initiative, identifying 25 priority sectors, including information technology and electronics, highlighting India's ambition to develop its digital economy manufacturing

capabilities.[4]

With rising global concerns over supply chain decoupling, India's industrial substitution policies have become a key driver of its digital manufacturing sector. The Modi government actively aligns with U.S. "decoupling" strategies, lobbying Western governments to replace China's role in global supply chains.[5]

In high-tech digital sectors, India restricts Chinese companies under national security grounds, gradually replacing Chinese capital with investments from U.S. digital giants.[6]

In 2015, India launched the Digital India initiative, formally accelerating its digital transformation. The program aims to develop secure and stable digital infrastructure, deliver government services digitally, and promote digital literacy across society.[7] By positioning technology as a core driver of development, the program has significantly advanced India's economic digitalization.[8]

Internationally, securing U.S. digital investments and advanced technologies is central to India's external digital strategy. Deeper U.S.-India digital cooperation also enhances India's global profile and attractiveness for further investments.[9]

The Modi government has also actively promoted a "Democratic Technology Alliance" narrative, engaging with the EU, Japan, and others to develop cooperative frameworks in

[1] Yan Xuetong & Xu Zhou. (2021). Sino-U.S. Competition in the Early Digital Era. *Political Science Quarterly*, *6*(1), pp. 24-55. DOI: 10.16513/j.cnki.qjip.2021.0003

[2] Sun Haiyong. (2020). Offensive Technonationalism and the U.S. Tech War Against China. *International Vision*, *12*(5), pp. 46-64, 158-159. DOI: 10.13851/j.cnki.gjzw.202005003

[3] Qiu Jing. (2023). The Value Competition Between China and the U.S. in the Digital Age. *International Political Studies*, *44*(1), pp. 89-113. DOI: 10.16407/j.cnki.1000-6052.2023.02.002

[4] "Modi Launches 'Make in India' Campaign, Portal and Logo," The New India Press, 2014, retrieved on December 12, 2023, from http://www.newindianexpress.com/business/news/Modi-LaunchesMake-in-India-Campaign-Portal-and-Logo/2014/09/25/article2448917.ece

[5] Xie Chao. (2023). The Evolution, Characteristics, and Constraints of India's Indo-Pacific Vision. *South Asian Studies*, *4*, pp. 25-57, 153-155, DOI: 10.16608/j.cnki.nyyj.2023.04.02

[6] Wang Chunyan & Guo Jianwei. (2021). Analysis of India's Economic Decoupling Behavior Against China Under the Indo-Pacific Strategy. *South Asian Studies Quarterly*, *3*, pp. 32-47, 156.

[7] Common Service Centre (CSC), "Digital India," retrieved on December 22, 2023, from https://csc.gov.in/digitalIndia

[8] N. Chandransekaran. (2023). Digitalizing India: A Force to Reckon With. EY India, retrieved on December 25, 2023, from https://www.ey.com/en_in/india-at-100/digitalizing-india-a-force-to-reckon-with

[9] Chen Ran & Wang Yiwei. (2022). The Demands and Contradictions of U.S.-India Digital Cooperation under the Indo-Pacific Strategy Framework. *South Asian Studies*, *4*, pp. 68-87, 156-157.

emerging digital technologies.[1]

However, India's strong stance on data localization, cross-border data flows, digital taxation, and digital sovereignty has led to regulatory conflicts with the U.S., which advocates for open digital trade rules. These regulatory divergences have become a major obstacle in U.S.-India digital cooperation.[2]

4. Conclusion

The new wave of global industrial revolution, characterized by informatization, intelligence, digitization, and networking, is unfolding rapidly.[3] However, this process is accompanied by the "backlash" of globalization driven by technological advancements, triggering strategic competition centered on technology among major powers.

In this context, most nations have come to recognize technology as a critical strategic resource, deeply intertwined with national security, economic prosperity, and social stability. Consequently, technonationalism is gaining traction globally. The specific drivers behind technonationalism vary across countries depending on their technological development stages and economic conditions. In the digital economy domain, states may adopt technonationalist policies based on economic benefits, national security concerns, or aspirations for technological hegemony — in many cases, these motivations are intertwined. This divergence in motivations directly shapes different digital economy policy choices across countries.

Under the influence of this new wave of technonationalism, competition in the digital economy has taken center stage in global affairs. This paper identifies three core variables that shape a country's competitiveness in the digital economy: technological power, institutional

power, and market power. These variables not only influence a country's digital competitiveness individually but also interact with each other to create complex power dynamics. In a digital economy competition system comprising multiple states, differences in relative technological, institutional, and market strengths determine each country's strategic choices.

By comparing and positioning the relative strengths of different countries across these three dimensions, it becomes possible to anticipate their likely policy combinations in digital competition. The analysis of China, the United States, and India confirms that countries occupying different positions in the power structure tend to adopt distinct strategic approaches. This validates the general applicability of the theoretical framework proposed in this paper.

This framework offers a systematic method for assessing a country's relative position in global digital competition and predicting its likely policy mix. Such analysis helps reduce uncertainty in policymaking and provides deeper insights into the digital strategies of different nations. Furthermore, understanding the interactions between technological, institutional, and market power allows China to leverage its digital strengths more effectively and develop a competitive policy system that supports technological catch-up and long-term competitiveness.

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Comparative Study on Aesthetic Features of Black-and-White Images in Chinese and Korean Films — Centered on Films *Shadow* and *The Book of Fish*

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Abstract

Since the birth of cinema, film has undergone transitions from silent to sound, from black-and-white to color. From the Lumière Brothers' monochrome films to the first color film *Becky Sharp*, black-and-white and color imagery have each developed uniquely in cinematic art. Today, although black-and-white imagery is no longer mainstream, it continues to captivate audiences with its unique artistic charm and value. This paper compares the visual styles and aesthetic contexts of black-and-white imagery in Chinese and Korean films, focusing on Chinese director Zhang Yimou's *Shadow* and Korean director Lee Joon-ik's *The Book of Fish*. Integrating theories from narratology and psychology, this research explores the contemporary application and artistic value of black-and-white imagery.

Keywords: black-and-white imagery, visual style, narrative characteristics, Chinese and Korean film

1. Introduction

Film has predominantly existed in black-and-white imagery since its inception. Even with the rise of color film as mainstream, black-and-white cinema has not become obsolete but instead resurged interest with its unique aesthetic and cultural connotations. For instance, in 2018, Polish director Paweł Pawlikowski's *Cold War* won Best Director at the 71st Cannes Film Festival, while Alfonso Cuarón's *Roma* won the prestigious Golden Lion at the 75th Venice Film Festival, reigniting public interest in black-and-white cinematic aesthetics. Korean directors like Bong Joon-ho and Park Chan-wook have also presented special screenings of black-and-white versions of their color films, stimulating extensive discussions.

Photographer Shao Dalang once remarked: "In terms of auditory effects, tranquility surpasses noise, silence outweighs eloquence; visually, black-and-white transcends color, simplicity prevails over complexity." The foremost characteristic of black-and-white imagery is its visual minimalism and poetic narrative presentation. The absence of color makes contrasts of light and shadow, brightness levels, and composition more pronounced, guiding viewers to focus more directly on the narrative itself. The lack of color detaches black-and-white imagery from realistic representation, creating minimalist and poetic expression. This characteristic provides black-and-white imagery

a unique advantage in setting narrative moods or depicting serious themes. For instance, classic black-and-white films often utilize strong light-dark contrasts to create comedic atmospheres, whereas film noir employs dark lighting and stark contrasts to evoke historical and fatalistic sentiments.

Since early cinema exclusively featured black-and-white visuals, such images carry distinct cultural and emotional weight, often linked to history and memories by audiences. Directors choosing black-and-white presentations typically have specific narrative intentions. Historical periods are frequently recreated through black-and-white imagery in films to immerse viewers in a past atmosphere through color contrasts. In Eastern cultural contexts, black-and-white visuals often associate with ink paintings, emphasizing a harmonious coexistence of emptiness and fullness. Thus, black-and-white imagery simultaneously conveys historical narratives and enhances a film's thematic depth, enriching its aesthetic experience.

This paper aims to investigate the application and differences in black-and-white imagery within contemporary Chinese and Korean films. The films *Shadow* and *The Book of Fish* represent bold experiments with black-and-white imagery in both countries' cinema and embody distinct national and cultural visual styles.

2. Overview of the Visual Style of Black-and-White Imagery

Black-and-white imagery, as a form of cinematic language, possesses unique visual styles and aesthetic characteristics, mainly manifesting in three aspects:

2.1 Contrast and Light-Shaping

Compared to color images, black-and-white visuals emphasize contrasts between light and shadow, using lighting to create a sense of depth and dimensionality. Such visual tension effectively highlights character outlines and facial expressions, intensifying dramatic effects. Early black-and-white films relied on casting shadows and high-contrast lighting to establish atmosphere, allowing audiences to focus intently on characters' actions and inner conflicts. Thus, black-and-white imagery is often seen as pure and devoid of visual noise. Rudolf Arnheim once suggested that "color appeals to emotion, while form speaks to intellect and analysis, making form a more effective method for communicating information." If vibrant color provides sensory experiences, then form—achieved through clear visual structures—offers more fundamental perceptual experiences. Black-and-white imagery, though seemingly less varied than color, actually contains rich gradations of grayscale, creating refined visual effects that directly and vividly stimulate viewer perception.

2.2 Abstraction and Symbolism

The absence of color information in black-and-white visuals partially reduces realistic detail, thus strengthening formalistic and symbolic qualities. When viewing black-and-white films, audiences often pay greater attention to lines, shapes, and shadows, leading to deeper emotional resonance and imaginative engagement. Consequently, black-and-white imagery embodies an art of subtraction, deliberately abandoning color to achieve more concentrated expression. Though visually simpler, black-and-white imagery leaves ample space for audience imagination. This makes it especially suited for expressing philosophical or poetic themes, often transcending narrative itself to evoke certain moods and atmospheres.

2.3 Narrative Function and Aesthetic Choice

Choosing black-and-white rather than color imagery constitutes both an aesthetic stance and narrative consideration for filmmakers. Through specific tones and contrast design, black-and-white imagery directs audience emotions, effectively supporting thematic storytelling. Flashbacks or dream sequences in black-and-white clearly differentiate from colorful present-day scenes, signaling temporal and spatial transitions. This structural use of imagery highlights black-and-white as a unique narrative strategy. In the digital age, black-and-white films represent an aesthetic and narrative resistance against mainstream forms. Rather than merely nostalgic or retro, they employ differentiated visual styles to create unique beauty, balancing sensory enjoyment with cinematic contemplation.

In summary, black-and-white imagery's distinct visual style, characterized by sharp contrasts, abstract refinement, and profound aesthetic implications, offers a unique expressive mode for film art. By analyzing its application in *Shadow* and *The Book of Fish*, this paper explores how each film fully realizes the artistic potential

of black-and-white imagery.

3. The Aesthetics of Black-and-White Imagery in the Film *Shadow*

The 2018 film *Shadow*, directed by Zhang Yimou, is a martial arts movie predominantly presented in black-and-white visuals. By largely abandoning vibrant colors, the film establishes an ink-painting-like aesthetic tone. This bold choice, distinctively different from Zhang Yimou's previous works celebrated for vivid colors, has garnered significant attention. The film continues Zhang's consistent emphasis on visual excellence while innovatively exploring aesthetics. Elements from traditional Chinese ink paintings are incorporated, using varying levels of black, white, and gray to build a rich Eastern visual atmosphere.

3.1 Composition and Tonality

Shadow adopts a desaturated black-and-white visual style to evoke restrained emotional expression. The grayscale deliberately minimizes the direct emotional influence of vibrant colors, resembling sketch-like imagery that directs viewer attention away from color distractions and towards character performances and narrative progression. Zhang frequently uses visual elements like drizzling rain, umbrellas, and rippling water textures combined with black-and-white tonality to create striking visual tension and dramatic contrast. Several pivotal scenes unfold in gentle rainfall, where black umbrellas spread out beneath gloomy skies, resembling the ink wash technique found in traditional Chinese painting. The characters' silhouettes subtly appear and disappear, reminiscent of the intentional blank spaces and ink strokes of Chinese art. This visual approach not only aligns with the film's theme of yin-yang duality and the interplay of reality and illusion, but also emphasizes the subtle beauty characteristic of traditional Chinese aesthetics.

3.2 Light, Shadow, and Atmosphere

Shadow leverages black-and-white imagery to heighten the narrative's grim atmosphere and tragic tone. The storyline revolves around political intrigues and the survival of a "shadow-double," permeated by tension and psychological oppression. The grayscale visuals fittingly intensify this mood; low brightness and low saturation render the scenes bleak and heavy, enhancing the audience's perception of oppression arising from power struggles.

Psychologically, black-and-white visuals often evoke gloominess and repression, aptly matching the film's persistent tension. Zhang adeptly employs black-and-white tones to highlight the fragility of life and the devastating costs of violence.

3.3 Cultural Significance

The aesthetic choice of black-and-white in *Shadow* is deeply rooted in traditional Chinese culture. Zhang Yimou has expressed that the visual inspiration for the film derives from traditional Chinese ink paintings, aiming to infuse "ink-wash painting" charm into cinema. Extensive use of black, white, and gray vividly translates the essence of ink-wash aesthetics to the screen. This aesthetic experimentation carries the significance of propagating cultural symbols, communicating traditional Chinese artistic sensibilities through commercial cinema. Moreover, the black-and-white imagery symbolizes Eastern philosophical concepts such as yin-yang duality and the interplay between reality and illusion. The film's narrative, revolving around the blurred identities of the protagonist Ziyu and his double Jingzhou, embodies a dialectical relationship, visually echoed by the interplay of black and white. This restrained and subtle expression aligns with the Eastern aesthetic tradition of "leaving blank space" and implying rather than explicitly stating emotions. Instead of openly revealing sentiments, the film leaves interpretative space to viewers, creating an implicit beauty in harmony with Eastern aesthetics.

Ultimately, the black-and-white visual aesthetic of *Shadow* represents not merely a stylistic innovation, but also pays homage to traditional culture and explores new dimensions in cinematic storytelling. The ink-wash-inspired visuals distinguish the film among colorful commercial blockbusters, providing fresh possibilities for the aesthetic development of Chinese martial arts cinema.

4. The Aesthetics of Black-and-White Imagery in the Film *The Book of Fish*

Released in 2021, *The Book of Fish*, directed by Korean filmmaker Lee Joon-ik, is a historical film presented entirely in black-and-white. Adapted from historical events surrounding the 19th-century Joseon scholar Jeong Yak-jeon, the film recounts his exile to Heuksando Island, where he collaborated with fisherman Chang Dae on a book documenting local fish species.

Lee boldly uses black-and-white imagery to depict this historical episode, giving the film a distinctively poetic and understated charm. Unlike Zhang Yimou's *Shadow*, which emphasizes dramatic conflict, *The Book of Fish* does not feature grand mise-en-scène or intense confrontations. Instead, it employs calm, restrained storytelling to portray emotional depth and the mentor-disciple relationship. The black-and-white visuals perfectly match the film's intended poetic ambiance.

4.1 Poetic Narrative and Visual Atmosphere

Black-and-white imagery enriches the film with profound poetic expression. Each frame resembles a timeless poem imbued with deep emotion and lingering resonance. This poetic visual style emerges primarily through skillful handling of black, white, and gray tones, which perfectly translate traditional ink-painting aesthetics onto the cinematic canvas. The film's depictions of landscapes, characters, and objects evoke an otherworldly beauty reminiscent of moving ink paintings. Heuksando Island's natural scenery, viewed through the camera's monochrome lens, becomes particularly evocative: the vast, misty sea, tranquil islands, and humble fishing villages appear even more ethereal and profound in their colorless presentation, immersing audiences in a remote, serene past. The black-and-white palette enhances the historical authenticity and unpretentious elegance of the film, inviting viewers to experience the poetic dimension of history through understated visual expression.

4.2 Director's Intention and Aesthetic Characteristics

Director Lee Joon-ik clearly articulated his artistic vision behind using black-and-white imagery, stating that this style perfectly aligns with the film's thematic intentions. He believed "black-and-white films possess unique depth," and despite budget constraints, refused to compromise on visual quality. Ultimately, choosing black-and-white allowed him to authentically represent the historical context. Lee confidently asserted, "I dare say every frame of this film is visually exquisite." Indeed, the cinematography captures numerous extraordinary moments; scenes such as Jeong Yak-jeon and Chang Dae drifting on a small boat across a vast, open sea resemble living ink paintings with profound resonance. Black-and-white imagery thus serves as an essential medium for recreating history in Lee's

work, imbuing the film not only with historical authenticity but also profound artistic elegance. This monochrome visual style integrates seamlessly with traditional Eastern ink aesthetics, creating elegantly poetic visuals. From a viewer's perspective, the cinematography of *The Book of Fish* is undeniably successful, as its poetic black-and-white imagery beautifully evokes ink-painting aesthetics, immersing audiences in a delicate interplay between historical depth and poetic emotion.

4.3 Narrative Structure and Symbolic Meaning

The entire film is presented in black-and-white until its final scene introduces color imagery—a transition with significant symbolic meaning. In the film's concluding moments, a panoramic view of Heuksando Island shifts from monochrome to full color, providing a poetic epilogue. This shift from black-and-white to color highlights the symbolic significance of the island as a central motif, transforming it from a mere geographical location into a metaphorical "island of the soul." When the monochrome Heuksando Island finally transitions into vibrant color, it symbolically marks Jeong Yak-jeon's inner transformation and intellectual enlightenment experienced during his exile—a previously bleak and lifeless place now imbued with renewed significance and life. This creative approach underscores the narrative's poetic dimension, with black-and-white establishing the film's historical and poetic atmosphere and the sudden introduction of color intensifying thematic clarity and emotional depth. The restrained pace and quiet narrative, accentuated by black-and-white imagery, allow audiences to savor the intimate exchanges and scholarly dialogues between mentor and disciple. Such nuanced and introspective storytelling contrasts sharply with dramatic tension common in commercial color films, yet possesses a deeply affecting and memorable power.

In conclusion, *The Book of Fish* employs black-and-white imagery masterfully to craft a poetic narrative and historical ambiance. Monochrome visuals lend the film an elegant, solemn beauty, emphasizing the weight of history and the quiet force of cultural depth, offering audiences a lingering and contemplative viewing experience.

5. Comparison of Visual Styles in Chinese and Korean Films

Through the analysis of *Shadow* and *The Book of*

Fish, differences clearly emerge in how Chinese and Korean cinema utilize black-and-white imagery, each highlighting distinct visual styles and cultural implications.

5.1 Visual Style

Shadow employs an almost monochrome grayscale style. Though not completely devoid of color, the film predominantly features an ink-painting aesthetic with subtle hints of skin tone and red, injecting vitality and dramatic tension into an otherwise stark visual framework. In contrast, *The Book of Fish* utilizes genuine black-and-white photography throughout the film, introducing color only in its concluding scene. This uniform monochrome palette creates a purer, more coherent visual experience. While *Shadow* focuses on deliberate visual design, carefully balancing blacks, whites, and grays for maximum dramatic impact, each frame intentionally constructed to achieve equilibrium and intensity, *The Book of Fish* adopts a more naturalistic approach. Its unembellished, straightforward monochrome visuals allow audiences to authentically experience the historical context free from colorful distractions.

5.2 Aesthetic Atmosphere

The two films differ markedly in their aesthetic atmospheres. The monochrome style of *Shadow* tightly aligns with its tense martial arts narrative and philosophical reflections on duality (yin and yang). The film's ink-wash aesthetic captures both the oppressive atmosphere of political intrigue and a deeper philosophical exploration of balance and conflict inherent in Eastern thought. Each frame appears meticulously crafted, exuding an austere yet magnificent beauty, strongly symbolic and visually impactful. This aesthetic closely aligns with Zhang Yimou's long-standing pursuit of the Chinese aesthetic spirit, leveraging visual form to convey profound cultural meaning.

On the other hand, the black-and-white imagery in *The Book of Fish* emphasizes poetry and tranquility. The film intentionally excludes drama and conflict, instead using monochrome visuals to construct a contemplative space detached from worldly chaos. Watching the film resembles reading an extended narrative poem, inviting audiences into quiet introspection on intellectual exchanges and emotional nuances. Thus, the aesthetic of *The Book of Fish* resembles traditional literati paintings—subtle, understated, and intellectually profound—while

Shadow evokes the grandeur and visual intensity of ink-wash paintings, emphasizing symbolic visual power and cultural metaphor.

5.3 Cultural Expression

Both films' monochrome aesthetics closely tie to their respective cultural contexts. *Shadow* unmistakably bears the imprint of Chinese traditional culture, blending ink-painting aesthetics, yin-yang philosophy, and Eastern aesthetic sensibilities. It simultaneously inherits and innovates Chinese aesthetics, confidently using mainstream cinema to disseminate traditional Chinese cultural beauty to broader audiences.

Conversely, *The Book of Fish* deeply roots itself in Korean history and East Asian intellectual traditions. Depicting Joseon scholars' steadfast pursuit of knowledge and faith amid turbulent times parallels Chinese narratives of exiled poets, such as Su Shi's banishment to Danzhou, and reflects historical intellectual exchanges under the influence of Western ideas. Here, black-and-white imagery facilitates cross-cultural resonance: Chinese audiences recognize familiar historical echoes, while Korean audiences gain renewed appreciation for their cultural heritage and quiet intellectual strength. The film's aesthetic reflects Korean cultural ideals—modesty, reverence for nature, and poetic portrayals of history. Director Lee Joon-ik's monochrome approach authentically portrays Joseon-era life, enhancing historical realism and profound cultural resonance.

In summary, the black-and-white aesthetics of *Shadow* and *The Book of Fish* distinctly embody their respective cultural characteristics. *Shadow* strongly represents traditional Chinese culture, emphasizing ink painting and yin-yang philosophy to showcase Eastern aesthetics and cultural confidence. Meanwhile, *The Book of Fish* draws deeply from Korean history and intellectual traditions, using black-and-white imagery to poetically narrate historical and intellectual themes, generating cultural resonance among both Chinese and Korean audiences. Both films effectively employ monochrome visuals to highlight thematic and emotional depth but differ markedly in visual style and aesthetic orientation. While *Shadow* emphasizes dramatic tension and visual spectacle, *The Book of Fish* prioritizes poetic serenity and historical authenticity. These differences reflect distinct Chinese and Korean

aesthetic traditions, narrative styles, and directors' innovative explorations of black-and-white cinematic language.

6. Conclusion

Through the comparative analysis of *Shadow* and *The Book of Fish*, it becomes clear that black-and-white imagery retains significant artistic value in contemporary filmmaking. Despite color films dominating mainstream cinema, black-and-white visuals continue to demonstrate their potential to expand cinematic visual expression and enrich narrative depth with their distinct aesthetic charm and cultural significance. Advances in digital technology have also provided new creative possibilities for black-and-white films, enabling precise grayscale manipulation and higher-quality visual representations.

This research further highlights the close relationship between black-and-white imagery and cultural expression. Zhang Yimou utilizes ink-wash aesthetics to convey traditional Chinese philosophical and aesthetic values, while Lee Joon-ik uses monochrome visuals to poetically represent historical and intellectual themes in Korean culture. Both examples illustrate the potential of black-and-white imagery as a cross-cultural visual language. Moreover, black-and-white aesthetics extend beyond nostalgia or retro style; by intentionally limiting color, filmmakers accentuate elements such as lighting, composition, and symbolic imagery, achieving an artistic effect characterized by restraint and introspection, allowing audiences to deeply engage with narrative contexts and emotional subtleties.

Although black-and-white imagery may face challenges regarding audience acceptance in commercial markets, successful examples clearly demonstrate its considerable artistic impact and commercial viability. Future research can further explore additional Chinese and Korean films to deepen understanding of aesthetic responses and innovative applications of black-and-white imagery in cinema.

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