



Distributed Cognition in J.S. Khairen's Novel *Bungkam Suara*: Technogenesis and the Engineering of Collective Cognition in the Perspective of Hayles' Posthumanism

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Article Info	Abstract
Received: 2026-05-14 Revised: 2026-05-29 Accepted: 2026-06-17 Keywords: distributed cognition; technogenesis, collective cognition engineering, Silence, Hayle's posthumanism DOI: 10.24256/ideas.v14i1.10577 Corresponding Author: Mariana Maharuju anamaharuju@gmail.com Universitas Negeri Gorontalo	<i>The digital age has fundamentally transformed human cognition. However, Indonesian literary studies have rarely examined this cognitive transformation as a distributed system involving humans and technology. This article analyzes the representation of distributed cognition in J.S. Khairen's novel Bungkam Suara (Silence of Voices) using N. Katherine Hayles' technogenesis framework, focusing on how characters' cognition transcends bodily boundaries and distributes into media networks, information systems, and surveillance technologies. Using a qualitative-narrative analysis approach, the findings show that distributed cognition in the novel constitutes a form of technogenesis that also functions as a mechanism for engineering collective cognition. Technology no longer serves as a neutral tool but as an agent that directs—even determines—how characters perceive truth, form identities, and respond to information. Engineering strategies include information control through geo-fencing, public opinion production through engineered pro-con scenarios, and mass mobilization through digital command systems. This article argues that when cognition distributes into systems beyond individual control, technology shifts from an emancipatory tool to a subtle yet effective social control mechanism. The theoretical contribution is expanding Hayles' technogenesis into contemporary Indonesian literary studies, demonstrating that this novel functions as a posthumanist critique of digital subjectivity.</i>

1. Introduction

The development of digital technology over the past two decades has fundamentally transformed how humans think, access information, and construct understandings of reality. As Hayles (2012: 1) argues, *technogenesis*—the co-evolution of humans and technology—has created conditions where cognition can no longer be understood as an exclusive property of individuals but rather as a phenomenon distributed across human networks, media, and technical systems. Similarly, Clark (2023: 425) asserts that *extended cognition* has become a fundamental characteristic of contemporary human life, with digital devices serving as "external scaffolding" that shapes thinking processes.

However, Indonesian literary studies remain dominated by ideological, sociological, and psychological readings that position technology as a background element or tool of power, not as part of the cognitive system shaping characters' subjectivity. As Ferrando (2020: 12) reminds us, posthumanism demands a rereading of human-technology relationships that no longer positions humans as the sole center of meaning.

Research on J.S. Khairen's novel *Bungkam Suara* (2023) has focused on Marxist criticism (Saputro & Wulandari, 2024), Foucault's power relations (Irhad, 2025), and social aspects (Kemala et al., 2025). While these studies critique power and ideology, they have not systematically examined how technology actively shapes character cognition through the distribution of thinking functions into digital systems. In other words, cognitive transformation due to technology has not been the main focus of literary analysis of this novel.

Research gaps identified include: no systematic study has examined how characters' cognition transcends bodily limits and distributes into media networks, information systems, and surveillance technologies in *Bungkam Suara*. Yet this novel presents a fictional NKAL world where surveillance technology (CCTV, face detection), data-based identity validation systems, propaganda machines, and geo-fencing strategies work together to direct how characters think, recognize truth, and respond to information. This phenomenon aligns with what Zuboff (2021: 6) calls "*surveillance capitalism*," where behavioral data is extracted and used to predict—even modify—human behavior without their awareness.

To address these gaps, this study employs N. Katherine Hayles' *technogenesis* and distributed cognition framework (1999; 2012). Hayles (2012: 17) asserts that cognition "transcends the boundaries of the body" such that human cognitive networks cannot be strictly limited to biological bodies alone. *Technogenesis* itself refers to the co-evolution of humans and technology, where changes in cognitive systems, social practices, and technical systems recursively shape each other (Hayles, 2012: 1). In this perspective, technology is not an external tool but an integral part of the cognitive system that shapes how humans think and act.

This study has three main objectives. First, to analyze how characters' cognition distributes into digital technology systems in *Bungkam Suara*. Second, to examine how technology engineers people's collective cognition. Third, to describe the implications of distributed cognition for character subjectivity.

The novelty lies in applying Hayles' *technogenesis* framework to read distributed cognition in *Bungkam Suara*—an unprecedented cognitive-posthumanist approach to this novel. Thus, this research not only expands contemporary Indonesian literary studies but also demonstrates that this novel functions as a posthumanist critique of digital subjectivity.

A note on theoretical balance: While this study emphasizes technology as a control mechanism, we acknowledge that digital systems also offer emancipatory potentials, including collaborative intelligence and spaces for resistance. However, the novel's dystopian framing foregrounds control, which remains our analytical focus.

2. Methods

This research uses a qualitative approach with narrative analysis (Creswell & Creswell, 2023: 205). Narrative analysis was chosen because it allows researchers to trace how character experiences, events, and story structures in *Bungkam Suara* build representations of human-technology relations. As Riessman (2020: 432) explains, narrative analysis in the digital age requires special attention to how technology mediates subjective experience and representation.

The primary data source is J.S. Khairen's novel *Bungkam Suara* (PT Gramedia Pustaka Utama, 2023, first printing, 368 pages). Data consist of narrative excerpts, dialogues, and descriptions representing distributed cognition, character-technology interactions, and collective cognition engineering. Quotation selection was based on relevance to the research focus, with contextual recording to ensure complete and interpretive validity. To maintain interpretive validity, all coding decisions were reviewed by two researchers, and thematic categories were cross-checked against the novel's narrative structure.

Data collection used *library research* with a read-note method (Zed, 2008: 3), as human-technology relations in *Bungkam Suara* can only be accessed through textual study. Steps included: (1) thorough reading for general plot, character, and technological landscape comprehension; (2) intensive rereading to mark text containing distributed cognition representations; (3) recording selected quotations and contexts; (4) gathering theoretical sources and previous research.

Data analysis employed thematic coding based on *technogenesis* (Hayles, 2012), categorizing data into three dimensions: (a) extension of cognition to technological devices, (b) distribution of cognition in social networks and information systems, and (c) engineering of collective cognition through information control. Narrative analysis is particularly suitable for posthumanist literary studies because it captures how technology mediates character experience and how story structures embody cognitive transformations. The analysis followed

Creswell and Creswell (2023: 205-206): organizing data, thorough reading, coding, theme identification, interpretation construction, and presenting results as narrative and interpretive descriptions.

3. Results

Results are presented based on analysis of *Bungkam Suara*. Data quotations represent character-technology interactions and distributed cognitive processes in digital environments. Results are divided into three dimensions following the analytical framework.

Extended Cognition to Technological Devices

Findings show cognitive functions—spatial orientation, temporal decision-making, economic transactions, and space access—have been "outsourced" to digital devices. The following quotation illustrates:

"Timmy membuka gadget barunya lagi, membuka peta, melihat-lihat informasi di mana kamarnya berada... Mata Timmy akhirnya menemukan tulisan *housekeeping*" (BS.JK:125).

"Timmy opened his new gadget again, opened the map, and looked for information about where his room was... Timmy's eyes finally found the word *housekeeping*" (BS.JK:125).

The character no longer relies on memory or direct orientation to locate his room. Spatial knowledge is stored not in Timmy's head but on a digital map.

"Timmy melihat jam di gadgetnya. Tak mungkin memutar arah..." (BS.JK:8).

"Timmy looked at the clock on his gadget. It's impossible to turn around..." (BS.JK:8).

The decision not to turn around is not based on subjective time assessment but on data displayed by the gadget. Screen time as information becomes inviolable authority.

"Timmy merebut gadget adiknya. Menempelkan ke gadget miliknya untuk mentransfer sedikit uang" (BS.JK:6).

"Ibu memindai gawai untuk melakukan pembayaran di pintu keluar, dan pintu dua bilah besi pendek itu terbuka" (BS.JK:16).

"Timmy snatched his sister's gadget. He attached it to his own gadget to transfer a little money" (BS.JK:6).

"Mother scanned her gadget to make a payment at the exit, and the door of two short iron bars opened" (BS.JK:16).

In both quotations, gadgets are not merely aids but prerequisites without which action is impossible. Money no longer has physical form that can be counted or handed over; it is a number moving between devices.

Distributed Cognition in Social Networks and Information Systems

Findings indicate that cognitive functions of "recognizing" and "validating truth" have distributed into surveillance systems and databases.

"Jangankan menyapa buru jelek itu, manusia menyapa manusia lainnya saja tidak ada. Orang-orang takut karena gerak-gerik mereka terekam CCTV. Langsung terpantau di istana Kerajaan" (BS.JK:1).

"Let alone greeting that ugly hunter, people don't even greet other humans. People are afraid because their movements are recorded on CCTV. Immediately monitored at the Royal palace" (BS.JK:1).

CCTV not only records behavior but creates psychological effects that change how individuals think about social actions. Even spontaneous acts as small as spitting are recorded (BS.JK:32).

"Salah satu CCTV di bangunan terdekat menyorot dan mendeteksi wajah Timmy serta ibunya" (BS.JK:2).

"One CCTV camera in a nearby building highlighted and detected the faces of Timmy and his mother" (BS.JK:2).

The cognitive function of "recognizing"—once possible only through human personal interaction—is now distributed into algorithmic systems.

"Wajah tak teregistrasi... Wajah terverifikasi. Jujur Timur. Asisten akademik Profesor Terang Setiawan. Selamat datang, Jujur Timur" (BS.JK:94).

"Unregistered face... Face verified. Jujur Timur. Academic assistant to Professor Terang Setiawan. Welcome, Jujur Timur" (BS.JK:94).

"Verified" status is a valid marker of individual existence. Before verification, individuals are considered non-existent. Once verified, the system even greets them by name.

"Para tentara akhirnya menemukan, alamat komputer yang terdata dari serangan itu adalah komputer Ayah Timmy. Meski ayahnya tak pernah mengaku, bukti itu dianggap sangat kuat" (BS.JK:18).

"The soldiers finally found that the computer address recorded from the attack was Timmy's father's computer. Although his father never confessed, the evidence was considered very strong" (BS.JK:18).

The hierarchy of evidence in this novel is reversed: impersonal digital traces are more trustworthy than the subject's direct confession.

Engineering Collective Cognition through Information Control

The most significant finding is the representation of collective cognition engineering as the peak form of *pathological technogenesis*.

"Pikiran kita, pikiran orang-orang, mudah sekali dicuci. Buat pemberitaan secara terprogram, bayar buzzer, bikin berita judul aneh-aneh, bikin gerakan-gerakan, kampanye moral, propaganda, itu semua sudah umum" (BS.JK:94).

"Our minds, people's minds, are very easy to wash. Make programmatic news, pay buzzers, make strange headlines, create movements, moral campaigns, propaganda—all of that is common" (BS.JK:94).

The term "washed" contains three layers of meaning: elimination of original thoughts that do not fit the narrative, systematic and repetitive mechanical processes, and the passive position of the washed object.

"Ya, ini dia, Mak. Mesin propaganda otak... Massa digerakkan lewat dinding-dinding komputer. Lewat layar ini, kasat mata" (BS.JK:95).

"Yes, here it is, Mom. The brain's propaganda machine... The masses are moved through computer walls. Through this screen, it is invisible" (BS.JK:95).

The phrase "*kasat mata*" (invisible) is key. Manipulation is not visible. All that is visible is content on the screen, not the engine behind it.

"Kanal ini sudah mulai bergerak sejak dua puluh menit yang lalu, Pak. Lima menit lagi juga akan ada tujuh video yang tersebar. Tiga ratus akun juga sudah dapat briefing..." (BS.JK:96).

"This channel has been moving for twenty minutes, sir. In five minutes, seven videos will be distributed. Three hundred accounts have also received briefings..." (BS.JK:96).

Time, content volume, and account coordination are all scheduled. Nothing is spontaneous.

"Begitu para Algojo itu lewat... semua rekaman video dan foto kejadian di rumah Timmy lenyap seketika oleh teknologi mereka" (BS.JK:68).

"As soon as the Executioners passed... all video recordings and photos of the incident at Timmy's house instantly disappeared due to their technology" (BS.JK:68).

"Di sinilah pagar-pagar Geo-Fencing kita bekerja. Begitu ada satu saja isu menyentil Pemangku Adat, langsung naikkan tentang ikan mas koki ini" (BS.JK:163).

"This is where our Geo-Fencing fences work. As soon as there is one issue touching the Customary Leaders, immediately raise this goldfish issue" (BS.JK:163).

Technology not only disseminates information but also deletes it. Geo-fencing enables geographic-based information control.

Pro-Con Strategies as Advanced Cognition Engineering

The novel's most sophisticated finding is the representation of pro-con strategies as the illusion of debate:

"Dari percakapan yang Timmy curi dengar... Dutak dan timnya bertugas melempar satu isu yang bertolak belakang. Meja pro akan mendukung sejadi-jadinya, meja kontra akan mengkritik..." (BS.JK:165).

"From the conversation Timmy overheard... Dutak and his team are tasked with throwing a contradictory issue. The pro side will support it completely, the contra side will criticize it..." (BS.JK:165).

This quotation suggests conflict itself is fabricated. "The pro side will support, the contra side will criticize"—both sides of the debate have been

orchestrated, run by the same actors under the same control. Audiences witnessing the debate believe they are seeing free and open exchange of ideas, when both camps work toward the same goal: directing public attention in the desired direction.

4. Discussion

Extended Cognition: When Mind Transcends Bodily Limits

Findings regarding characters' dependence on gadgets for spatial orientation, temporal decision-making, economic transactions, and space access indicate that cognition in the novel can no longer be understood as an isolated property of individuals. Within the *technogenesis* framework, this is not simply being "assisted" by technology but rather the formation of a distributed cognitive system including brain, body, and devices as an inseparable unit. Hayles (2012: 17) asserts that cognition "transcends the boundaries of the body," and the examples show that spatial orientation—once an internal cognitive function—now resides in the relationship between eyes, fingers, screens, and map algorithms.

Clark (2023: 428) calls this "*epistemic action*," where physical actions in the external environment (such as swiping a screen or typing keywords) become a constitutive part of knowledge-seeking rather than merely preparation for thinking. Gallagher (2020: 610) notes that this externalization of cognitive function has neural plasticity consequences: the more frequently we rely on technology for decisions, the more our capacity for independent decision-making may atrophy. Consequently, if the gadget dies, the character loses the capacity for independent temporal decisions.

Menary (2022: 820) explains that under these conditions, technology has become a "*cognitive integrator*"—not just a tool serving human purposes but a component without which the cognitive system cannot function. Extended cognition here is not optional but structurally imperative.

Distributed Cognition: Surveillance and Truth-Validation Networks

If extended cognition shows how mind extends to individual devices, distributed cognition shows how cognitive functions spread across broader social networks and technical systems. Hayles (2012: 92-93), referencing Hutchins, notes that in high-stress situations, cognitive systems emerge through coordination between humans, tools, and environments. Zuboff (2021: 8) calls this "*epistemic asymmetry*": the party with data access (the Royal palace) possesses knowledge impossible for the supervised individual to obtain.

Face detection systems reveal deeper distribution. The cognitive function of "recognizing"—once possible only through personal interaction—is now distributed into algorithmic systems. Couldry & Mejias (2022: 1250) critique this practice as "*data colonialism*," where individuals' biological identities are extracted into data commodities without meaningful consent. Identity cognition no longer resides in human interactions but in camera networks and databases.

Truth-validation also distributes into digital systems. "Verified" status becomes a valid marker of individual existence. The cognition of "who a person is" has completely moved from human-human relationships to human-database relationships. Vosoughi, Roy, & Aral (2018: 1148) demonstrated that digital information—even false information—tends to spread faster and farther than truth because algorithms optimize for *engagement* rather than verification. Within the *technogenesis* framework, truth-determination no longer occurs inside heads but across networks of sensors, databases, algorithms, and screens.

Collective Cognition Engineering as Peak Technogenesis

Findings on "mind washing," "brain propaganda machines," information dissemination coordination, record deletion, and geo-fencing suggest that collective cognition engineering in the novel constitutes the peak form of *pathological technogenesis*. Woolley & Howard (2019: 252) documented similar real-world phenomena, where "*computational propaganda*" uses bots and automated accounts to create consensus illusions and silence dissent.

Hayles (2014: 204) explains that in the "*cognitive assemblage*," agency can no longer be attributed exclusively to humans or machines but arises from their interaction. In the novel, the propaganda machine is a *cognitive assemblage* functioning to produce the collective cognition desired by power. Hutchins (2021: 670) points out that in distributed cognition, temporal coordination is key; by timing information dissemination, controllers can create public momentum illusions.

Zuboff (2021: 10) calls information deletion and diversion "*epistemic engineering*," where reality itself is engineered through control over available information. This is total control: not only is what you see in regulated media controlled, but evidence of what you see with your own eyes can also be eliminated.
Pro-Con Strategies: Debate Illusions as Advanced Cognition Engineering

The pro-con strategy findings are the most sophisticated because they suggest that collective cognition control need not operate through censorship or violence. It suffices to create a theater where people voluntarily choose positions prepared for them. Woolley & Howard (2019: 255) documented similar strategies in digital propaganda campaigns, where bots and fake accounts create "balanced" public debate illusions while both sides are controlled by the same actor.

The phrase "From the conversation Timmy overheard" indicates that knowledge of this behind-the-scenes structure is secret. The public does not know the debate is fake. Ferrando (2020: 15) emphasizes that critical posthumanism must be wary of control forms that are no longer coercive but *seductive*: we are not forced to believe but persuaded to voluntarily enter designed positions.

Within the *technogenesis* framework, the pro-con strategy suggests distributed cognition can be engineered at a metacognitive level. Not just issues are managed, but the debate structure itself—who is pro, who is contra, how arguments flow—has all been determined. Wolfe (2020: 52) reminds us that under such conditions, humanism with its belief in subject autonomy becomes not only naive but dangerous because it prevents us from seeing actually operating control mechanisms.

Possibilities for Resistance and Human Agency

While the novel predominantly emphasizes technological control, moments of resistance exist. Characters like Timmy retain critical awareness, stealing information and exposing engineered debates. This suggests that even within distributed cognitive systems, human agency persists—though often at great risk. Future research might explore how critical digital literacy and emancipatory digital practices emerge within surveillance environments. Nevertheless, the novel's dystopian framing foregrounds control mechanisms, which remains this study's analytical focus.

Implications for Character Subjectivity

The three finding dimensions above suggest *Bungkam Suara* represents distributed cognition as a *technogenesis* process with paradoxical consequences. On one hand, cognition distribution into technology expands human capacity: characters can navigate, transact, and access information with unprecedented efficiency. On the other hand, when the system in which cognition is distributed is not controlled by individuals, technology shifts from emancipatory tool to control mechanism. Couldry & Mejias (2022: 1255) call this contradiction the "*digital paradox*."

Subjects in the novel are no longer autonomous in the classical humanist sense. They do not fully determine what is true (because truth is determined by the system), do not fully recognize who surrounds them (because identity is determined by databases), and do not fully decide which issues matter (because their attention is directed by geo-fencing and diversion strategies). Hayles (1999: 4) asserts that the posthuman condition can mean loss of "something valuable" if not accompanied by critical reflection.

Additionally, power relations have shifted from physical violence to information control. Power in the novel is no longer exercised through imprisonment or torture but through control over the cognitive environment. Zuboff (2021: 5) calls this shift the transition from "*disciplinary power*" (Foucault) to "*instrumentarian power*": power that does not force behavior but modifies the information environment so certain behaviors become easier or more advantageous than alternatives.

5. Conclusion

This article has analyzed distributed cognition representation in J.S. Khairen's novel *Bungkam Suara* using N. Katherine Hayles' *technogenesis* framework. Three main conclusions emerge.

First, cognition in the novel is represented as a system transcending individual bodily boundaries: spatial orientation, temporal decision-making, economic transactions, and physical space access all depend on gadgets and digital networks. This is extended cognition in its most fundamental form. As Clark (2023: 432) emphasizes, *extended cognition* is no longer anomalous but normative in digitized societies.

Second, cognition is also distributed across broader social networks and technical systems: CCTV and facial detection assume recognition functions; databases assume identity and truth verification functions; propaganda machines and geo-fencing assume collective attention direction functions. In this distribution process, technology no longer functions as a neutral tool but as an agent actively engineering collective cognition. Hutchins (2021: 675) calls this "*distributed cognition of control*."

Third, the novel's most sophisticated engineering strategy is creating debate illusions through fabricated pro-con scenarios. This suggests collective cognition control need not operate through censorship or violence. It suffices to create a theater where people voluntarily choose positions prepared for them. Woolley & Howard (2019: 262) warn that this control form is most difficult to resist because manipulation victims are unaware they are being manipulated.

Limitations of this research include its focused scope on one novel and one theoretical framework. Future research could expand by applying the *technogenesis* framework to other contemporary Indonesian novels addressing digital technology themes or conducting comparative studies with literary works from other countries that also critique digital subjectivity. Additionally, further research might explore moments of resistance and human agency within distributed cognitive systems, which the novel hints at but does not fully develop.

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