

Essay

Collective Intelligence and Hybrid Reality in a New Journal – Interaction Observations

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Abstract. This paper explores how collective intelligence emerges under hybrid reality conditions by examining the interaction between editorial and reader systems during the launch of a new academic journal. It aims to clarify how human and AI reasoning become structurally coupled in scholarly publishing and how this coupling reshapes active participation, reasoning capacity, identifies epistemic blind spots and expands the research frame. The study applies a CyberSystemic interaction-observation framework grounded in second-order cybernetics, interaction theory, and viable system principles. A single bounded interaction of publishing a journal issue is analyzed using a normalized time/zoom (T/Z) observation plane to examine structures, recurrent interactions, and resulting structural changes. The analysis suggests that scholarly publishing can be understood as a hybrid collective in which editorial teams, readers, and AI systems co-produce and co-interpret knowledge. In operational processes, AI-based mediation enhances accessibility and efficiency, but also reinforces mainstream convergence, limiting the identification of blind spots and the expansion of research frames. From this perspective, collective intelligence appears as an emergent potential rather than a realized outcome. Efficient collective intelligence could reduce the need for publishers. The study examines a single interaction episode by a reflexive observer involvement, which may introduce interpretive bias. The paper highlights the need for reflexive governance of human-AI interactions in scholarly communication. It suggests that responsible collective intelligence depends less on automation and more on interaction design, editorial autonomy, and epistemic variety. The paper introduces a CyberSystemic approach that makes hybrid human-AI knowledge processes observable and analyzable in practice.

Keywords. *Collective intelligence, hybrid reality, cybersystemic observation, scholarly publishing, human-ai interaction, second-order cybernetics, viable systems*

Introduction

The rapid integration of artificial intelligence into scholarly communication has begun to reconfigure the relationships between people, organizations, and tasks, redesigning their understanding of learning and performance (Kaltenbrunner et al., 2022). When looking at the specific process of publishing and reading research, algorithmic mediation now extends from manuscript triage and plagiarism detection to content discovery, summarization, and evaluation (Fiorillo & Mehta, 2024; Hohenstein et al., 2023). These processes have introduced new efficiencies but also new asymmetries (Diakopoulos, 2016): the same mechanisms that expand informational reach simultaneously narrow interpretive autonomy (Hohenstein et al., 2023). The scholarly system increasingly operates as a hybrid collective, where human and machine agents co-produce and co-interpret knowledge (Horbach & Halffman, 2018; Woolley et al., 2010).

Current research on collective intelligence tends to describe such hybridization in technocratic terms, often focusing on optimization, scalability, or productivity (Hazy, 2021). The prevailing models emphasize distributed computation or network efficiency (Peeters et al., 2021), comparing it with the cost of individual reasoning (Sweller, 1988), rarely addressing how the coupling of human and algorithmic cognition changes the reasoning process itself. Likewise, studies in digital publishing have documented quantitative changes in information flow (Centola, 2022) but seldom examine the qualitative shifts in attention, judgment, and responsibility that follow from AI interactions.

To examine the transformation into machine-assisted cognitive operations, the instance of publishing a new journal will be observed. Examining these transformations as recurring interactions (Pask & de Zeeuw, 1992; Von Foerster, 2003) rather than as abstract system states could provide a better understanding of the drivers shaping the process. Existing analyses often treat “the scholarly community” or “AI tools” as homogeneous entities, overlooking the recursive feedback between them (Forrester, 1971; Schleiger et al., 2024). What remains under-theorized are the structures (Beer, 1984; Espejo & Reyes, 2011) and interactions (Pask & de Zeeuw, 1992) through which hybrid human-machine systems negotiate meaning, legitimacy, and relevance.

This paper develops an analytical perspective on the application of collective intelligence in a Hybrid reality case, specifically the emergence of a new journal issue, by utilizing a CyberSystemic interaction-observation framework (Perko, 2025). The editorial collective and the readership (Leung et al., 2023) are both conceptualized as hybrid systems, comprising human participants and algorithmic agents (Perko, 2021). Their interaction is mediated by digital infrastructure, data analytics, and generative models, which constitute an observable instance of collective intelligence in practice, which can provide insight into other interactions between people and AI.

The paper reflects on how such interactions modify:

- the level of activeness and passiveness among participants,
- the cost and capacity of reasoning within hybrid collectives and
- the identification of blind spots and beyond-the-box observation within constrained cognitive systems.

By analyzing these dynamics, the study aims to illuminate hybrid scholarly communication and to explain its emergent tensions and open lines of further research. The ultimate objective is to reveal how the convergence of human and artificial reasoning impacts the viability of critical thinking, the boundaries of reflexivity, and the conditions for responsible collective intelligence.

The paper is structured as follows. Section 2 (*Methodology*) introduces the CyberSystemic interaction-observation framework, defining the analytical boundaries, observed structures, related interactions, and observation points used in the study. Section 3 (*Interpretive Analysis*) presents the results of the interaction observation, focusing on the preparation, production, and publication phases of launching a new journal, analyzed through the Z/T observation plane. Section 4 (*Discussion*) discusses reception and reflection beyond the direct observation window, examining anticipated reader engagement, feedback mechanisms, and system-level implications under hybrid reality conditions. Section 5 (*Summary*) concludes by summarizing the contribution and situating the findings within ongoing discussions on collective intelligence and human-AI interaction. The limitations of the approach are also discussed.

Methodology

Analytical and interpretive approach

The study applies a *CyberSystemic interaction-observation framework* (Perko, 2025) to examine a single, bounded interaction between two systems. The framework integrates second-order cybernetics (Von Foerster, 2003), interaction theory (Pask & de Zeeuw, 1992), and viable-system principles (Beer, 1984; Espejo & Reyes, 2011). It assumes that communication constitutes the elementary unit of analysis. The interaction between the systems is observed through multiple related structures and interactions, which affect and form the interaction itself. The method provides a semi-structured, subjective, yet holistic perspective on the observed interaction. The analysis is articulated in terms of structural configurations and interaction states, not as outcome measures.

The following analysis adopts an analytical-interpretive stance grounded in second-order cybernetics. Rather than treating the observed interaction as an external empirical object, the interpretation reflects on structural configurations and interaction patterns from within a hybrid human-AI setting in which the observer is structurally coupled to the system under consideration.

Case definition and boundaries

The observation focuses on the interaction launching the first issue of a new journal, “Collective intelligence perspectives”. This episode is treated as an observable instance of hybrid collective intelligence under “hybrid reality” (Perko, 2021) conditions.

- **Temporal boundary (T):** from the editorial decision to design a new journal ($T=-1$) through the execution part of creating the content for the inaugural issue ($T=0$) to the short and long-term expectations on the impact of the journal ($T=1$).
- **Level of Detail (Zoom):** The observed interaction resides in the environment, enabling conditions, the enrolled systems' mind models and operation capacity. The related structures and interactions will be observed through multiple perspectives, where Zoom will range from examining the environment ($Z=0$) to close-up examination ($Z=1$).

Observed structures

The structures examined in this particular observation, as depicted in Figure 1, are:

- E Environment:** Publication infrastructure including indexing databases, citation networks, institutional repositories, funding policies, and social-media channels etc.
- S₁ Editorial hybrid system:** Editors, reviewers, and their algorithmic tools (submission platforms, plagiarism detectors, topic classifiers, generative summarization) with
- M₁ Managerial system:** encompasses decisions on how to direct the journal path
- O₁ Operational system:** invokes the tasks of processing the papers and
- S₂ Reader hybrid system:** readers (human and AI) with management (M₂) and operational (O₂) sub-systems
- M₂ Managerial system:** encompasses readers decisions on paper selection, engagement and citation
- O₁ Operational system:** invokes the reader tasks of Accessing and utilizing the paper
- R Relations:** Communication flows between S₁ and S₂ through digital interfaces and metadata
- Δ-S₁, Δ-S₂, Δ-E, Δ-R:** Changes in structures resulting from the interaction manifestations

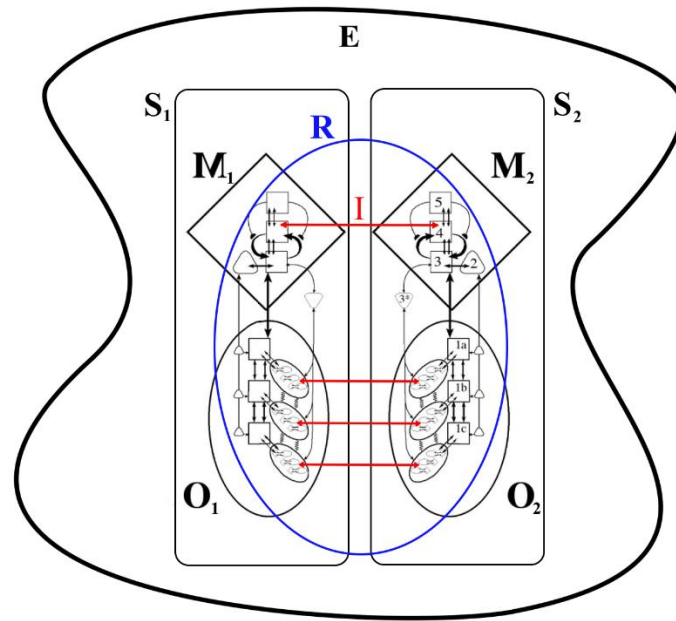


Figure 1. Observed structures

Related interactions

As depicted in Figure 2, interactions display activities related to the observed interaction through relational couplings. Related interactions are treated as repetitive patterns. The observation, therefore, documents the interaction types that consistently reappear throughout the episode or are particularly important for the observed interaction.

The following interaction relations were identified as displayed in Figure 2:

E ↔ S1 (Environment ↔ Editorial Hybrid System):

Interactions between the publication environment and the editorial hybrid system. They appear throughout the preparation, production, publication, and reflection phases, with varying visibility depending on the analytical resolution.

E ↔ S2 (Environment ↔ Reader Hybrid System):

Interactions between the environment and the reader hybrid system. They become prominent during publication and reception, continuing into longer-term phases where discovery and access patterns develop.

S1 ↔ S2 (Editorial Hybrid System ↔ Reader Hybrid System):

Interactions connecting the processes of producing and interpreting the issue. These interactions emerge at the moment of publication and recur through readership engagement and subsequent feedback paths.

S1 internal sub-interactions:

Interactions within the editorial hybrid system, involving editors, reviewers, and their algorithmic tools. These sub-interactions span all phases and maintain the operational coherence of S₁.

S2 internal sub-interactions:

Interactions within the reader hybrid system, consisting of human readers and their supporting algorithmic systems. These interactions become visible primarily during engagement with the published material and subsequent interpretive activities.

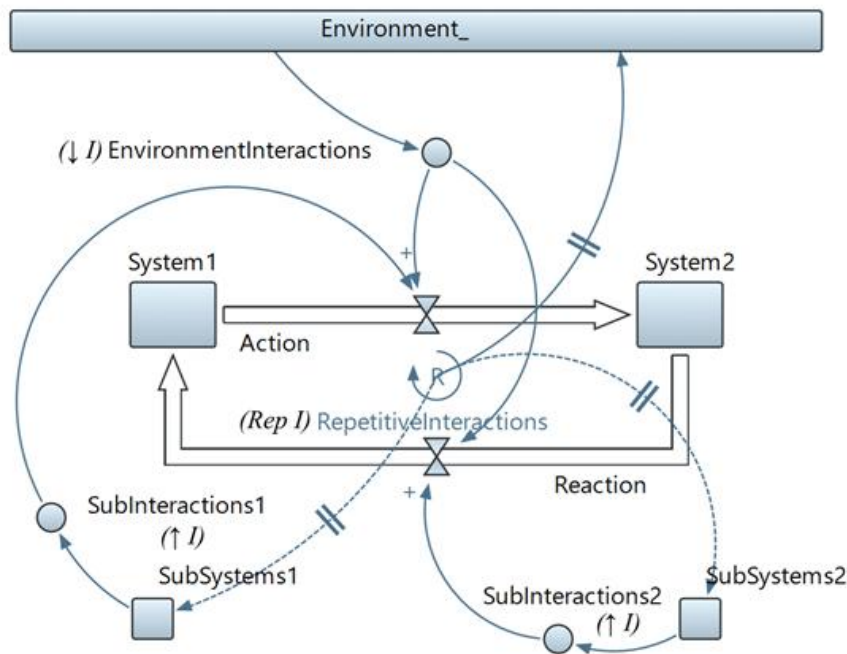


Figure 2. Observed interactions

Observation points on the Z/T-plane

The observation is positioned on a two-dimensional plane defined by normalized time (T) and analytical resolution or zoom (Z) (Perko, 2025). The plane represents a normalized relative position of the observation point within the interaction and the chosen level of detail.

- **Time axis (T):** The temporal dimension is normalized to the interval $[-1, +1]$, anchored in the publication of the first issue: $T=-1$ marks the editorial decision to design the new journal; $T=0$ denotes the publication of the inaugural issue; $T=+1$ represents the longer-term expectations regarding the journal's impact.
- **Resolution axis (Z):** The analytical resolution is normalized to the interval $[0, 1]$: $Z=0$ corresponds to zoom out, focusing on the enabling conditions in the environment (E); $Z=1$ corresponds to a detailed observation of the interaction between the involved systems (S1, S2) and their sub-interactions. The Z-coordinate, therefore, expresses the Zoom level of the observation point rather than a physical scale.

Observation points.

Within this plane, the study defines five observation points (or zones), each characterized by a T-interval, a fixed Z-value, and a primary analytical focus:

- **Preparation** ($T=-1, Z=0.0$): Decision-making and configuration of editorial AI tools.
Structures to be examined: E — platform rules, indexing requirements, repository constraints; S1 (M1) — editorial team, roles, AI toolset selection; S2 — reader systems.
- **Production** ($T=-0.5, Z=0.8$): Coordination between human and algorithmic agents during peer review and editing.
Structures to be examined: S1 (O1) — editorial decision cycles, review procedures; Structural change at the operational level (S1: $\Delta O1$), Relations (R) — emerging operational pathways.
Interactions to be examined: Formative Interactions S1 M1 $\leftrightarrow$ board members.
- **Publication** ($T=0, Z=1.0$): Release of the issue; interaction between metadata systems and dissemination algorithms.

Structures to be examined: E — dissemination systems, metadata infrastructure, S2 (M2, O2) — reader subsystem becomes activated; Relations (R) — emerging operational pathways.

The forthcoming structures and interactions are discussed only, since observations at this stage are not available.

- **Reception** (T=0.5, Z=0.8) Reader engagement via AI-assisted discovery and summarization.

Structures to be examined: S2 — interpretive processes, AI-assisted navigation.

Interactions to be examined: E ↔ S2 — algorithmic discovery, ranking, filtering.

- **Reflection** (T=1, Z=0.0) Feedback loops, metrics, and editorial response.

Structures observable: (S1: M1) — editorial reflection; E — metrics, citation maps, external consequences; R — long-term relational signatures; Δ-R — system-level structural transformations.

Data sources include:

- digital traces (editorial logs, publication timestamps, readership analytics);
- documentation of editorial policies regarding AI use (Leung et al., 2023);
- qualitative notes and reflexive memos by the observer.

No personal data or closed peer-review content was used.

Epistemic stance and validity

The study follows a second-order observation stance, in which the observer recognizes being structurally coupled with the system under examination. Validity, therefore, relies on reflexive transparency: the observation process, its choices, and its limitations are made explicit. The aim is to develop a viable description of the interaction rather than a predictive or generalizable model.

Triangulation is pursued through multiple data sources, including system logs, published artefacts, and reflexive observer notes, as well as conceptual cross-checking with established CyberSystemic constructs such as feedback, recursion, and requisite variety. This combination ensures that observations remain anchored in both empirical traces and theoretical consistency.

The following sections present an interpretive account of the observed interaction, applying the CyberSystemic framework to articulate how structural configurations and interaction patterns unfold under hybrid human-AI conditions. The aim is to render these dynamics observable and discussable.

Interpretive Analysis

Initialization (T=-1, Z=0.0)

Environment (E)

Structural coupling without shared epistemic governance: Human researchers, editors, reviewers, readers, and AI systems are already mutually influencing one another. Research outputs shape AI reasoning spaces, while AI systems increasingly shape human attention, judgment, and synthesis.

What is missing is explicit governance of this coupling. The system operates through technical defaults, platform logics, and efficiency incentives rather than through consciously designed epistemic principles.

Knowledge as an active but opaque intermediary: The body of scholarly knowledge has shifted from a static archive to an active intermediary system. Research outputs are continuously ingested, recombined, summarized, and ranked by AI systems before being encountered by humans.

At this stage, this process remains largely opaque: Human participants often interact with AI-mediated representations of knowledge without clear visibility into how these representations are generated, weighted, or constrained. The body of knowledge “feeds” AI systems, but the classical body of knowledge modifications effects on transformations of LLMs are not yet systematically observed or documented.

Asymmetric reflexivity: Reflexivity exists, but it is unevenly distributed. AI systems operate without epistemic self-awareness. Human actors may be reflexive individually, but the system as a whole lacks shared mechanisms for reflecting on its own reasoning patterns. As a result, the system can generate increasingly sophisticated outputs while remaining blind to its own structural biases and blind spots. This is characteristic of an early emergent phase, where capacity to acquire data grows faster than the capacity to reason upon these data.

Papers as dual-purpose artefacts: Research papers increasingly function as dual-purpose artefacts:

Inputs for human interpretation and critique, and inputs for AI-driven aggregation, synthesis, and recommendation. At this stage, the dual role is mostly implicit. Authors rarely write explicitly for both audiences, yet their texts are already optimized, evaluated, and consumed through AI-mediated processes. This creates latent tensions between depth, nuance, standardization, and machine legibility.

Collective intelligence as potential: What exists today is not yet collective intelligence in a strong sense, but rather collective cognitive potential. The system demonstrates increased capacity for information processing and pattern recognition. Whether this potential develops into collective intelligence depends on:

- how reflexivity is cultivated,
- how variety is preserved,
- how responsibility is distributed,
- and how the interaction between human and artificial reasoning is made observable and discussable.

The scholarly publishing environment is currently shaped by **publisher-dominated economic and infrastructural arrangements** that influence how research is produced, evaluated, and disseminated. Commercial publishing models structure access to visibility, legitimacy, and indexing through proprietary platforms, article processing charges, and metric-driven incentive systems, thereby modifying the behavior of researchers and editors toward volume, speed, and formal compliance.

These environmental conditions influence the body of knowledge by prioritizing scalability and revenue optimization over epistemic reflexivity, creating pressure toward standardized formats, accelerated review cycles, and asymmetrical power relations between authors, editors, and publishing infrastructures. As a result, knowledge increasingly enters circulation through pathways that prioritize economic viability and algorithmic tractability, influencing how research is aggregated, interpreted, and reused within AI-mediated knowledge systems.

The journal management system ($S_1 M$)

The editorial management **defines collective intelligence as an emergent property of systemic interaction**, rather than as a descriptive label for group performance, in order to act on how contributions are framed, interpreted, and related to one another within the journal. By grounding this definition in cybernetic and systems-theoretical traditions, the editorial team acts to shift the body of knowledge from a collection of isolated findings toward a field of interacting perspectives and recursive processes.

The editorial team **operates within the dominant publication logic of empirical prioritization by orienting the journal toward essays, dialogues, and reflective formats, thereby modifying** the sequence through which knowledge enters the scholarly system. Rather than treating empirical results as the primary drivers of understanding, this orientation positions argumentation, conceptual clarification, and critical exchange as conditions that precede, accompany, and reshape empirical inquiry.

Through this intervention, the editorial management **acts on the temporal dynamics of knowledge production**, so that meaning-making, critique, and theoretical articulation occur earlier and more explicitly in the knowledge cycle, rather than being deferred to post-publication interpretation.

The editorial management **assembles variety at the management level** by constituting an editorial structure that spans cybernetics, systems theory, artificial intelligence, philosophy, ethics, information systems, organizational studies, and applied domains. This diversity serves as a structural mechanism that keeps multiple interpretive frameworks simultaneously active, thereby preventing premature closure of discourse and maintaining the variety required for collective adaptation.

By positioning the journal as a **discursive community**, the editorial team considers how contributions contribute to the broader body of knowledge. Papers are treated as **interventions into an ongoing discourse**, whose value lies in how they provoke response, disagreement, reinterpretation, and further inquiry.

In doing so, the editorial management **acts on the recursive coupling between individual reasoning and collective cognition**, explicitly acknowledging that scholarly knowledge increasingly enters AI-mediated systems of aggregation, summarization, and reuse. The journal is thus oriented toward making these couplings visible and discussable.

In response to **publisher publisher-dominated environment**, the editorial management acts on the organizational structure of the journal by establishing it as an independent publication entity, in order to modify how editorial decision-making, access, and knowledge circulation are governed. This choice aims to reduce dependency on commercial publishing infrastructures and reclaim control over editorial processes, licensing, and dissemination pathways.

Reader system (S_2)

At the reception stage, the reader hybrid system (S_2) becomes observable as a **coupled human-AI reasoning system**, in which readers act on the body of published knowledge, sometimes through AI-mediated search, summarization, and orientation processes, to support understanding, research advancement, and sense-making.

Human readers **access the body of knowledge directly or use AI systems to navigate increasing volumes of scholarly material**, acting on search queries, summaries, and relevance rankings to identify contributions related to their current research interests or to potential future lines of inquiry. Through this activity, AI systems shape the entry points, while human readers select which paths to follow, deepen, or abandon.

At the same time, readers **can utilize AI to alleviate cognitive load, particularly when navigating** loosely defined, emerging, or cross-disciplinary topics. This reliance allows readers to engage with broader knowledge spaces, but it also shifts interpretive effort toward representations produced by AI systems rather than direct engagement with primary texts.

Through repeated use, S_2 **stabilizes hybrid reading practices** in which AI mediates relevance and structure, while humans provide contextual judgement and purpose. These practices could increase efficiency and accessibility, but they also introduce a structural tendency toward **mainstream convergence**, as AI systems prioritize frequently occurring concepts, established framings, and well-indexed publications.

As a result, the reader system **encounters limits in identifying blind spots or expanding the observation space**, particularly those that are not already articulated within the existing body of knowledge. While readers can recognize gaps or tensions within dominant discourses, blind spots related to unarticulated assumptions, marginal perspectives, or poorly formalized real-world phenomena remain structurally difficult to detect.

In this configuration, S_2 consolidates and recombines recognized knowledge structures, contributing to collective intelligence primarily through **stabilization and dissemination**, rather than through exploration of unknown domains.

These observations indicate that, at the current stage, **collective intelligence may not be immediately available “at our fingertips.”** Although hybrid human-AI reading expands access and accelerates orientation, it does not automatically produce deeper understanding or reveal unknown unknowns.

Production ($T=-0.5$, $Z=0.8$)

Emergence of hybrid operational processes for review and editorial coordination.

At the production stage, observation at $Z = 0.8$ reveals that the operational subsystem of the editorial hybrid system (S_1 : O_1) is not yet stabilized. Instead of executing predefined procedures, the editorial system operates according to its own design of operational processes, particularly with respect to reviewing, assessment, and editorial decision-making under hybrid human-AI conditions.

Formative Interactions S_1 $M_1 \leftrightarrow$ board members

At the preparation stage, the interaction between the environment and the editorial hybrid system is observable as a constraint- and guidance-shaping process, through which external infrastructural, institutional, and procedural conditions influence the design of editorial processes.

During the initial editorial board meeting, the editorial system responds to environmental expectations of scholarly legitimacy and discoverability by acting on decisions related to indexing readiness, licensing models, and publication infrastructure, so that the journal can enter existing knowledge circulation systems without compromising its epistemic orientation. These interactions translate environmental requirements into managerial design parameters for S_1 . Trying to avoid publisher predatory practices is identified as one of the prerequisites, and so is the dependency on AI model providers.

At the same time, the editorial team interprets environmental signals regarding scale, efficiency, and standardization in order to selectively adopt supporting infrastructures (e.g., submission and review systems) while retaining editorial discretion over how contributions are developed. Through this interaction, environmental automation potentials are filtered and incorporated in a way that preserves space for editorial judgement and reflexive development.

Editorial system: Operational level ($S_1: O_1$)

At the production stage, the editorial operational subsystem ($S_1: O_1$) **organizes how papers are processed** to move submissions toward publication under hybrid human-AI conditions. The focus at this stage is on setting up workable editorial actions rather than executing a fixed review procedure.

Editors **act on the handling of submissions** by coordinating reading, checking, and evaluation activities that involve both human judgment and AI-supported analysis. Operational attention is directed toward making papers readable, comparable, and assessable within the journal's scope.

A practical concern at this stage is that submitted papers are used in two ways: they are read by humans and processed by AI systems. This affects how papers are checked, structured, and prepared during the production process.

Operational interactions within S_1 primarily consist of editor-to-editor coordination, supported by the exploratory use of AI tools. These interactions enable the editorial team to test how different processing steps can be combined into a workable workflow.

Through this process, the editorial system develops **basic operational capacities required to process papers effectively**. Because the operational system is not established yet, a list of **editorial operational capacities for processing papers is presented**:

- receiving and registering submissions
- organizing the review process
- coordinating input from human reviewers when applicable
- comparing submissions against journal scope and focus
- processing papers

At the same time, the editorial system **uses AI tools to support these tasks** at an operational level.

AI capacities supporting editorial processing:

- suggesting potential reviewers based on topic similarity
- providing first-pass checks of structure and clarity
- generating short summaries for internal orientation
- identifying overlapping content or repeated arguments
- highlighting missing sections or inconsistencies

Structural change at the operational level ($S_1: \Delta O_1$)

Building on the exploratory operational work described in the previous section, the publication introduces a shift in how editorial operations are organized and executed. The editorial operational subsystem builds upon earlier experiments with paper processing to establish a repeatable, publication-oriented workflow.

Editors act on stabilizing selected processing steps so that submissions can move reliably from internal handling to public release. Activities that were previously tested in parallel or informally are aligned into a sequential operational flow suitable for publication.

This operational change is shaped by paired editorial and AI capacities, where a specific form of AI assistance supports each editorial activity. The resulting configuration reflects how hybrid processing becomes workable at the operational level.

Editorial operational capacities and corresponding AI support:

- receiving and registering submissions, supported by AI intake checks and basic metadata extraction
- checking basic structure and completeness, supported by AI structure detection and section validation
- producing internal orientation summaries, supported by AI short summaries and outlines
- comparing submissions to the journal focus, supported by AI topic matching and semantic similarity checks
- selecting appropriate reviewers, supported by AI tools for the reviewer identification
- Organizing editorial discussion and decision-making, supported by AI comparison views across submissions
- preparing papers for release, supported by AI-assisted formatting checks and language polishing
- identifying potential reviewers when needed, supported by AI-based reviewer suggestion tools

Editors act on these pairings to coordinate work rather than to delegate responsibility. AI outputs function as inputs for editorial action, while editors retain control over decisions and sequencing.

From an operational perspective, the observed configuration does not necessarily depend on publisher-managed infrastructures; the required editorial, evaluative, and dissemination functions can be enacted independently within the hybrid system.

Relations (R): emerging operational pathways

Partial relational structures (R) become visible as proto-pathways for interaction between editors, reviewers, contributors, and algorithmic systems. These pathways remain fluid and provisional, reflecting the absence of a fixed operational model.

The editorial system responds to these emerging relations, keeping them adaptable and allowing the review process to evolve in tandem with the journal's understanding of collective intelligence, rather than enforcing premature standardization.

As a result of these internal interactions, structural changes within S_1 ($\Delta-S_1$) are observable in the form of evolving editorial norms, provisional assessment criteria, and shifting expectations regarding the role of AI in scholarly evaluation. Rather than converging on a stable process, the system maintains openness as an operational feature, preserving room for learning and adjustment.

These $\Delta-S_1$ effects indicate that the editorial hybrid system is actively constructing its operational logic in response to the challenges posed by hybrid collective intelligence, setting conditions for further stabilization in later phases.

Publication (T=0, Z=1.0)

Release of the issue; interaction between metadata systems and dissemination algorithms.

Dissemination systems, metadata infrastructure (E)

At the publication stage, the environment is observable as a set of **dissemination systems and metadata infrastructures** that act on the published artefacts in order to render them visible, addressable, and processable within broader scholarly and algorithmic ecosystems. Through the assignment of identifiers, metadata fields, and platform-specific representations,

the environment transforms the content from an editorial product into an entity that can circulate across indexing, discovery, and aggregation systems.

These environmental structures **influence how journal content is encountered by both human readers and AI-mediated systems**, shaping discoverability, ordering, and contextual framing prior to interpretation. At this stage, the environment establishes the structural conditions under which such evaluations can later occur, thereby enabling subsequent coupling with reader systems and AI-driven knowledge processes.

ΔE : Following publication, the environment is expected to incorporate the journal content as a new, identifiable element within dissemination and metadata infrastructures. This incorporation is anticipated to modify the environment incrementally by extending the range of indexed topics, conceptual framings, and reference points available to human readers and AI-mediated knowledge processes.

Any further structural effects on the environment depend on the subsequent circulation, reuse, and integration of the published material and remain beyond the scope of this observation.

Reader subsystem becomes activated S_2 (M_2, O_2)

At the moment of publication, the reader hybrid system **becomes activated as a coupled human-AI structure**, capable of engaging with the released artefact through both interpretive and algorithmic processes. Publication functions as the trigger that enables this activation, transforming the paper from an internal editorial object into an accessible input for reader sense-making.

At this activation stage, the reader system establishes **potential pathways for interaction**, which will be realized and stabilized during subsequent reception phases: indexing, reading, commenting and referencing the paper.

Relation from $S_1 \rightarrow S_2$ ($R_{1,2}$)

At publication, the communication relation between the editorial system (S_1) and the reader system (S_2) **becomes operational**. Through the published artefact and its metadata, editorial framings and structural decisions are made accessible for human interpretation and AI-mediated processing. At this stage, communication flows primarily from S_1 to S_2 , while feedback pathways remain latent and emerge only through subsequent reader engagement.

In Summary, publication functions as a structural activation event rather than as an epistemic outcome. All systems become coupled, but no learning (except for the reviewers and the editors), convergence, or collective intelligence can yet be observed.

Discussion

Since the interpretation of observations stops at this point, the latter observation points are speculative and thereby part of the discussion. Both observations and discussion reductions are depicted in Figure 3.

Reception ($T=0.5, Z=0.8$)

In the reception phase, the focus shifts from observed activation to **anticipated patterns of reader engagement** within a hybrid human-AI context. At this stage, the reader system (S_2) can be expected to operate as an **interpretive and navigational subsystem**, shaped by AI-mediated discovery and summarization mechanisms.

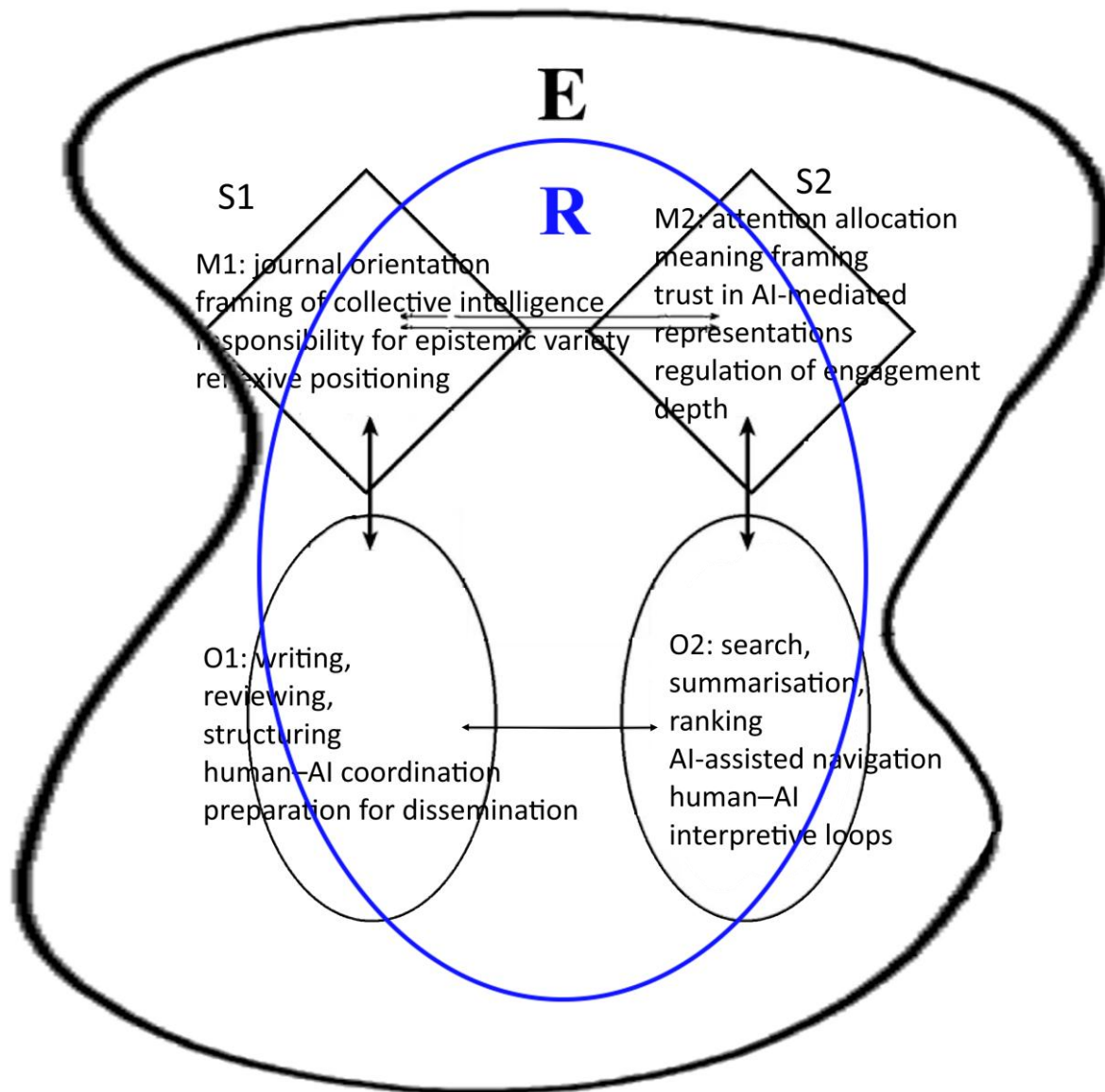


Figure 3. Observed and discussed in the collective intelligence journal and by readers

Human readers are expected to **utilize AI-assisted navigation tools to efficiently identify relevant contributions** within an expanding body of knowledge. Through search, recommendation, and summarization systems, readers reduce cognitive load while orienting themselves toward issues related to their current research interests or emerging problem spaces. This interaction positions AI as a facilitator of access rather than as an autonomous interpreter of meaning.

Within S_2 , **human-AI interpretive cycles** are expected to emerge, in which algorithmically generated representations guide initial attention and humans selectively deepen engagement based on contextual judgement and intent. These cycles are likely to favor well-structured, accessible, and conceptually explicit contributions, shaping how the journal's content is encountered and reused.

At the environmental level, recommendation algorithms and retrieval systems are expected to **filter and rank content** based on usage signals and metadata characteristics. Through repeated interaction ($E \leftrightarrow S_2$), visibility patterns may stabilize, reinforcing certain conceptual framings while leaving others less exposed.

Early feedback toward the editorial system ($S_1 \leftrightarrow S_2$) is expected to remain **weak and indirect**, primarily in the form of aggregated usage metrics, mentions, or informal references. While such signals do not yet constitute reflective dialogue, they provide initial indications of how content resonates within the reader's system.

Over time, reader engagement is expected to produce **structural adaptations within S_2 ($\Delta-S_2$)**, such as evolving interpretive practices and reliance on AI-mediated entry points, as well as **incremental environmental adjustments ($\Delta-E$)** in ranking and recommendation behavior. These changes remain contingent and cannot be observed directly within the present study.

Reflection (T=1, Z=0.0)

At the reflection stage, analysis shifts to a system-level perspective, where the journal, its readers, and the surrounding infrastructures are understood as components of a collective intelligence, in which human cognition, algorithmic mediation, and institutional structures are structurally coupled. At this resolution, individual actions and operational details recede, and the focus shifts to how responsibility, meaning, and learning are distributed across the system.

Within **collective intelligence**, feedback mechanisms such as metrics, visibility patterns, and aggregated engagement signals function as **structural constraints** rather than as direct evaluative measures. These signals influence how editorial meaning-making occurs ($S_1: M_1$), but they do not determine it. Editorial reflection, therefore, operates as a process of *interpretation under constraint*, where quantitative indicators are contextualized rather than optimized.

From the perspective of **collective intelligence** development, responsibility emerges from how **interaction structures are designed, maintained, and adjusted over time**. The editorial system's role at this stage is to assess whether existing feedback loops maintain sufficient epistemic variety to support learning.

The environment (E), through citation maps, indexing structures, and algorithmic representations, increasingly stabilizes particular framings of relevance and impact. These stabilizations act back on both S_1 and S_2 , shaping expectations and interpretive habits. At $Z=0.0$, such effects can only be observed as **tendencies**, reinforcing the need for reflexive rather than reactive editorial responses.

Relations between S_1 and S_2 acquire long-term signatures ($\Delta-R$) in the form of recurring attention patterns and thematic associations. These relations represent **structural coupling** within the **collective intelligence**. Whether this coupling contributes to learning depends on whether it enables continued differentiation and reflection, or whether it collapses complexity into self-reinforcing auto-poetical patterns.

In this context, collective intelligence cannot be treated as an achievement or endpoint. It remains a **contingent property of the hybrid system**, sustained only if responsibility is exercised at the level of system design and interaction governance. Reflection at T=1, therefore, concerns the **viability of the interaction architecture** that has been implemented.

Summary

This paper examines the emergence of **collective intelligence** through a **CyberSystemic interaction-observation** of launching a new academic journal. Rather than treating AI as a tool or the scholarly system as a static structure, the study observes publishing and reading as **recurrent interactions between hybrid human-AI systems**, mediated by infrastructures and feedback loops.

Using a **Z/T observation plane** (normalized time and analytical resolution), the paper analyses preparation, production, and publication as observable interaction points, while reception and reflection are addressed in discussion. Editorial teams and readers are conceptualized as **hybrid systems** with management and operational subsystems, structurally coupled to dissemination environments.

The analysis reveals that AI-supported publishing enhances efficiency and reach, yet also amplifies mainstream convergence and obscures blind spots. Collective intelligence emerges as **a potential rather than an outcome, dependent on reflexive governance, the preservation of epistemic variety, and responsible interaction design**, rather than technological optimization.

Limitations

- The study represents a single interaction episode; results are illustrative rather than generalizable.
- Quantitative analysis of readership metrics is excluded due to the early stage in the lifecycle of the considered journal.
- As the observer participates in the same ecosystem, interpretive bias is acknowledged.

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