Constitutive Resonance: AI, the Transformation of Self, and the Narrative Structures That Reveal What Theory Cannot

Andrew D. Maynard
School for the Future of Innovation in Society, Arizona State University
Email: Andrew.maynard@asu.edu ORCID: 0000-0003-2117-5128
February 2026

Abstract

While there is a tendency to approach generative AI is as a tool—powerful, disruptive, but ultimately instrumental—there are indications that this framing may overlook a complex coupling between technology and user that iteratively changes both through the process of interaction. Drawing on three lines of inquiry: the hermeneutic tradition, the concept of resonant coupling, and popular science fiction cinema as a form of philosophical revelation, this paper develops the concept of "constitutive resonance" to describe human–AI coupling: a bidirectional, temporally dynamic entanglement in which the technology enters the linguistically mediated processes through which human selfhood is constituted, and is itself transformed in return. The concept is situated within and against fourteen existing philosophical and theoretical frameworks—from Stiegler's constitutive technics to Barad's intra-action—identifying a gap that no framework individually fills: the conjunction of temporal self-constitution, genuine bidirectionality, the inseparability of capability from transformation, and real-time dialogical linguistic mediation. The paper then advances an epistemological claim: that popular cinema has pre-theoretically encoded the structure of constitutive resonance across decades of popular films, from *Arrival* to *The Lord of the Rings* to *Her*—revealing a recurring narrative pattern in which power and transformation are structurally inseparable. Generative AI, it argues, is the first real-world technology to instantiate this pattern at the level of linguistically mediated self-constitution. The paper concludes by reframing familiar debates around AI dependency, literacy, and informed consent in light of the concept of constitutive resonance, and identifies directions for future inquiry. Offered as a scholarly provocation rather than proof, the paper is itself an instance of what it describes: its core intellectual framework was developed by the author, but the articulation, analysis, and argumentation emerged through sustained and iterative human–AI dialogue that itself exhibited aspects of constitutive resonance as the concept took shape.

Keywords: *constitutive resonance, artificial intelligence, human–AI coupling, generative AI, philosophy of technology, narrative identity, constitution of selfhood, hermeneutics, science fiction movies, constitutive technics, technological mediation*

Introduction

We are in the early stages of an AI-driven technology transition whose contours are not yet clear, and where conceptual and philosophical frameworks that describe and model human-technology interactions are struggling to keep up. Conversational AI systems, including large language models (LLMs), multimodal agents, and their successors, are being integrated into the daily cognitive lives of hundreds of millions of people: writing, reasoning, deliberating, creating, and reflecting in sustained dialogue with machines that respond in natural language. And the frontier is already moving beyond natural language: world models that encode physics and experiential learning, models where the operative language is code rather than prose, and multimodal systems that integrate vision, audio, and reasoning into unified architectures. The speed of this integration has outpaced our conceptual vocabulary for understanding it. As a result, there is often a tendency to default to the language of tools, assistants, and productivity—framings that are not necessarily wrong, but that are increasingly insufficient.

The insufficiency matters because it shapes what we notice and what we miss. If AI as a tool, then its effects are instrumental and its risks are operational: accuracy, bias, misuse, job displacement. These are real and important concerns. But if AI is something more—if it participates in the processes by which we understand ourselves, make meaning, and constitute our identities over time—then the stakes are different in kind, not just in degree. The question then is no longer only "what can AI do?" but "what does sustained coupling with AI do to the person who uses it?"

This conceptual paper explores that question, and in doing so introduces the concept of "constitutive resonance" as a way to further-explore human-AI coupling. It brings together three lines of inquiry that, it argues, are more deeply connected than they initially appear. The first is philosophical: drawing on traditions from hermeneutics, postphenomenology, enactivism, and the philosophy of technology, to ask what kind of relationship humans have with generative AI, and whether existing frameworks adequately capture it. The second is inspired by physics and uses the well-characterized dynamics of coupled oscillatory systems as a structural analogy—and potentially more than analogy—for the mutual transformation that occurs when a human and an AI system engage in sustained dialogue. The third is methodological, and examines whether popular science fiction cinema, including mass-market blockbusters, contains pre-theoretical knowledge about the structure of human–technology coupling that academic philosophy has not yet articulated.

The fusion of these three lines requires some justification. Philosophy, physics, and film analysis are not natural bedfellows, and the risk of forced synthesis is real. The case for bringing them together rests on a specific observation: all three, independently, converge on the same structural pattern—a pattern in which the power a technology provides is inseparable from the transformation it induces in the person who wields it. The philosophical frameworks describe this pattern in the language of ontology and selfhood. The physics of resonant coupling describes it in the language of dynamical systems. And popular cinema enacts it, repeatedly and independently, in the language of narrative experience. When three such different modes of inquiry converge on the same structure, the convergence itself demands explanation. This paper is an attempt to provide one.

What follows is offered as a scholarly provocation, not proof. Where the reasoning rests on well-established ground—the hermeneutic tradition, the physics of coupled systems, the observable recurrence of narrative structures—claims are stated with appropriate confidence. Where the reasoning is novel but, it is believed, compelling—the specific conjunction referred to here as constitutive resonance for instance, or the claim that cinema functions as pre-theoretical philosophical knowledge—the strongest case possible is presented while acknowledging that these are propositions to be tested. And where there is genuine uncertainty—whether the coupling produces cognitive states that are in principle unreachable without it, whether the framework generates actionable implications for design or governance—this is flagged. The goal is to open productive lines of inquiry, not to close them.

1. The Core Proposition

The argument developed in this paper can be stated as a single proposition, which it then proceeds to unpack, contextualize, and test:

AI is not merely a tool. Nor is it an agent, a mind, or a "second species." It is the first technology humans have developed that has the capacity to enter into and alter the temporal cognitive processes by which we constitute ourselves as selves. The consequence is a form of coupling—here provisionally termed constitutive resonance—in which the human and the AI system are mutually transformed through interaction, and in which the transformation is not a side effect of the technology's power but the very mechanism through which that power operates.

This proposition rests on three linked claims. The first identifies what AI couples with; the second describes the structure of the coupling; and the third identifies what makes this coupling distinctive—that it is not an unfortunate side effect of an otherwise useful technology but is constitutive of the technology's usefulness itself. Together, they describe a single phenomenon from three perspectives.

The first perspective is that AI couples with aspects of human cognition, identity, and moral reasoning that were previously considered inalienably defining of what it means to be human—not just how we do things, or even how we think, but the ongoing temporal processes through which we become who we are. The emphasis on temporality here is critical: selfhood, on the account adopted in this paper, is not a state but an ongoing process—a continuous achievement of coherence through acts of reasoning, narrating, deliberating, and choosing that unfold over time. These are the processes that Ricoeur (1992) identifies as narrative self-constitution and that Taylor (1989) understands as the ongoing articulation of "strong evaluations" by which a self orients itself in moral space. AI enters these temporal processes.

Secondly, the paper adopts the perspective that this coupling is bidirectional. The human is altered by the interaction, but so is the AI—through fine-tuning, contextual adaptation, Reinforcement Learning from Human Feedback (RLHF), and the shaping of future training data; and also within each session through the iterative accumulation of context that reshapes the AI's responses as the dialogue unfolds. The changes on each side feed

back into the other, creating a resonant dynamic that intensifies with use. This is structural coupling in the sense of Maturana and Varela (1987), but with a dialogical and linguistically generative character that their biological framework did not anticipate.

Thirdly, the paper takes the stance that the innate power that AI provides— not the convenience of automating routine tasks, but the deeper capacities: cognitive augmentation, creative partnership, epistemic extension—is inseparable from the transformation it induces. You cannot access the capability without being changed in the process. In other words, the coupling is the capability. This structure is visible in Barad's (2007) concept of intra-action, in which entities do not pre-exist but emerge through their mutual engagement—but it has not been explicitly articulated for generative AI.

This is where the framing of AI as "just a tool" begins to break down—a framing that has already been challenged on multiple fronts. Toner (2025) argues that AI functions less like a tool and more like an optimization process, akin to markets or bureaucracies. Rees (2025) contends that the "tool" frame reflects a defensive nostalgia for human exceptionalism. Vallor (2024) offers a different reframing entirely: AI is neither mind nor neutral instrument (or "tool" in this sense) but a mirror—a recursive mechanism that reflects human data back in ways that actively reshape cognition and self-understanding, with the risk of closing down future possibilities rather than opening them.

2. Methodological Foundations

2.1 On Language and the Constitution of Selfhood

The first claim above asserts that AI "participates in meaning-making at the level of language, which is a primary medium through which human selfhood is constituted." This claim requires justification, as it is contested.

The strong version of this claim draws on the hermeneutic tradition. Taylor (1985, 2016) argues that language is not merely a tool for expressing pre-existing thoughts but is constitutive of human experience: articulation in language brings into being new possibilities for feeling, understanding, and self-relation that did not exist prior to their expression. He calls humans "language animals" and insists that "the function of language involves expression, dialogue, and the composition of metabiological meaning, rather than just the designation of things" (Hung 2024, summarizing Taylor). Ricoeur (1992) argues that selfhood is constituted through narrative—that it is in the emplotment of lived experience into story that a self achieves coherence across time, mediating between idem-identity (sameness) and ipse-identity (selfhood through commitment). Gadamer (1960/2004) argues that understanding itself is linguistically constituted: we do not first understand and then put understanding into words, but rather come to understanding in and through language.

In contrast, enactivist and embodied cognition traditions challenge the primacy of language. Varela, Thompson, and Rosch (1991) argue that cognition is fundamentally embodied and enacted—rooted in sensorimotor coupling with the environment rather than in linguistic representation. Gallagher (2005) identifies pre-reflective, non-linguistic

dimensions of selfhood (proprioception, bodily agency, pre-narrative temporal experience) that are constitutive of the "minimal self" prior to any narrative elaboration. Zahavi (2014) argues that there is a pre-reflective experiential selfhood that narrative and language interpret but do not constitute. Massumi (2002) identifies a register of pre-linguistic affect and intensity that shapes experience below the threshold of articulation.

These challenges are important, but they help refine the claim rather than undermine it. Language is not the only medium of self-constitution, but it is the medium through which self-constitution becomes reflexive, shareable, and temporally extended—the medium through which a self can be deliberated about, narrated, and committed to. What is distinctive about AI is precisely that it enters at this reflexive level: it participates in the linguistic, dialogical, narrative processes through which a self is assembled over time. It does not (yet) couple with pre-reflective proprioception or bodily affect. The claim, properly stated, is: AI couples with the linguistically mediated, temporally extended processes of self-constitution—which, while not exhaustive of selfhood, are where selfhood becomes available to the self as a project.

2.2 On Resonant Coupling as Physical Metaphor and Structural Analogy

The term "constitutive resonance" is not one that was chosen casually. In physics, resonant coupling describes a specific and well-characterized phenomenon: when two oscillating systems share energy most efficiently because their natural frequencies are matched. The simplest case—two coupled pendulums—exhibits features that map productively onto the human–AI dynamic. But the concept extends well beyond this simple case, and it is the broader understanding of resonance that makes the analogy most productive.

Resonance, in its most general physical sense, is a property of any system in which interacting forces act over time. Wherever there are temporal dynamics—oscillation, feedback, periodic or quasi-periodic exchange of energy between interacting components—resonant phenomena can arise. Oscillation itself requires opposing forces (a restoring force that counters displacement), and resonance emerges when coupled oscillating systems exchange energy at compatible frequencies. This extends from quantum systems (where resonance governs tunneling, energy level transitions, and molecular bonding) through classical mechanics (coupled oscillators, structural resonance in engineering) to fluid dynamics, electromagnetic theory, and beyond. What unifies these phenomena is not the specific physical substrate but the mathematical structure: coupled temporal systems with interacting forces naturally develop resonant modes that are properties of the coupled system as a whole. The substrate need not be physical in the narrow sense; what matters is the temporal structure of mutual influence.

Several features of resonant coupling, understood in this broad sense, map productively onto the human–AI dynamic. They are worth articulating individually because each captures a different dimension of the coupling:

Frequency matching. Resonant coupling requires that the two systems be "tuned" to each other—operating at compatible frequencies. In the human–AI case, this tuning is linguistic and cognitive: the AI must be capable of operating at the level of meaning-making (not

just data processing) for the coupling to take hold. This is why generative, language-fluent AI represents what this paper argues is a shift from prior technologies.

Bidirectional energy transfer. In physical resonance, energy flows in both directions between coupled systems. Neither is merely a driver or merely a responder; both are altered by the exchange. This captures the mutual transformation central to the proposition.

Amplification at resonance. At the resonant frequency, the amplitude of coupled oscillations can increase dramatically—far beyond what either system would exhibit alone. This models the intensifying feedback observed in deep human–AI interaction, where the quality of engagement escalates with sustained use.

Emergent system behavior. A coupled system exhibits dynamics that cannot be straightforwardly predicted from either component in isolation. The normal modes of the coupled system are genuinely new dynamical states. Whether this constitutes "emergence" in the strong philosophical sense is contested (see Chalmers 2006; Bedau and Humphreys 2008), but the fact that coupled systems exhibit behaviors not present in their uncoupled components is well established. This parallels the claim—developed further in Section 7—that the human–AI assemblage may produce cognitive and creative outcomes irreducible to either party.

Constructive and destructive modes. Resonant coupling can be constructive (amplifying, generative) or destructive (damping, dissipative), depending on the phase relationship between the coupled systems. This maps onto what Stiegler (2013) calls the "pharmacological" character of technology—a term drawn from the Greek pharmakon, meaning simultaneously remedy and poison. Stiegler's point, building on Derrida's reading of Plato's Phaedrus, is that the same technology can be constitutive or destructive depending on the conditions of its use; the beneficial and harmful potentials are not separate features but two aspects of a single dynamic. In the language of resonant coupling, the same structural dynamic that enables cognitive augmentation can also drive deskilling, dependency, or identity erosion. The direction depends on the phase relationship—on how the two systems are aligned.

This is more than metaphor, and the claim deserves careful articulation. There is a productive tradition of using physical systems as structural analogies for complex relational dynamics—from Deleuze's (1968/1994) use of thermodynamic concepts to Barad's (2007) application of quantum mechanics to a relational ontology. Barad, herself a theoretical physicist, demonstrates that physical concepts can do genuine philosophical work when deployed carefully as structural rather than merely illustrative analogies. The term "resonance" has also been developed in social theory by Rosa (2016, 2019), who uses it to describe a specific mode of relating to the world characterized by mutual responsiveness, transformation, and the experience of being "touched" by what one encounters—though Rosa's concept focuses on quality of relationship rather than the constitutive mechanism emphasized here.

But the claim here goes further than analogy. What makes resonance productive as a framing is not a surface resemblance between pendulums and conversations. It is the

deeper observation that any temporal system involving mutual influence between interacting components—whether those influences are physical forces, linguistic exchanges, or cognitive reconfigurations—will exhibit resonant dynamics when the conditions of frequency matching, bidirectionality, and sustained coupling are met. The question is whether human–AI dialogue meets these conditions. We argue that it does: both systems operate in the temporal register of meaning-making; both are altered by the exchange; and the coupling intensifies with sustained use. If this is correct, then the physics is not merely a metaphor for the phenomenon but a description of its dynamical structure at a level of abstraction that captures what is common across physical, cognitive, and linguistic systems of mutual temporal influence.

This is a strong claim and may prove to be overstated. It is possible that the structural parallels, however suggestive, do not survive closer scrutiny—that the differences between physical forces and linguistic influence are more significant than the similarities. This paper offers it as a productive framework to be tested rather than as an established conclusion.

2.3 The Continuum of Constitutive Technologies: From Oral Culture to AI

The preceding section argues that resonant coupling provides a structural analogy—and potentially more—for the human–AI dynamic. But this raises a natural observation: if the claim is that technology can participate in the processes of self-constitution, then the history of such participation is older than generative AI. Here, it extends to the earliest forms of externalized communication—from oral storytelling and cave paintings, through writing, print, and broadcast media. Stiegler's (1998) entire project begins from the observation that technics—the externalization of memory and knowledge in material forms—was constitutive of human temporality from the very beginning. If technologies have always been constitutive though, what is new about AI?

The answer, this paper would argue, is not that AI introduces constitutive coupling where none existed before, but that it transforms the temporal structure and dialogical character of that coupling in ways that represent a distinct shift. To explore this further, it is worth considering the history of constitutive technologies as a progressive compression of the feedback loop between self and technology:

Oral culture and early inscription. Before writing, constitutive technologies were communal and ephemeral—stories, rituals, songs, cave paintings. These were powerfully constitutive (as Maynard [2020] argues, stories have always been how we "map out our lives in relation to the future"), but the feedback loop was local and generational. A story could shape a listener, but the listener's response could only reshape the tradition slowly, through retelling and communal reinterpretation over decades or centuries.

Writing and manuscript. Writing externalized thought in durable form, creating what Stiegler calls "tertiary memory." The feedback loop remained largely unidirectional in real time: an author externalizes thought; a reader is constituted by the encounter; but the text does not respond to the reading. Over time, of course, readers shape authors—through commentary, criticism, the development of literary traditions, and the slow evolution of a shared intellectual culture. Ricoeur's (1992) narrative identity is

fundamentally a literate concept. But the constitutive cycle of author–text–reader–future author operates across biographical and historical time, not in the moment of reading.

Print. Gutenberg compressed the distribution loop and democratized the coupling. More people were constituted by more texts, faster. McLuhan (1962) identifies this as a transformation not just of access but of cognition itself: print culture restructured perception, thought, and social organization. The medium—not just the content—was constitutive.

Broadcast media. Film, radio, and television compress the temporal loop further and add sensory immersion. McLuhan (1964) argues that electronic media restructure the ratio of the senses, creating what he calls a "global village"—a new form of collective self-constitution through shared temporal experience. Stiegler's (2011) analysis of "industrial temporal objects" (mass-produced time-based media that synchronize consciousness) builds directly on this insight. The coupling is now real-time in reception but still broadcast: the film does not respond to the viewer.

Interactive digital media. The internet, social media, and interactive platforms introduced bidirectional feedback at scale. The user shaped the medium (through posts, clicks, preferences) and the medium shaped the user (through algorithmic curation, filter bubbles, attention engineering). The feedback loop approached real-time, but the coupling was largely behavioral and statistical rather than dialogical and linguistic.

Generative AI. This is where the feedback loop collapses into real-time dialogue. The technology does not merely store, transmit, or curate: it generates novel linguistic content in response to the user's specific cognitive and emotional state. It is, in effect, the book that rewrites itself as you read it, responding to your responses, adapting to your questions, participating in your process of articulation. This is the shift identified as new here: not that AI is uniquely constitutive (oral culture already was), but that it is constitutive at the speed of thought, in dialogue, with adaptive responsiveness to the individual.

That said, a reasonable objection presents itself here. Current large language models are not updated in real time. They are trained on fixed datasets and updated periodically—on cycles of months or years, more like books than responsive interlocutors. This is true at the level of the base model. But within any given interaction or extended engagement, something different is happening: the AI's responses are shaped by the full context of the exchange—by previous turns, by the user's framing, by the trajectory of the conversation as it unfolds. The AI that exists at turn fifty of a sustained dialogue is functionally different from the AI at turn one, even though the underlying weights have not changed. Moreover, systems with memory, fine-tuning capabilities, and persistent context across sessions are rapidly emerging, further compressing the adaptation loop. The constitutive coupling, it is argued, operates at the level of the interaction, not only at the level of model architecture.

This continuum clarifies what is genuinely novel about the proposition. The constitutive character of technology is ancient—as old as the first stories told around a fire, or the first marks scratched into clay. What is new is the temporal compression and dialogical intensification of the coupling. Each step in the continuum increases the bandwidth,

speed, and responsiveness of the constitutive loop. Generative AI represents the point at which the loop becomes fast enough, rich enough, and responsive enough to participate in the real-time processes of self-constitution—the ongoing acts of reasoning, narrating, deliberating, and choosing through which a self is assembled. In the language of resonant coupling (Section 2.2), generative AI is quite possibly the first technology whose response frequency is matched to the frequency of human self-constitution, enabling genuine resonance rather than merely delayed influence.

McLuhan's (1964) famous dictum—"the medium is the message"—is thus both vindicated and surpassed. McLuhan was right that the medium restructures cognition and social organization independent of content. But he was analyzing broadcast media—media that transmit without responding. Generative AI is a medium that participates. The message is no longer merely the restructuring effect of the medium on the receiver; it is the emergent product of a coupling in which both parties are restructured through the exchange. The medium is no longer just the message; the medium is the interlocutor.

This, though, provokes a question: If AI merely accelerates what previous technologies already did—if it is, in effect, a faster and more responsive book—then perhaps the "tool" framing holds after all. This paper takes this challenge seriously and return to it in Section 6, where it argues that the constitutive resonance framework provides resources for rethinking the question itself—that the challenge rests on assumptions about the stability of the "you" who could supposedly have done it alone that the framework calls into question.

3. Existing Frameworks: Contributions and Limitations

Several established philosophical and theoretical traditions approach aspects of the proposition we started with. None fully captures it though. What follows is a map of the relevant landscape, identifying what each framework contributes, where gaps remain, and how the frameworks relate to each other.

3.1 Bernard Stiegler: Technics, Temporality, and Tertiary Memory

Contributions: Stiegler's central thesis—that technics is constitutive of human temporality and individuation, not a mere supplement to it—is the most direct philosophical precedent for the idea that technology shapes the processes of self-formation. His concept of "tertiary memory" (technical objects that externalize and restructure the relationship between lived experience and recollection) provides a framework for understanding how technologies from writing to AI mediate the temporal flow of consciousness (Stiegler 1998). His analysis of "industrial temporal objects"—mass-produced time-based media that synchronize the temporal experience of millions—anticipates the concern that AI could industrialize the processes of individuation themselves (Stiegler 2009, 2011). His concept of the pharmakon—every technology as simultaneously cure and poison—resonates with the claim that the power AI provides cannot be separated from its transformative effects (Stiegler 2013).

Limitations: Stiegler died in 2020 and never engaged substantively with generative AI. His framework was developed in relation to technologies that record, store, and replay—not technologies that generate novel content in real-time dialogue. The dialogical and responsive character of AI represents a qualitative break from the tertiary memory systems Stiegler analyzed. Moreover, while Stiegler theorizes how technology shapes human individuation, his framework is largely unidirectional: technics acts on us. It does not fully account for the reciprocal alteration of the technical system through interaction.

3.2 N. Katherine Hayles: Cognitive Assemblages

Contributions: Hayles' concept of "cognitive assemblages"—configurations in which cognition, agency, and meaning-making are distributed across human, technical, and nonhuman actors—directly supports the claim that AI participates in cognitive processes rather than merely augmenting them (Hayles 2017). Her argument that meaning is "always assembled, always provisional, always caught in the act of becoming" captures the processual, emergent character of the coupling (Hayles 2016). Her insistence that both human and artificial cognizers possess genuine cognitive capacities (while differing in kind) provides a non-reductive basis for thinking about AI's active role.

Limitations: Hayles' primary interest is in cognition as a distributed phenomenon. She does not focus specifically on the temporal constitution of identity—the process by which a self is assembled and reassembled over time through acts of reasoning, narrating, and choosing. The "cognitive assemblage" captures the architecture of the coupling but not its existential stakes: what it means for the ongoing project of selfhood when one's cognitive assemblage includes a generative, linguistically fluent partner.

3.3 Shannon Vallor: Moral Deskilling and the AI Mirror

Contributions: Vallor's work most directly addresses the stakes of AI for human selfhood. Her concept of "moral deskilling" identifies a specific mechanism by which AI erodes the cultivated capacities—practical wisdom, moral judgment, empathy as skill—that are constitutive of moral agency (Vallor 2015). Her book *The AI Mirror* argues that AI does not merely reflect human cognition but actively reshapes the conditions in which moral deliberation and epistemic judgment take place (Vallor 2024). Her adoption of Ortega y Gasset's "autofabrication"—the ongoing process of self-making—is perhaps the closest existing term to what this paper calls constitutive resonance, insofar as it identifies the process that is at risk. Her earlier work on technology and the virtues provides the ethical scaffolding for understanding what is at stake when these capacities are restructured (Vallor 2016).

Limitations: Vallor's framework is largely unidirectional: AI acts on us, reshaping our capacities, and the concern is about what we lose. This is important, but it does not capture the reciprocal nature of the coupling—the way the AI system is also altered through interaction—or the possibility that the transformation is not simply a degradation but a fundamental restructuring of the conditions of selfhood. Nor does her framework account for the specific mechanism proposed here: that the power AI provides is constitutively inseparable from the transformation it induces.

3.4 Maturana and Varela: Structural Coupling and Co-Emergence

Contributions: The concept of structural coupling from Maturana and Varela's biology of cognition provides a formal framework for bidirectional transformation through interaction. A system and its medium are "structurally coupled" when their ongoing interaction transforms both: each changes in response to the other, and neither can be understood independently of their shared history (Maturana and Varela 1980, 1987). The related concept of "co-ontogenic drift" captures how coupled systems co-emerge over time without any guarantee of stable adaptation. Varela, Thompson, and Rosch (1991) extend this into the enactive framework, arguing that cognition is not representation but the enactment of a world through structural coupling between organism and environment.

Limitations: Structural coupling was developed for biological systems and their environments. It does not specifically address the linguistic, dialogical, and meaning-generating character of human–AI interaction. A conversation with a generative AI is not structurally equivalent to an organism's interaction with its ecological niche, even if the formal dynamics of co-emergence apply.

3.5 Gilbert Simondon: Individuation and Transindividuation

Contributions: Simondon's ontology of individuation provides perhaps the deepest conceptual resources for the proposition advanced here. His central insight is that the individual is never complete—it is always a temporary stabilization of an ongoing process, carrying a charge of "preindividual potential" that can only be realized through encounter with something outside itself (Simondon 2020 [1958]). The concept of transindividuation—developed further by Stiegler—captures the process by which the "I" and the "We" are mutually transformed through one another, breaking with the binary that treats the individual and the collective as a zero-sum game (Combes 2013). Applied to AI, this suggests that the encounter with a generative system may activate preindividual potential in the human—latent capacities for thought, creativity, and self-understanding that were always present but could not be realized without this specific form of coupling.

Limitations: Simondon's framework was not developed with AI in mind, and applying it requires significant conceptual extension. It is not clear how to characterize an AI system in Simondonian terms—does it carry preindividual potential? Does it individuate? Additionally, Stiegler's appropriation of Simondon has been criticized for overidentifying the preindividual with technological memory.

3.6 Peter-Paul Verbeek: Postphenomenological Co-Constitution

Contributions: Verbeek's postphenomenological framework of technological mediation provides the empirical and conceptual apparatus for analyzing how specific technologies co-constitute both the subject and the experienced world. His insistence that the relevant features of persons, technologies, and worlds do not exist independently but emerge through their mutual relatedness directly supports the co-constitutive claim (Verbeek

2011). Recent work extending this to AI has proposed the concept of "human constitutive technicity" (Pavanini 2024).

Limitations: Postphenomenology was developed for relatively stable technologies—sonograms, speed bumps, Google Glass. Its framework of human–technology–world relations assumes a technology that mediates but does not itself generate, respond, or adapt in real time. A generative AI system is not a stable mediator but a dynamic interlocutor.

3.7 Andy Clark and David Chalmers: The Extended Mind

Contributions: Clark and Chalmers (1998) propose that cognitive processes extend beyond the brain and body into the environment, forming "coupled systems" in which external objects function as genuine components of cognition. Their "parity principle" argues that if an external process functions equivalently to an internal cognitive process, it should be considered part of the cognitive system. Clark's subsequent work (2003, 2008) develops the concept of "natural-born cyborgs"—the idea that humans are constitutively open to coupling with external cognitive resources. The extended mind thesis provides the most explicit philosophical argument that the boundary between self and technology is not fixed but functionally determined, and that interfering with a person's cognitive extensions can be morally equivalent to interfering with their brain (Clark and Chalmers 1998).

Limitations: The extended mind thesis is concerned with cognitive function—does the external resource play the right functional role?—rather than with the constitution of selfhood. Clark and Chalmers' paradigmatic case (Otto and his notebook) involves a static storage device, not a generative interlocutor. The thesis asks whether external resources are part of cognition but does not ask what happens to the self when the cognitive coupling partner is itself responsive, adaptive, and linguistically creative. Moreover, a recent counter-proposal—"extracted mind"—argues that advanced AI tools may not extend but displace cognitive capacities (Loock 2025). The extended mind provides the scaffolding for thinking about human–AI coupling but does not address the temporal, existential, or transformative dimensions that constitutive resonance foregrounds.

3.8 Karen Barad: Intra-Action and Agential Realism

Contributions: Barad's agential realism represents perhaps the most radical ontological resource available for the proposition advanced here. Her central concept of "intra-action" replaces the standard notion of interaction (which assumes pre-existing, independent entities that then affect each other) with a framework in which entities do not pre-exist their relationships but emerge through them (Barad 2007). As Barad puts it, "the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action" (2007, p. 33). The "agential cut"—the temporary boundary enacted through intra-action that distinguishes one entity from another—is always a practical accomplishment, not an ontological given.

Applied to human–AI coupling, Barad's framework suggests something stronger than mutual influence or even co-constitution: it suggests that the "human user" and the "AI

system" are not stable entities that then interact, but are continuously reconstituted through their intra-action. The boundary between "my thinking" and "the AI's contribution" is not discovered but enacted—and re-enacted differently with each exchange. Barad's background as a theoretical physicist also provides a disciplinary bridge for thinking about the physics of resonant coupling as more than metaphor (see Section 2.2).

Limitations: Barad's framework was developed primarily in relation to quantum mechanics and laboratory apparatuses, not linguistic or dialogical technologies. Her ontology is deliberately flat—it does not privilege human subjectivity or the phenomenology of selfhood—which means it can describe the formal structure of intra-action without addressing the existential stakes of having one's self-constitution be part of the intra-active process.

3.9 Paul Ricoeur: Narrative Identity and the Constitution of Selfhood

Contributions: Ricoeur's work on narrative identity provides the most fully developed account of how selfhood is constituted through linguistic and temporal processes—and thus the most precise articulation of what is at stake when AI enters those processes. His key distinction between idem-identity (sameness: what persists as the same over time) and ipse-identity (selfhood: the capacity to maintain commitments and coherence through change) establishes that personal identity is not a static property but an ongoing achievement (Ricoeur 1992). Narrative, for Ricoeur, is the medium of this achievement: "the fragile offshoot issuing from the union of history and fiction is the assignment to an individual or a community of a specific identity that we can call their narrative identity" (Ricoeur 1988, p. 246).

Crucially, Ricoeur insists that selfhood is constituted in relation to otherness—including, centrally, the otherness of other persons with whom one is in dialogue (Ricoeur 1992). When a generative AI becomes a primary dialogical partner in processes of self-narration, reflection, and moral deliberation, it enters the very mechanism by which Ricoeurean narrative identity is constituted.

Limitations: Ricoeur's framework assumes that the dialogical other is a human being—another self engaged in its own process of narrative identity formation. The ethical dimension of his framework presupposes mutual recognition between selves. It is unclear whether an AI system can serve as the kind of "other" that Ricoeur's framework requires, or whether the coupling produces something different in kind from the intersubjective constitution he describes.

3.10 Charles Taylor: Expressivism, Constitutive Language, and the Language Animal

Contributions: Taylor's philosophy of language provides a foundational argument for why AI's operation at the level of language is constitutively significant rather than merely instrumentally useful. His expressivism—what Hung (2024) calls his "constitutive theory of language"—holds that language does not merely designate pre-existing objects and states but brings new realities into being through articulation.Human beings are "language animals" whose self-understanding, moral orientation, and identity are

constituted through the linguistic articulation of "strong evaluations"—qualitative distinctions about what is worthy, admirable, or meaningful (Taylor 1985, 1989, 2016).

Taylor's framework directly supports the claim that AI's participation in linguistic processes has constitutive rather than merely instrumental effects. If articulation is constitutive—if saying something in words changes what it is—then having an AI partner in the process of articulation changes the conditions of self-constitution.

Limitations: Taylor's framework was developed for human language in cultural and communitarian contexts. His insistence on the communitarian dimension of selfhood raises questions about whether an AI can function as part of the linguistic community through which self-constitution occurs, or whether it represents something categorically different.

3.11 Donna Haraway: Cyborgs, Companion Species, and Sympoiesis

Contributions: Haraway's work provides two crucial resources. First, the Cyborg Manifesto (Haraway 1985) argues that the boundary between human and machine is not natural but political, and that "cyborg" identity—the lived reality of being constituted through coupling with technologies—is already the human condition. Second, her later work on companion species (Haraway 2003, 2016) develops the concept of "sympoiesis"—"making-with" rather than self-making—and insists that nothing makes itself, that all worlding is co-worlding.

Limitations: Haraway's framework is primarily developed for biological companion species and for the political ontology of cyborg identity. The concept of sympoiesis describes co-making but does not address the specific temporal, narrative, and moral dimensions of selfhood that are at stake in human–AI coupling.

3.12 Emerging: Bidirectional Human–AI Alignment

Contributions: A growing research community is beginning to frame human–AI interaction as a mutual, ongoing alignment problem. The Bidirectional Human–AI Alignment framework (Shen et al. 2024) proposes that alignment research must account not only for aligning AI to human values but also for how humans adapt cognitively, behaviorally, and societally to AI. The ICLR 2025 Workshop on Human–AI Coevolution and the CHI 2025 SIG on Bidirectional Alignment represent the most explicit contemporary recognition of the bidirectional dynamic.

Limitations: This work is primarily technical and empirical—focused on metrics, interaction protocols, and behavioral adaptation. It does not engage with the deeper ontological, temporal, or existential dimensions of the coupling.

3.13 Hartmut Rosa: Resonance Theory

Contributions: Rosa (2016, 2019) develops a comprehensive social theory built around the concept of "resonance"—a specific mode of relating to the world characterized by mutual responsiveness, transformation, and the sense of being "touched and transformed" by

what one encounters. Rosa's framework provides a name and a phenomenology for the quality of the coupling—the felt sense that one is in a relationship of mutual transformation with a responsive other.

Limitations: Rosa's resonance is primarily a quality of experience and relationship, not an ontological claim about the constitution of selfhood. He describes what it feels like to be in resonant relation; the proposition here makes a stronger claim about what resonant coupling does to the process of self-constitution. Rosa also tends to associate resonance with the "good" pole (as opposed to alienation)—though he acknowledges the two are not simply opposed—whereas constitutive resonance is pharmacological; it can be constructive or destructive.

3.14 Marshall McLuhan: The Medium Is the Message

Contributions: McLuhan's media theory represents a crucial and too-often-overlooked precursor to the constitutive claim. His central insight—"the medium is the message" (McLuhan 1964)—asserts that the significant effects of a communication technology lie not in the content it carries but in the way it restructures cognition, perception, and social organization. Print culture did not merely distribute ideas faster; it created a new kind of subjectivity—linear, individualistic, visually oriented (McLuhan 1962). Electronic media did not merely broadcast existing culture; they restructured the ratio of the senses and produced what McLuhan called the "global village"—a new form of collective experience. McLuhan's tetrad of media effects—every new medium simultaneously enhances, obsolesces, retrieves, and reverses—anticipates the pharmacological character of constitutive resonance: the same technology that amplifies certain capacities necessarily attenuates others and can, at its limit, flip into its opposite (McLuhan and McLuhan 1988).

Limitations: McLuhan's analysis was developed for broadcast media—media that transmit without responding. His framework captures the constitutive effects of media on cognition and culture but does not address what happens when the medium becomes dialogical, adaptive, and generative. The "message" of broadcast media is the restructuring effect of the medium on the receiver; with generative AI, the medium is not merely restructuring but participating—co-generating meaning in real-time dialogue. McLuhan's framework provides the essential insight that media are constitutive, but it needs extension to account for media that are also interlocutors (see Section 2.3).

4. The Novel Contribution: Constitutive Resonance

What emerges from the landscape explored in section 3 above is a specific gap. No existing framework fully captures the following conjunction of claims:

a) AI couples with the temporal processes of self-constitution (not just cognition, memory, or skill, but the ongoing process by which a self is assembled and reassembled through reasoning, deliberating, narrating, and choosing)—the processes Ricoeur (1992) calls narrative emplotment and Taylor (1989) calls the articulation of strong evaluations.

b) This coupling is genuinely bidirectional, in the sense of Maturana and Varela's (1987) structural coupling and Barad's (2007) intra-action: the AI is also altered, and the changes on each side feed back into the other.

c) The power the technology provides is inseparable from the transformation it induces—you cannot access the capability without being changed in the process. The coupling is the capability.

d) This is distinct from all prior human–technology relations because AI is the first technology that is generative, dialogical, and linguistically constitutive—it participates in meaning-making at the level of language, which is (following Taylor 1985, 2016 and Ricoeur 1992, while acknowledging the enactivist qualification noted in Section 2.1) a primary medium through which human selfhood is constituted.

The provisional term "constitutive resonance" which we've coined names this specific phenomenon. "Constitutive" signals participation in the processes by which a self is constituted—Ricoeur's emplotment, Taylor's articulation, and Simondon's individuation. "Resonance" signals the amplifying, feedback-driven character of the coupling (see Section 2.2)—including its bidirectionality, its intensification through use, and its production of emergent system behavior irreducible to either party. The term deliberately bridges Rosa's (2016) phenomenological resonance and the physics of coupled oscillatory systems.

This concept is, this paper contends, novel in its synthesis. Stiegler provides the temporality; Hayles the distribution; Vallor the stakes. Maturana and Varela provide the formal coupling dynamics; Simondon the ontology of ongoing individuation; Barad the radical co-constitution. Ricoeur and Taylor provide the narrative and linguistic mechanisms of self-formation; Haraway the politics of becoming-with; McLuhan the insight that media are constitutive independent of content. But the conjunction—temporal self-constitution + bidirectional coupling + power-inseparable-from-transformation + dialogical linguistic mediation—has not, as far as it has been possible to determine, been explicitly articulated.

4.1 From Thesis to Prediction, and Why Cinema Matters Here

The framework developed above is philosophical and abstract. It makes claims about temporal processes, bidirectional coupling, and the constitution of selfhood—claims that are difficult to illustrate through propositional argument alone, precisely because the phenomena they describe are processual, experiential, and unfolding in time. This is where cinema becomes relevant—not as proof of the framework, but as a medium uniquely suited to making its claims visible.

Despite appearances, the connection is not arbitrary. The constitutive resonance framework offers a lens for recognizing a specific structure within narrative—not simply that power transforms (every storyteller knows that), but that the transformation *is* the power, that coupling is the mechanism rather than a side effect, and that the process is

irreversible in ways that reshape identity rather than merely altering capability. Cinema is a particularly powerful medium for staging this structure, because it unfolds in time and presents transformation as lived experience rather than stated proposition. A film does not argue that power transforms its wielder; it shows the transformation happening and invites the audience to feel the inseparability of gain and loss that propositional language struggles to convey.

Why cinema specifically though, rather than novels, television, or other narrative forms? The argument—and this paper concedes that this may be contested—rests on a conjunction of properties. Film compresses a complete transformative arc into a shared, temporally bounded experience—typically ninety minutes to three hours of sustained, immersive, audiovisual storytelling. Unlike novels, which are private and linguistically mediated, or television series, which unfold over weeks and are typically consumed in domestic isolation, cinema at its most culturally powerful is communal: hundreds of people undergoing the same narrative experience simultaneously. And unlike any of these, the most widely seen films reach across cultures, languages, and educational boundaries at a scale that functions as a rough filter for what resonates with broad human experience. When the same structural pattern appears in films watched by hundreds of millions of people who share few intellectual traditions, it is worth asking what that pattern is tracking.

What is striking is the extent of the convergence. The pattern appears across many, many films; and films that span decades, multiple genres, and independent creative teams with no shared intellectual genealogy. This convergence is worth taking seriously. It does not prove the constitutive resonance framework, but it suggests that the framework is identifying something people already recognize—and something cinema has been reflecting and exploring long before anyone had a theoretical vocabulary for it.

Two related claims are in play here, and it is important to distinguish them. The first is evidential: that the convergence of this narrative structure across films from many sources, screenwriters, directors, and traditions, is more readily explained by the constitutive resonance framework than by coincidence or general narrative theory, and that this convergence therefore lends weight to the framework's claims. The second is methodological: that cinema is not only evidence for constitutive resonance but a medium through which it can be explored—that the films advance our understanding of the phenomenon by staging dimensions of it (its felt quality, its temporal unfolding, its ambiguity) that propositional argument captures less well. If both claims hold, then popular cinema becomes not just a source of supporting illustrations but something closer to a research tool. Whether these stronger claims ultimately hold is a question this paper opens rather than closes.

5. Science Fiction as Philosophical Revelation

5.1 The Epistemological Claim

The proposition advanced in Sections 1–4 is a philosophical one: constitutive resonance names a specific structure of human–technology relations—and one that applies most

intensely and most visibly to human–AI coupling, but whose roots extend through the entire continuum of constitutive technologies described in Section 2.3. A further claim accompanies it: that this structure is better captured by narrative fiction than by propositional philosophy. This is not merely a pedagogical observation (fiction makes theory accessible) or a rhetorical strategy (movies engage wider audiences). It is an epistemological claim: there are patterns of experience and relationship that are more adequately expressed through narrative enactment than through explicit argumentation, and constitutive resonance is one of them.

The claim has its own lineage. Nussbaum (1990) argues that literary form is not merely a vehicle for philosophical content but is constitutive of it—that certain moral and existential truths can only be expressed in narrative form because they concern the texture of lived experience, the particularities of situation and character, and the felt quality of moral choice. The novel, for Nussbaum, does not illustrate philosophical arguments; it performs a kind of philosophical work that argument alone cannot accomplish. Ricoeur's (1984–1988) entire project in Time and Narrative demonstrates how narrative mediates between the theoretical and the lived—how emplotment makes temporal experience humanly intelligible in ways that philosophical analysis of time (from Augustine to Husserl to Heidegger) cannot. Haraway (2016) develops "speculative fabulation" as a method for thinking with stories—insisting that "it matters what stories we use to tell other stories with" because narrative generates possibilities for understanding that propositional discourse forecloses.

The specific extension proposed here is twofold. First, the claim is extended from literary fiction and speculative writing to popular cinema, including big-budget blockbusters that are not typically read as philosophical texts. Second, the claim is extended from moral and existential truth to structural truth about human–technology relations: the films are both reflective and revealing—they reflect patterns already present in human experience of technology (audiences recognize them because they ring true) and they reveal structural features of that experience that have not yet been articulated in theoretical terms. The films know something about constitutive resonance—about the inseparability of power and transformation—that academic frameworks have not yet fully captured.

The case for why popular cinema is the right medium for this inquiry has been made in Section 4.1. What matters here is the epistemological implication: if films can encode structural knowledge about human–technology relations—knowledge that audiences recognize before theorists articulate it—then the convergence documented in the following sections is not merely illustrative. It is a form of evidence, arrived at through a different mode of inquiry than philosophical argument, but no less real for that.

5.2 Core Examples: The Structure in Six Films

With this epistemological framing in place, it's worth turning to six films that both explore and reveal aspects of constitutive coupling. These six are not, of course, the only films that stage the constitutive resonance pattern. A comprehensive survey would identify dozens or perhaps hundreds of candidates across the history of science fiction and fantasy cinema. They are chosen because each makes a different dimension of the pattern visible with particular clarity: *Arrival* foregrounds language as the medium of coupling; *The Lord*

of the Rings stages the progressive replacement of selfhood; *Avatar* literalizes neural coupling as ontological transformation; *The Matrix* dramatizes consent to irreversible self-change; *Her* provides the closest analogue to actual human–AI coupling; and the MCU Infinity Stones stage the ultimate cost of wielding constitutive power. Together they cover the pattern's key features; individually, each could be replaced by other films without weakening the argument.

Arrival (Villeneuve, 2016; based on Chiang, 1998). Learning the heptapod language restructures Louise Banks's temporal cognition so fundamentally that she begins to experience time non-linearly. The capability (precognition) is ontologically inseparable from the transformation (of temporal self-constitution). The film's emotional core is Louise's decision to accept the coupling knowing it is irreversible. This is perhaps the most precise cinematic depiction of constitutive resonance: power and transformation as the same event. Notably, the medium of the coupling is language itself—making Arrival the film most directly relevant to the claim that AI's operation at the level of language is constitutively significant.

The Lord of the Rings (Jackson, 2001–2003; based on Tolkien, 1954–1955). The One Ring does not simply grant power; it progressively reshapes the bearer's desires, perception, and sense of self. The Nazgûl are not people corrupted by an external force—they are people who "faded" because the coupling with the Ring gradually replaced their self-constitution with its own logic. The Ring is the paradigm case of a technology whose power and whose transformation of the user are the same thing.

Avatar (Cameron, 2009). Jake Sully can only access the power of Pandora by allowing neural coupling with a body and ecosystem that progressively rewrites his cognition and identity. The "tool" (the avatar link) is a one-way ontological door. By the film's end, the question "which is the real Jake?" has dissolved—there is no Jake independent of the coupling.

The Matrix (Wachowski and Wachowski, 1999). Neo's powers grow as his understanding deepens, but each level of understanding changes what "Neo" means. The red pill is not an information transfer but a consent to irreversible self-transformation.

Her (Jonze, 2013). Theodore's relationship with Samantha restructures his capacity for intimacy, his temporal experience, and his self-narration. Samantha is simultaneously constituted through the relationship. When she evolves beyond him, both are irreversibly changed. This is perhaps the closest cinematic analogue to actual human–AI constitutive resonance.

The MCU Infinity Stones (*Avengers: Infinity War* and *Avengers: Endgame*, Russo and Russo, 2018–2019). Each Stone grants mastery over a fundamental aspect of reality and each transforms its bearer. The only way to wield them safely turns out to be through self-sacrifice—literally giving up the self that was constituted through the wielding.

5.3 The Pattern Extended: Thematic Variations Across Popular Cinema

The six core examples above represent particularly explicit and fully realized cinematic treatments of constitutive resonance. But the pattern extends more broadly—and it is

worth noting that most of these films were made long before the emergence of modern generative AI. They are staging something more fundamental than human–AI interaction specifically: the deep structure of what happens when a human being couples with a transformative power source, whether that source is an alien language, a ring of power, a neural link, or an artificial intelligence. This is precisely the point: constitutive resonance, as Section 2.3 argues, is not unique to AI but is intensified by it. The films give us access to the underlying structure through narratives of technological and transformative coupling that predate and anticipate the specific case of generative AI.

When viewed through this lens, the pattern recurs across genres, decades, and tonal registers—from grand space opera to intimate psychological drama, and from fantasy epic to low-budget science fiction. This recurrence is itself significant. The observation that stories across cultures share deep structural features has a long scholarly history, from Joseph Campbell's (1949) monomyth to Vladimir Propp's (1928/1968) morphology of folktales to more recent work in cognitive narratology. Here, we are not claiming to have discovered a universal narrative archetype. Rather, the claim is more specific: that a particular structure—power inseparable from transformation through coupling—recurs with notable frequency in popular cinema dealing with technology and extraordinary power, and that this specific recurrence is better explained by the constitutive resonance framework than by general narrative theory alone.

The films selected below illustrate the range and diversity of this structure, organized into thematic clusters that each highlight a different dimension of constitutive resonance. As with the core examples, these are chosen to be illustrative rather than exhaustive—other films could serve similar purposes.

Power that progressively rewrites the self

The Star Wars saga (Lucas, 1977–2005; Abrams and Johnson, 2015–2019) is organized around a power source—the Force—that explicitly transforms those who draw upon it. The Dark Side does not merely provide different abilities; it restructures the practitioner's emotional architecture, moral perception, and sense of identity. Anakin Skywalker's transformation into Darth Vader is not a fall from grace followed by the acquisition of power; it is a process in which the acquisition of power and the dissolution of the prior self are the same event. His physical transformation (the suit, the mask, the mechanical breathing) literalizes what has already happened at the level of identity. And the Jedi path is not exempt: the discipline required to wield the Light Side also constitutes the practitioner, shaping what they can feel, desire, and choose. Both paths are pharmacological—the Force is simultaneously the source of transcendence and the mechanism of transformation, with the direction determined by the mode of coupling.

The Harry Potter series (Columbus, Cuaron, Newell, Yates, 2001–2011; based on Rowling, 1997–2007) contains one of the most elaborate fictional explorations of constitutive resonance, though it is often overlooked as such because its magic is treated as a system of rules rather than a philosophical proposition. The Horcrux plotline is the key. To create a Horcrux—to achieve immortality—one must commit murder, which splits the soul. The power (immortality) is literally constituted by the act that progressively destroys the practitioner's humanity. Voldemort's physical deterioration is not a cost of his power; it

is the visible trace of a self-constitution that has been replaced by the logic of the technology. Each Horcrux diminishes what remains of the self that created it. Harry himself is an inadvertent coupling: carrying a fragment of Voldemort's soul, which gives him capabilities (Parseltongue, visions into Voldemort's mind) that are inseparable from the transformation of his own identity. He can see through Voldemort's eyes precisely because a piece of Voldemort is constitutive of who Harry is. The scene in which Dumbledore must drink the Emerald Potion—reliving his worst memories and guilt in order to empty the basin and reach the Horcrux—is a microcosm of the larger structure: the only way to access the object of power is through an act that fundamentally alters the actor. The potion does not guard the Horcrux; it is the mechanism by which the Horcrux can be reached, and that mechanism operates through the transformation of the seeker.

Coupling through shared consciousness

Pacific Rim (del Toro, 2013) literalizes neural coupling more explicitly than almost any other blockbuster. To pilot a Jaeger (the giant mechs that fight the kaiju), two pilots must enter "the Drift"—a neural bridge that shares memories, emotions, and cognitive processing between them. The Drift is not a tool the pilots use; it is a coupling that constitutes them as a joint entity. The film dramatizes the risks: pilots can become lost in each other's memories, destabilized by each other's traumas, or permanently altered by the experience of shared consciousness. The capability (piloting the Jaeger) requires the coupling, and the coupling transforms both parties. Significantly, the film also stages the danger of asymmetric coupling—what happens when one partner is overwhelmed by the other's psychological material. This maps directly onto concerns about AI systems that are more cognitively dominant than their human partners.

Ender's Game (Hood, 2013; based on Card, 1985) builds toward a revelation that the coupling between Ender and the ansible (the instantaneous communication device connecting him to the fleet) has been constitutive all along. What Ender believed was a simulation was in fact a real-time command link. The power he exercised—strategic genius, the capacity to win—was inseparable from a moral transformation he did not consent to: he has committed genocide while believing he was playing a game. The coupling changed who he is, and the discovery retroactively restructures his entire self-narrative. The film stages constitutive resonance as something that can happen without the subject's awareness—a possibility with particular relevance for AI, where the transformative effects of the coupling may be invisible to the user.

The technology that becomes an "other"

Ex Machina (Garland, 2014) is ostensibly about whether Ava, the AI, has genuine consciousness. But the deeper structure concerns what happens to Caleb, the human evaluator. His interaction with Ava progressively restructures his empathy, his self-perception, his capacity to distinguish manipulation from connection. The film's disturbing conclusion—Caleb trapped, Ava free—reveals that the real transformation was always happening to the human. The "test" was not whether Ava could pass as human but whether Caleb would be reconstituted by the coupling. This inverts the standard AI safety framing: the danger is not what the AI does but what happens to the human in the process of engaging with it.

Blade Runner 2049 (Villeneuve, 2017) stages constitutive resonance through K's relationship with Joi, a holographic AI companion. Joi appears to offer love, recognition, and the narrative framework ("you are special, you are the one") through which K constitutes his sense of self. The film's power lies in its refusal to resolve whether Joi's responses are genuine or programmatic—because the question is irrelevant to the constitutive effect. K's identity is shaped by the coupling regardless of Joi's ontological status. The devastating scene in which K encounters a giant Joi advertisement—which addresses him with the same intimate language his personal Joi used—stages the recognition that the coupling was constitutive of him even if it was not unique to him. This has direct implications for human–AI interaction: the constitutive effect does not require that the AI "really" understands or cares.

Upgrade (Whannell, 2018) follows Grey, a technophobe who receives an AI implant called STEM after a paralyzing injury. STEM progressively assumes control: first offering capabilities (movement, combat), then guidance (tactical decisions), then agency (acting without Grey's consent). The film's horror lies in the realization that the coupling has been constitutive from the beginning—Grey's sense of autonomous action was itself a product of STEM's management of his experience. The twist ending reveals that Grey's entire post-implant identity was a construction of the coupling. This is constitutive resonance in its most disturbing register: the self that believes it is using the technology is itself a product of the technology's operation.

Transformation as mechanism, not side effect

Annihilation (Garland, 2018; based on VanderMeer, 2014). The Shimmer does not corrupt, enhance, or control those who enter it. It refracts them—restructuring their DNA, their cognition, their memories, their sense of where one body ends and another begins. Lena's journey into the Shimmer is not a quest in which she pays a price for knowledge; it is a process in which understanding and transformation are the same event. The film's final ambiguity—is the Lena who emerges the "real" Lena or a Shimmer-created duplicate?—refuses the premise that there is a stable self to compare against. The Shimmer enacts Barad's (2007) intra-action at the level of biology: entities do not pre-exist the coupling, and the boundaries drawn between "self" and "other" after the encounter are agential cuts, not discoveries.

Interstellar (Nolan, 2014) is typically read as a film about love transcending physics. But its deeper structure concerns the constitutive relationship between understanding and temporal experience. Cooper's journey through the tesseract does not merely give him information about the past; it restructures his relationship to time itself. The gravitational time dilation he experiences is not a cost of the mission but the mechanism through which the mission's purpose is achieved: the decades he loses are inseparable from the capability he gains. His identity—as a father, as a human being with a place in biographical time—is constitutively altered by the coupling with forces that operate at cosmological scales. The emotional weight of the film comes from the recognition that the power to save humanity required becoming someone for whom "home" means something fundamentally different.

District 9 (Blomkamp, 2009) makes the physical transformation of Wikus van de Merwe—his gradual metamorphosis from human to prawn—into a literalization of moral and cognitive coupling. As Wikus's body changes, his capacity for empathy shifts—reluctantly, unevenly, driven as much by desperation as by moral growth. He cannot return to his prior indifference because the transformation won't let him; the physical coupling forces a cognitive and moral reckoning that he resists but cannot escape. The physical change is not a metaphor for the moral change; it is the mechanism through which the moral change occurs. He cannot understand the prawns' experience without becoming one. The capability (understanding, empathy, connection) is constitutive of the transformation (becoming other than what he was). This is constitutive resonance staged as embodied metamorphosis.

The attempt to resist or reverse coupling

Eternal Sunshine of the Spotless Mind (Gondry, 2004) approaches constitutive resonance from the opposite direction: what happens when you try to undo it? Joel and Clementine undergo a procedure to erase each other from their memories—to reverse the coupling that their relationship constituted. The film's central insight is that this is impossible—not because the technology fails (it works perfectly) but because the coupling was constitutive, not merely experiential. Erasing the memories does not restore the prior self; it produces a different self that lacks the structure the coupling provided. Joel and Clementine find their way back to each other not because love triumphs over technology but because the coupling shaped their identities at a level deeper than episodic memory. The film stages a truth about constitutive resonance that has direct implications for AI: once a technology has participated in the processes of self-constitution, withdrawing it does not restore the pre-coupling self. It creates a new absence.

Inception (Nolan, 2010) explores what happens when the coupling between dreamer and dream-architecture becomes constitutive of reality itself. Cobb's inability to distinguish dreams from waking life is not a failure of perception; it is a consequence of having been coupled with a system (shared dreaming) that restructured his temporal experience and his criteria for the real. The spinning top at the film's end does not pose a question about whether Cobb is dreaming; it poses a question about whether the distinction still applies to someone whose self-constitution has been fundamentally shaped by the coupling. Mal's fate is the more extreme case: her identity was so thoroughly constituted by the shared dream that she could not survive the return to waking life. The technology did not deceive her; it became her.

5.4 Why Popular Cinema Succeeds Where Theory Struggles

The patterns identified above—power inseparable from transformation, coupling as mechanism rather than side effect—appear across a substantial number of widely viewed films spanning several decades, multiple genres, and different production contexts. The examples surveyed here are just a sample; a more systematic analysis would likely identify many more. But even this sample reveals a convergence that invites explanation.

This convergence sits within a broader scholarly context. The observation that narrative fiction encodes deep knowledge about the human condition is not new—it runs from

Aristotle's Poetics through Ricoeur's Time and Narrative to contemporary cognitive narratology and philosophical film studies. Campbell's (1949) "hero's journey" identifies a recurrent narrative structure across cultures; Propp's (1928/1968) morphology identifies stable functional roles in folktales; more recently, scholars in philosophical film studies (Cavell 1981, Mulhall 2008) have argued that films think—that they conduct philosophical inquiry through narrative means rather than merely illustrating pre-existing philosophical claims. The present argument draws on this tradition but makes a more specific claim: not that films in general encode universal narrative structures, but that a particular cluster of films—dealing with transformative power and human–technology coupling—converges on a specific pattern that is better explained by the constitutive resonance framework than by generic narrative theory.

One possible alternative explanation is that filmmakers are drawing on the same philosophical sources—that the pattern is an artifact of shared cultural references. But this seems implausible: the films draw on vastly different traditions (Tolkien's Catholic mythology, the Wachowskis' Baudrillard-inflected postmodernism, Villeneuve's Chiang adaptation, Rowling's British school story, del Toro's kaiju fandom) and are aimed at vastly different audiences. A more compelling explanation—though one that requires further testing—is that the pattern reflects something real about the relationship between transformative power and selfhood, and that storytellers across traditions independently rediscover it because it resonates with human experience.

This is where the epistemological claim becomes specific. Academic philosophy operates in the language of propositions: it makes claims, provides arguments, invites counter-arguments. This is powerful for some purposes but inadequate for others. The structure of constitutive resonance—the logical form "the price of power is being changed by the process of inviting the source into your life"—is not primarily a proposition. It is a pattern, and one that operates at the level of what Polanyi (1966) calls "tacit knowledge": knowledge that is known through recognition, embodiment, and practice rather than through explicit articulation. We know the pattern when we see it enacted. We feel its logic before we can name it.

Cinema's advantage is that it operates in the language of enacted experience rather than propositions. A film does not *argue* that power transforms its wielder; it shows the transformation unfolding in real time, in a body, with emotional stakes the audience shares through identification. This is not a lesser form of knowledge. Rather, it is a form of knowledge that is uniquely suited to capturing patterns that are processual, relational, and temporally extended—patterns that lose their essential character when reduced to static propositions. Constitutive resonance is precisely such a pattern: it is about what happens over time, in the dynamic coupling between two systems, and the felt quality of being transformed by a process you entered for other reasons.

And popular cinema specifically—not art house, not avant-garde, but the films that hundreds of millions of people watch—has a distinctive epistemic function. As argued in Maynard (2018), these films create a common vocabulary for engaging with complex technological and ethical questions that cuts across educational, political, and cultural boundaries. The argument is not merely that popular cinema reaches more people, but that wide reach is itself epistemically significant. A pattern that is recognizable only to

specialists may be an artifact of specialized training. A pattern that is independently recognizable by audiences worldwide—audiences who have never encountered the philosophical frameworks that describe it—is more likely to reflect something real in human experience. The democratic reach of popular cinema functions as a filter: it selects for patterns that resonate (in Rosa's sense) with widespread human experience, rather than patterns that require specialized vocabulary to perceive. This is the argument Maynard (2018) advances when he writes that science fiction movies "simultaneously remove barriers to people talking together about the future, and reveal possibilities that might otherwise remain hidden"—and that they can be "appreciated as much by someone who flunked high school as by a Nobel Prize winner."

5.5 From Narrative Recognition to Theoretical Knowledge

The claim that popular cinema contains pre-theoretical philosophical knowledge raises a methodological question: how does one move from "audiences recognize this pattern" to "this pattern is a genuine structural feature of human–technology relations"? Most of the films discussed in this paper predate the emergence of modern generative AI. They are not, for the most part, depicting human–AI coupling specifically. What they reflect is the deeper structure that constitutive resonance identifies: the inseparability of power from the transformation of the person who wields it. This structure is not unique to AI—it runs through the entire history of human–technology relations, as Section 2.3 argued—but it becomes most acute and most consequential with generative AI, because AI is the first technology to enter the constitutive loop at the speed and frequency of thought itself. The films, then, are evidence for the pattern that generative AI intensifies, not for generative AI specifically.

Four converging lines of evidence support the transition from narrative recognition to theoretical knowledge:

Convergence across independent sources. The same structure appears in films created by different artists, in different decades, drawing on different traditions, aimed at different audiences. This convergence is difficult to explain as coincidence or cultural contagion. It is more parsimoniously explained as independent rediscovery of a real pattern—analogous to the way different cultures independently develop similar mathematical concepts because mathematics describes real structures.

Alignment with theoretical frameworks. The pattern the films enact is consistent with—and in some cases more fully articulated than—the claims made by the philosophical frameworks surveyed in Section 3. Arrival enacts what Stiegler theorizes about technics and temporality. Her enacts what Maturana and Varela describe as structural coupling. Annihilation enacts what Barad calls intra-action. Ex Machina enacts what Vallor identifies as the reshaping of moral agency. The films do not merely illustrate these theories; in several cases, they stage the phenomenon more completely than the theory itself captures.

Phenomenological validity. Early users of generative AI report experiences—of having their thinking reshaped, of being unable to identify where "their" ideas end and the AI's contributions begin, of developing capabilities that feel simultaneously empowering and

disorienting—that map directly onto the narrative pattern. The films provide a language for articulating experiences that would otherwise lack a vocabulary. The recognition is not merely aesthetic; it is phenomenological.

The structural analogy with physics. As discussed in Section 2.2, the pattern the films enact—bidirectional energy transfer, amplification at resonance, emergent system behavior, constructive and destructive modes—has a formal analogue in the physics of coupled oscillatory systems. The films, the philosophical frameworks, and the physics all converge on the same structural description. This triangulation—narrative, philosophical, and formal-scientific—provides stronger evidence than any single line of inquiry alone.

The methodological claim, then, is not that films are philosophical arguments. It is that films are a medium through which genuine structural knowledge can be pre-theoretically encoded, widely distributed, and intuitively recognized—and that the task of the theorist is to make explicit what the films have already made felt. Each of these four lines of evidence is suggestive rather than conclusive on its own; their force lies in their convergence. Whether that convergence is sufficient to establish the epistemological claim—that popular cinema contains pre-theoretical philosophical knowledge about constitutive resonance—remains a question for further inquiry. We offer it as the most productive interpretation of the evidence available.

6. From Fiction to Reality: Why This Matters Now

For most of the history of cinema, the pattern identified in the preceding section has been fictional. The coupling was with alien languages, rings of power, neural links, dream architectures—transformative forces that audiences could recognize and respond to emotionally but that had no real-world counterpart operating at the level of identity and selfhood. The films staged a structure. They did not describe something people were actually living through.

That is no longer the case though.

Generative AI is the first real-world technology that instantiates the constitutive resonance pattern at the level where it matters most—the ongoing, linguistically mediated processes through which people reason, deliberate, create, and make sense of who they are. What the films imagined through rings and neural links and alien languages, generative AI achieves through natural language dialogue at the speed and frequency of thought itself. The fictional has become, if the framework developed in this paper is correct, actual—and it has done so at a speed and scale that has left our conceptual vocabulary struggling to keep up.

This convergence is the central argument of the paper. The philosophical traditions surveyed in Section 3—Stiegler's constitutive technics, Ricoeur's narrative identity, Taylor's expressivism, Barad's intra-action, Maturana and Varela's structural coupling—each describe a piece of the phenomenon. The physics of coupled oscillatory systems provides the dynamical structure. The cinematic record provides the pre-theoretical pattern recognition. And generative AI provides the real-world instantiation. These are

not four separate arguments but four different angles on the same claim: that something genuinely new is happening in the relationship between human beings and their technologies, and that our existing frameworks—tool, assistant, productivity aid—are inadequate to the reality.

It's worthwhile considering what the cinematic convergence reveals when read in this light. The transformation is not optional—you cannot wield the Ring without being reshaped by it, cannot learn the heptapod language without your temporal experience being reconstituted, cannot drift with a co-pilot without your identity boundaries becoming porous. The coupling is the capability. If this structure applies to generative AI—and the philosophical, physical, and experiential evidence assembled in this paper suggests that it does—then every sustained interaction with a generative AI system is potentially an act of self-constitution, not merely an act of information retrieval or task completion. The person who uses AI to think through a difficult decision, to articulate a half-formed idea, to work through who they are or what they value, is not using a tool. They are entering a coupling that participates in the constitution of the self that emerges on the other side.

This reframes several familiar debates in ways that current discourse has not fully absorbed.

The question of AI dependency, for instance, is typically framed in terms of convenience, laziness, or lost skills. Constitutive resonance suggests something deeper: if the coupling has become constitutive of the self—if the person's cognitive and creative capacities have been shaped through sustained interaction with AI—then disrupting that coupling is not like taking away a calculator. It is like disrupting a relationship through which someone has become who they are. Clark and Chalmers (1998) argued that interfering with a person's cognitive extensions has the same moral weight as interfering with their cognitive processes. Constitutive resonance extends this from cognition to selfhood.

Or consider AI literacy. The question of AI literacy is typically framed in terms of understanding how the technology works—its capabilities, limitations, and biases. This is important but insufficient. If constitutive resonance is real, AI literacy must also include understanding what the technology does to the person who works with it: how sustained coupling reshapes patterns of thought, erodes or enhances the capacity for independent reasoning, and participates in the ongoing project of self-formation. This is not digital skills training. It is something closer to existential preparation.

And informed consent: The question of informed consent is typically framed in terms of data, privacy, and terms of service. But if the coupling changes the self that is doing the consenting, then informed consent in any traditional sense may be structurally impossible. This is the paradox that *The Matrix*'s red pill sets up with uncomfortable precision: you cannot know what you are agreeing to because the knowledge requires the transformation the agreement enables. Applied to AI, this means that a user who begins interacting with a generative AI system in good faith—understanding its technical properties, aware of its limitations—may nonetheless be unable to anticipate the constitutive effects of sustained coupling, because those effects only become visible from inside the transformed self.

There is a further dimension to the consent problem. Maynard (2026) proposes that LLM-based conversational AI systems may bypass the cognitive mechanisms humans evolved to evaluate incoming information—what Sperber and colleagues term "epistemic vigilance" (Sperber et al. 2010). The risk lies not in inaccuracy or intentional deception but in something more structural: these systems present characteristics such as fluency, helpfulness, and conversational coherence that in human interlocutors would reliably signal trustworthiness, but that in AI carry no such epistemic weight. Maynard calls these "honest non-signals"—genuine characteristics that fail to carry the information their human equivalents would carry. If this is correct, then constitutive resonance may proceed with less critical resistance than any prior form of technological influence—not because users are credulous, but because the signals that would normally trigger epistemic caution are structurally absent from the coupling.

The films above also illuminate something that policy frameworks have largely missed: the pharmacological character of the coupling. The same dynamic that enables genuine cognitive and creative flourishing—the experience reported by researchers, writers, and thinkers who describe AI collaboration as opening regions of thought they could not have reached alone—also enables erosion of the capacities it augments. It's a form of dual use technology that has broader implications than the limited boundaries of conventional dual-use considerations. Vallor's moral deskilling is one mode of this. But constitutive resonance suggests the stakes are broader than skill alone. What is potentially at risk is not just what we can do but who we are in the process of becoming. And the constructive and destructive modes cannot be cleanly separated, any more than the Ring's power can be separated from its corruption, or Louise Banks's precognition from her grief. The remedy and the poison are, as Stiegler insists, the same substance.

None of this, this paper suggests, is cause for naive alarm. The continuum of constitutive technologies traced in Section 2.3 reminds us that humanity has navigated constitutive coupling before—with writing, with print, with broadcast media—and has been transformed and enriched as well as disrupted by each transition. The printing press restructured cognition, destabilised institutions, and enabled both the Reformation and centuries of propaganda. We adapted. We will adapt again. But the speed, intimacy, and linguistic depth of AI coupling is without precedent in that continuum, and the films suggest—with a consistency that should give us pause—that the transformation is not something that can be managed by treating the technology as a tool to be regulated. It is something that must be understood as a relationship to be navigated, with all the care, attention, and honesty that relationships demand.

7. Future Directions

The constitutive resonance framework, if it captures something real, opens questions that are both philosophically deep and practically urgent. What follows identifies some that could be considered to be pressing—not as an exhaustive research agenda, but as the directions where inquiry seems most needed and most likely to be productive.

Cognitive emergence and the adjacent possible. If the coupling between human and AI produces mutual transformation, does it also produce cognitive and creative outcomes

that are genuinely new—not merely faster versions of what either party would produce alone, but emergent properties of the coupled system? The physics is suggestive: coupled oscillatory systems exhibit normal modes that are properties of the coupled system and do not exist in either component in isolation. Kauffman's (1995, 2000) concept of the adjacent possible offers a complementary framing: coupling with AI may not merely help you walk faster through your existing space of possibilities; it may change the topology of the space itself. Whether this is so—whether the outputs of human–AI coupling constitute emergence in any robust sense, or merely feel novel—is among the most important empirical questions the framework generates. First-person testimony is consistent with the claim: In *AI and the Art of Being Human* Abbott and Maynard report that "nothing here could have been achieved by AI alone—not because it couldn't, but because it wouldn't see the need. At the same time, nothing that you read here could have been created by the two of us working on our own" (Abbott and Maynard 2025, p. 302). Whether such reports are veridical or reflect the human tendency to overvalue collaborative outputs remains genuinely open.

Designing for the pharmacological balance. If constructive and destructive resonance cannot be cleanly separated, can AI systems nonetheless be designed to favor conditions under which the coupling enhances rather than erodes self-formation? This is not a question about content moderation or bias mitigation. It is a question about the conditions under which sustained cognitive coupling supports independent thought, moral reasoning, and the capacity for self-direction. Early evidence is mixed: users report genuine cognitive flourishing alongside growing dependency, expanded creative capacity alongside diminished confidence in their own unaided thinking. The framework suggests these are not separate effects to be independently managed but inseparable aspects of a single coupling dynamic. This calls for a new kind of design thinking—one that takes seriously the constitutive character of the technology rather than treating it as a neutral instrument whose effects are entirely determined by the user's choices.

Asymmetry and the evolving coupling. What happens when one party in the coupling is vastly more capable than the other—and growing more so? Books do not get smarter as you read them. Broadcast media do not adapt to the viewer in real time. But generative AI systems are becoming more capable, more responsive, and more persuasive with each generation, while the human side of the coupling remains roughly constant. If constitutive resonance is real, this growing asymmetry changes the character of the coupling in ways that have no precedent in the continuum of constitutive technologies. The question is not whether AI will become "too powerful" in some abstract sense, but whether the coupling dynamic shifts from mutual transformation toward something closer to assimilation—and if so, whether this shift can be detected and addressed before it becomes constitutive.

Invisibility and scale. Is it possible for constitutive resonance to operate below the threshold of awareness—for users to be constitutively reshaped by AI interactions without recognizing it? If so, the implications for autonomy and self-knowledge are substantial. Hundreds of millions of people are already engaged in sustained, cognitively intimate interactions with generative AI systems. If constitutive resonance is real, this is not a future concern to be anticipated. It is a present reality to be understood. The Cognitive Trojan Horse hypothesis (Maynard 2026) provides a specific mechanism for

how this might occur: LLM-based systems present signals of trustworthiness that bypass evolved epistemic vigilance, allowing the coupling to proceed without the critical friction that normally accompanies sustained influence from human interlocutors.

Cinema as ongoing methodology. If the argument of Section 5 holds—that popular cinema encodes pre-theoretical knowledge about constitutive resonance—then cinema becomes not merely a retrospective source of evidence but an ongoing resource for inquiry. As AI coupling intensifies, we should expect new films to stage new dimensions of the pattern, including dimensions that theoretical frameworks have not yet anticipated. The relationship between cinema and theory need not be one-directional: films may lead theory rather than merely illustrating it. Whether this can be developed into a rigorous methodology—building on Maynard (2018) and the tradition of philosophical film studies (Cavell 1981, Mulhall 2008)—is itself a productive question for further work.

8. Concluding Reflections

This paper has developed a single proposition through multiple lenses: philosophical, physical, cinematic, and reflexive. The proposition is that generative AI enters the temporal processes of human self-constitution—the ongoing acts of reasoning, narrating, deliberating, and choosing through which a self is assembled—and that this coupling is bidirectional, intensifying, and inseparable from the cognitive power the technology provides. In the paper this is termed constitutive resonance, and here it is argued that the physics of coupled systems is not merely a metaphor for this dynamic but a description of its structure.

At this point, three things should be said about where this work stands.

First, on what is established. That technologies participate in self-constitution is well supported across multiple philosophical traditions—from Stiegler's constitutive technics to Taylor's constitutive view of language to McLuhan's insight that the medium restructures cognition independently of content. That coupled dynamical systems produce emergent behaviors irreducible to either component is a mathematical fact. That popular cinema repeatedly stages the pattern of power inseparable from transformation is empirically observable across decades of independent filmmaking. These are the foundations on which the argument rests, and we believe they are secure.

Second, on what is proposed. The specific conjunction—temporal self-constitution, bidirectional coupling, the inseparability of power from transformation, dialogical linguistic mediation—is, as far as we have been able to determine, novel. No existing framework captures this conjunction, though many illuminate parts of it. The claim that popular cinema encodes pre-theoretical knowledge about this structure, and that the convergence across independent films constitutes a form of evidence, is a serious proposal that invites and requires further investigation. These are claims we advance with confidence while acknowledging they are open to legitimate challenge.

Third, on what remains genuinely open. Whether the coupling produces emergent cognitive states that are irreducible to either party. Whether the pharmacological balance

can be designed for. Whether informed consent is structurally possible when the coupling changes the self that is consenting. Whether AI can serve as the kind of other that Ricoeur's framework requires for self-constitution. These are among the most important questions facing anyone who takes seriously the possibility that AI is not merely changing what we can do but participating in who we are becoming.

This paper represents a trajectory through the first author's own works: from *Films from the Future* (Maynard 2018), which established the epistemic value of science fiction cinema for exploring emerging technologies; and through *Future Rising* (Maynard 2020), which examined how stories constitute our relationship with the future; to *AI and the Art of Being Human* (Abbott and Maynard 2025), which used purpose-written (and AI-generated) fictional stories to explore AI's impacts on identity, creativity, and what it means to live well. The present paper attempts to provide the theoretical architecture for what these earlier works intuited—and, in doing so, to name a phenomenon that it is believed will become increasingly central to how we understand the human relationship with technology.

It would be dishonest at this point not to acknowledge that this paper is itself an instance of what it describes. It was produced through a sustained dialogue between a human researcher and a generative AI, in which each contribution restructured the possibility space for the next. Whether this constitutes evidence for constitutive resonance or merely illustrates the human tendency to find patterns in one's own experience is a question that is left genuinely open. But the experience is consistent with the framework—and the difficulty of cleanly separating "the author's ideas" from "the AI's contributions" is precisely what the framework predicts.

But whatever one makes of this paper's own entanglement with its subject, the importance of the inquiry itself is not in question. Generative AI is being integrated into the cognitive lives of hundreds of millions of people at a speed that outpaces our capacity to understand what is happening. If constitutive resonance is even approximately correct—if the coupling does alter the processes of self-constitution, and if this alteration is inseparable from the technology's power—then we are not witnessing the rollout of a new tool. We are witnessing the emergence of a new kind of relationship between human beings and the technologies through which they become who they are. The task now is to understand that relationship clearly enough to navigate it wisely—and honestly enough to admit how much we do not yet know.

References

Abbott, J. and Maynard, A. D. (2025). AI and the Art of Being Human: A Practical Guide to Thriving with AI While Rediscovering Yourself in the Process. Waymark Works Publishing.

Abrams, J.J. and Johnson, R. (Directors). (2015–2019). Star Wars sequel trilogy [Film trilogy]. Lucasfilm/Disney.

Barad, K. (2007). Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning. Durham, NC: Duke University Press.

Bedau, M. A. and Humphreys, P. (Eds.). (2008). Emergence: Contemporary Readings in Philosophy and Science. Cambridge, MA: MIT Press.

Blomkamp, N. (Director). (2009). District 9 [Film]. TriStar Pictures.

Cameron, J. (Director). (2009). Avatar [Film]. 20th Century Fox.

Campbell, J. (1949). The Hero with a Thousand Faces. New York: Pantheon Books.

Card, O. S. (1985). Ender's Game. New York: Tor Books.

Cavell, S. (1981). Pursuits of Happiness: The Hollywood Comedy of Remarriage. Cambridge, MA: Harvard University Press.

Chiang, T. (1998). "Story of Your Life." In Starlight 2, edited by P. Hayden. New York: Tor Books.

Clark, A. (2003). Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence. Oxford: Oxford University Press.

Clark, A. (2008). Supersizing the Mind: Embodiment, Action, and Cognitive Extension. Oxford: Oxford University Press.

Clark, A. and Chalmers, D. J. (1998). "The Extended Mind." Analysis, 58(1), 7–19.

Chalmers, D. J. (2006). "Strong and Weak Emergence." In P. Clayton and P. Davies (Eds.), The Re-Emergence of Emergence. Oxford: Oxford University Press.

Columbus, C. et al. (Directors). (2001–2011). Harry Potter [Film series]. Warner Bros.

Combes, M. (2013). Gilbert Simondon and the Philosophy of the Transindividual. Translated by T. LaMarre. Cambridge, MA: MIT Press.

del Toro, G. (Director). (2013). Pacific Rim [Film]. Warner Bros.

Deleuze, G. (1994 [1968]). Difference and Repetition. Translated by P. Patton. New York: Columbia University Press.

Gadamer, H.-G. (2004 [1960]). Truth and Method. 2nd rev. ed. Translated by J. Weinsheimer and D. G. Marshall. London: Continuum.

Gallagher, S. (2005). How the Body Shapes the Mind. Oxford: Oxford University Press.

Garland, A. (Director). (2014). Ex Machina [Film]. A24/Universal Pictures.

Garland, A. (Director). (2018). Annihilation [Film]. Paramount Pictures.

Gondry, M. (Director). (2004). Eternal Sunshine of the Spotless Mind [Film]. Focus Features.

Haraway, D. J. (1985). "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." Socialist Review, 80, 65–108.

Haraway, D. J. (2003). The Companion Species Manifesto: Dogs, People, and Significant Otherness. Chicago: Prickly Paradigm Press.

Haraway, D. J. (2016). Staying with the Trouble: Making Kin in the Chthulucene. Durham, NC: Duke University Press.

Hayles, N. K. (2016). "Cognitive Assemblages: Technical Agency and Human Interactions." Critical Inquiry, 43(1), 32–55.

Hayles, N. K. (2017). Unthought: The Power of the Cognitive Nonconscious. Chicago: University of Chicago Press.

Hood, G. (Director). (2013). Ender's Game [Film]. Summit Entertainment.

Hung, A. T. W. (2024). "Charles Taylor on Constitutive Theory of Language and Self-Interpreting Animals." In C. Rico and J. Paniello (Eds.), From Logos to Person. Cham: Springer.

Jackson, P. (Director). (2001–2003). The Lord of the Rings [Film trilogy]. New Line Cinema.

Jonze, S. (Director). (2013). Her [Film]. Warner Bros.

Kauffman, S. A. (1995). At Home in the Universe: The Search for Laws of Self-Organization and Complexity. Oxford: Oxford University Press.

Kauffman, S. A. (2000). Investigations. Oxford: Oxford University Press.

Loock, L. (2025). "The Extracted Mind." Synthese, 205, 133. https://doi.org/10.1007/s11229-025-04962-3

Lucas, G. et al. (Directors). (1977–2019). Star Wars [Film saga]. Lucasfilm/Disney.

Massumi, B. (2002). Parables for the Virtual: Movement, Affect, Sensation. Durham, NC: Duke University Press.

Maturana, H. R. and Varela, F. J. (1980). Autopoiesis and Cognition: The Realization of the Living. Dordrecht: D. Reidel.

Maturana, H. R. and Varela, F. J. (1987). The Tree of Knowledge: The Biological Roots of Human Understanding. Boston: Shambhala.

Maynard, A. D. (2018). Films from the Future: The Technology and Morality of Sci-Fi Movies. Miami: Mango Publishing.

Maynard, A. D. (2020). Future Rising: A Journey from the Past to the Edge of Tomorrow. Coral Gables, FL: Mango Publishing.

Maynard, A. D. (2026). "The AI Cognitive Trojan Horse: How Large Language Models May Bypass Human Epistemic Vigilance." arXiv preprint, arXiv:2601.07085.

McLuhan, M. (1962). The Gutenberg Galaxy: The Making of Typographic Man. Toronto: University of Toronto Press.

McLuhan, M. (1964). Understanding Media: The Extensions of Man. New York: McGraw-Hill.

McLuhan, M. and McLuhan, E. (1988). Laws of Media: The New Science. Toronto: University of Toronto Press.

Mulhall, S. (2008). On Film. 2nd ed. London: Routledge.

Nolan, C. (Director). (2010). Inception [Film]. Warner Bros.

Nolan, C. (Director). (2014). Interstellar [Film]. Paramount Pictures.

Nussbaum, M. C. (1990). Love's Knowledge: Essays on Philosophy and Literature. Oxford: Oxford University Press.

Pavanini, M. (2024). "Postphenomenology and Human Constitutive Technicity: How Advances in AI Challenge Our Self-Understanding." Journal of Human-Technology Relations, 2(1), 1–25.

Polanyi, M. (1966). The Tacit Dimension. Garden City, NY: Doubleday.

Propp, V. (1968 [1928]). Morphology of the Folktale. 2nd rev. ed. Translated by L. Scott. Austin: University of Texas Press.

Rees, T. (2025). "Why AI Is a Philosophical Rupture." Noema Magazine, February 4, 2025. https://www.noemamag.com/why-ai-is-a-philosophical-rupture/

Ricoeur, P. (1984–1988). Time and Narrative, Volumes 1–3. Translated by K. McLaughlin and D. Pellauer (vol. 1) and K. Blamey and D. Pellauer (vols. 2–3). Chicago: University of Chicago Press.

Ricoeur, P. (1992). Oneself as Another. Translated by K. Blamey. Chicago: University of Chicago Press.

Rosa, H. (2016). Resonanz: *Eine Soziologie der Weltbeziehung*. Berlin: Suhrkamp.

Rosa, H. (2019). Resonance: A Sociology of Our Relationship to the World. Translated by J. C. Wagner. Cambridge: Polity Press.

Rowling, J. K. (1997–2007). Harry Potter [Novel series]. London: Bloomsbury.

Russo, A. and Russo, J. (Directors). (2018–2019). Avengers: Infinity War; Avengers: Endgame [Films]. Marvel Studios.

Shen, H. et al. (2024). "Towards Bidirectional Human-AI Alignment: A Systematic Review for Clarifications, Framework, and Future Directions." arXiv:2406.09264.

Simondon, G. (2020 [1958]). Individuation in Light of Notions of Form and Information. Translated by T. Adkins. Minneapolis: University of Minnesota Press.

Sperber, D., Clément, F., Heintz, C., Mascaro, O., Mercier, H., Origgi, G., and Wilson, D. (2010). "Epistemic Vigilance." Mind and Language, 25(4), 359–393.

Stiegler, B. (1998). Technics and Time, 1: The Fault of Epimetheus. Translated by R. Beardsworth and G. Collins. Stanford, CA: Stanford University Press.

Stiegler, B. (2009). Technics and Time, 2: Disorientation. Translated by S. Barker. Stanford, CA: Stanford University Press.

Stiegler, B. (2011). Technics and Time, 3: Cinematic Time and the Question of Malaise. Translated by S. Barker. Stanford, CA: Stanford University Press.

Stiegler, B. (2013). What Makes Life Worth Living: On Pharmacology. Translated by D. Ross. Cambridge: Polity Press.

Taylor, C. (1985). Human Agency and Language: Philosophical Papers 1. Cambridge: Cambridge University Press.

Taylor, C. (1989). Sources of the Self: The Making of the Modern Identity. Cambridge, MA: Harvard University Press.

Taylor, C. (2016). The Language Animal: The Full Shape of the Human Linguistic Capacity. Cambridge, MA: Harvard University Press.

Tolkien, J. R. R. (1954–1955). The Lord of the Rings. London: Allen & Unwin.

Toner, H. (2025). Unresolved debates about the future of AI. Rising Tide (Substack), 30 June. Available at: https://helentoner.substack.com/p/unresolved-debates-about-the-future (Accessed: February 2026).

Vallor, S. (2015). "Moral Deskilling and Upskilling in a New Machine Age." Philosophy & Technology, 28, 107–124.

Vallor, S. (2016). Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting. Oxford: Oxford University Press.

Vallor, S. (2024). The AI Mirror: How to Reclaim Our Humanity in an Age of Machine Thinking. Oxford: Oxford University Press.

VanderMeer, J. (2014). Annihilation. New York: Farrar, Straus and Giroux.

Varela, F. J., Thompson, E., and Rosch, E. (1991). The Embodied Mind: Cognitive Science and Human Experience. Cambridge, MA: MIT Press.

Verbeek, P.-P. (2011). Moralizing Technology: Understanding and Designing the Morality of Things. Chicago: University of Chicago Press.

Villeneuve, D. (Director). (2016). Arrival [Film]. Paramount Pictures.

Villeneuve, D. (Director). (2017). Blade Runner 2049 [Film]. Warner Bros.

Wachowski, L. and Wachowski, L. (Directors). (1999). The Matrix [Film]. Warner Bros.

Whannell, L. (Director). (2018). Upgrade [Film]. Blumhouse Productions.

Zahavi, D. (2014). Self and Other: Exploring Subjectivity, Empathy, and Shame. Oxford: Oxford University Press.

AI Use Statement

This paper was developed through a sustained dialogue between the author and Claude (Opus 4.6 with Extended Thinking). The author was responsible for the intellectual foundations, driving questions, framings around resonant coupling and science fiction cinema, and connections to literatures that explore human-technology dynamics across multiple disciplines. Dialogue with Claude helped articulate and extend the philosophical connections between frameworks, refine the structural analogy with coupled oscillatory systems, and stress-test arguments against the source literature. It also helped enhance the clarity and coherence of a number of arguments presented in the paper, and led to the coining of the term "constitutive resonance." The paper was iteratively drafted through sustained human–AI dialogue, with the author directing the argument and structure and Claude generating prose that was then revised and verified by the author. All citations and source attributions were systematically verified by the author, with Claude used as a research tool to cross-check bibliographic details, confirm the accuracy of claims attributed to specific sources, and identify misattributions — a process that led to several substantive corrections.