Towards an Operational Hermeneutics of AI Artifacts

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1. Introduction

The contemporary world is saturated with artifacts. Our engagements–from writing and reading to algorithmic generation and synthetic interaction–are increasingly mediated by artificial systems. The rise of *generative artificial intelligence* (AI) has introduced a new class of artifacts that challenge both traditional aesthetics and classical hermeneutics. These *AI artifacts*–texts, images, sounds, simulations, and designs produced by machine learning systems–confront us with products that appear meaningful, purposive, and even creative, yet emerge through non-human processes of computation and pattern extraction.

The question that motivates this paper is hermeneutical at its core: how are we to interpret AI artifacts, and what is the mode of their being and operation? While there exists a substantial body of literature on the *ethics* of AI and on *interpretability* as a technical problem, there is as yet no systematic philosophical framework for interpreting the *outputs* of AI models as artifacts in the classical sense. This paper proposes that my own framework of Operational Hermeneutics, developed in the 1990s at the University of Guelph, provides precisely such a foundation.

Operational Hermeneutics conceives texts and utterances as operational artifacts–structures designed to *do* something, to operate upon interpreters and contexts through their internal "writs" (assertive, directive, commissive, expressive, and declarative). The interpreter engages such artifacts by *sourcing* their operations–actuating, manipulating, utilizing, or actualizing them in accordance with personal or institutional projects. This model, originally formulated for linguistic and textual interpretation, can now be extended to encompass AI-generated artifacts, whose modes of production and engagement parallel, yet transform, the traditional hermeneutic situation.

In what follows, I outline the existing scholarship linking hermeneutics and artificial intelligence, clarify the notion of the *AI artifact*, trace the philosophical lineage of the term *artifact* from Aristotle to Herbert Simon, and then demonstrate how the

principles of Operational Hermeneutics illuminate the interpretive, operational, and ethical dynamics of engaging AI-generated outputs. The ultimate aim is to inaugurate a program of research in the Operational Hermeneutics of AI Artifacts, to be pursued collaboratively through multiple colleges, departments and centers at the University of Guelph (Ontario – Canada), Sheikh Mohammad bin Zayed University for the Humanities (Abu Dhabi), Sheikh Mohammad bin Zayed University for Artificial Intelligence, Kalam Research and Media, and Agathon Systems Ltd.–linking philosophical inquiry, technological design, and ethical governance.

2. Hermeneutics and AI: A Review of the Literature

Although hermeneutics has traditionally concerned itself with human texts, art, and action, recent scholarship has begun to explore how interpretive theory may apply to artificial systems. The literature falls into three main clusters: (1) theoretical reflections on AI as an interpreter, (2) hermeneutic analysis of AI-generated outputs, and (3) post-phenomenological studies of technological mediation and sense-making.

2.1 AI as an Interpreter

Rémy Demichelis, in *"The Hermeneutic Turn of AI: Are Machines Capable of Interpreting?"* (2024), argues that deep-learning systems introduce a "hermeneutic turn" in computation by shifting human-machine relations from representation to *interpretation*. He re-reads Gadamer and Ihde to claim that meaning in AI arises dialogically, in the fusion of horizons between human and algorithmic agents.

Similarly, Thomas Youvan's preprint *"Applying Hermeneutic Principles to AI: Enhancing Interpretability, Interaction and Ethical Reflection in Artificial Intelligence Systems"* (2024) proposes integrating hermeneutic concepts–context, historicity, and dialogical openness–into system design, thereby improving both transparency and ethical responsiveness. These studies converge on the insight that AI interpretability cannot be reduced to explainable models; it must be understood as *participatory understanding* within a hermeneutic horizon.

2.2 Hermeneutics of AI-Generated Artifacts

A second line of inquiry examines the *products* of AI rather than the systems themselves. Gu Pengfei's article *"On the Hermeneutics of AI Art"* (2023) explores algorithmic creativity and the interpretive status of machine-generated artworks, arguing that AI art discloses "algorithmic consciousness" and necessitates a redefinition of authorial intention. Henrickson's *"The Hermeneutics of Computer-Generated Texts"* (2022) in *Configurations* performs close readings of GPT-2 outputs to show that such texts compel us to revisit the boundaries between automatic generation and meaningful authorship.

Together, these works underscore that AI artifacts, though machine-produced, are *interpretively active*: they invite readings, evoke affect, and influence social practice. They thus occupy the same ontological space as other cultural artifacts, even as their genesis differs radically.

2.3 Ethical and Material Hermeneutics in AI Contexts

The ethical implications of AI hermeneutics are most sharply formulated by Nicholas Rebera, who introduces the notion of "hermeneutic harm." In his paper *"Hidden Risks: Artificial Intelligence and Hermeneutic Harm"* (2025) in *AI & Society*, Rebera contends that opaque AI systems can damage our capacity to make sense of experience by substituting algorithmic classifications for human interpretive agency. This concept parallels earlier feminist epistemology on *hermeneutical injustice* but locates the harm in technological mediation rather than social exclusion.

Relatedly, post-phenomenological and material-hermeneutic approaches–initiated by Don Ihde and expanded by Peter-Paul Verbeek–provide a framework for analyzing how technologies *mediate* human perception and meaning. Verbeek's *Moralizing Technology* (2011) and subsequent essays argue that every artifact co-constitutes moral and interpretive horizons. Recent studies extend this to digital and AI systems, highlighting how algorithmic infrastructures shape what can be perceived, said, or done.

2.4 Gaps and Opportunities

Despite these advances, there remains a significant lacuna: few works address AI artifacts as operational entities–objects designed to act, not merely to signify. The prevailing literature discusses interpretive meaning but neglects the *performative and operative* dimensions of AI outputs. Here, *Operational Hermeneutics* provides a missing conceptual bridge. By construing texts as operational artifacts endowed with "operating power," it equips us to treat AI outputs as *machines of signification*–entities that operate upon users, institutions, and societies.

3. The Historical Lineage of the Notion of Artifact

The concept of the *artifact* has served as one of philosophy's most persistent mediators between *making* and *meaning*. From Aristotle's *poiesis* to Simon's *Sciences of the Artificial*, the artifact has been the privileged object through which philosophers have examined how intention, design, and purpose shape the human world. In tracing this lineage, we find a progressive deepening of the notion of *making*–from material fabrication to symbolic production and, finally, to informational generation. The *AI artifact* may thus be seen as the most recent expression of a millennia-long reflection on the human capacity to transform nature through reason and craft.

3.1 Aristotle: Poiesis and the Four Causes

In *Physics* II and *Metaphysics* VII, Aristotle establishes the fundamental distinction between *physis* (that which grows of itself) and *techne* (that which is made). Artifacts, unlike natural beings, do not contain within themselves the principle of their own motion. They come into being through *poiesis*–the act of bringing-forth–wherein the artisan imposes a form upon matter for an intended purpose. Every artifact can therefore be explained through the four causes: material (what it is made of), formal (its shape or essence), efficient (its maker), and final (its end or telos).

This schema remains instructive for thinking about AI artifacts. The *material cause* becomes the digital substrate–data, code, and energy. The *formal cause* lies in the model architecture and training patterns. The *efficient cause* corresponds to the combined agencies of programmers, datasets, and prompt engineers. The *final cause*–often the most ambiguous–resides in the system's goal or the user's intention. Aristotle's teleological analysis therefore anticipates the layered causal complexity of AI production and interpretation.

3.2 Ibn Khaldūn: Crafts (*Ṣinā'āt*) and the Civilizational Logic of Making

More than a millennium later, the North-African philosopher and historian 'Abd al-Raḥmān ibn Khaldūn (1332–1406) provided an early sociology of artifacts in *al-Muqaddimah*. He identified *crafts* (*ṣinā'āt*) as the highest expression of human sociability and intelligence, emerging when surplus and urbanization make specialization possible. Crafts transform raw nature into purposive forms and transmit skills across generations, thereby constituting the very fabric of civilization.

Ibn Khaldūn's analysis anticipates both the economics of design and the ethics of workmanship: an artifact embodies the discipline, technique, and aesthetic of its maker's milieu. In contemporary terms, AI systems represent a new *'ilm al-ṣinā'a*–a craft of algorithmic production–whose social conditions (data accumulation, computational capital, collaborative labor) mirror his account of civilizational refinement through collective expertise.

3.3 al-Qalqashandī: The Writ (*Maktūb*) as Crafted Instrument

In the fifteenth century, the Egyptian chancery scholar Aḥmad al-Qalqashandī (1355–1418), in his monumental *Ṣubḥ al-A'shā fī Ṣinā'at al-Inshā'*, offered a fully developed theory of writing as a *craft of administration* (*ṣinā'at al-inshā'*). For al-Qalqashandī, official correspondence (*maktūbāt*) were not mere carriers of meaning but *crafted instruments of governance*–structured, formulaic artifacts that exercised performative power. The letter itself "acts" when properly written, sealed, and delivered.

This conception foreshadows the idea, central to Operational Hermeneutics, that a text is an *operational artifact*: a designed composition of writs capable of *acting* upon its recipient. The AI-generated memorandum or legal draft stands today as the digital successor of al-Qalqashandī's *maktūb*, continuing the lineage of language that governs.

3.4 Leonardo da Vinci: Renaissance Making and the Unity of Art and Technique

With Leonardo da Vinci (1452–1519), the Renaissance united artistic creation with mechanical invention. His notebooks–filled with anatomical sketches, flight machines, and optical experiments–exemplify the ideal of the *uomo universale*, in whom theory and fabrication converge. For Leonardo, *making* is itself a mode of *knowing*; design is a disciplined inquiry into nature's operational principles.

The AI engineer and the generative artist both inherit this *Leonardian* synthesis. The algorithmic model, like a mechanical contrivance, is a design that makes manifest

the *laws of operation*. The aesthetic and the technical are no longer distinct domains but aspects of one operational continuum.

3.5 Francis Bacon: The Human *Opus* and the Re-Engineering of Nature

Francis Bacon (1561–1626) transformed the classical contemplation of nature into an organized *operation upon nature*. In *Novum Organum* (1620) and *New Atlantis* (1627), he proposed that knowledge should yield "the enlargement of man's estate" through experiments and instruments–what he called *operatio et opus humanum*. Bacon's "House of Solomon" institutionalized invention as collective labor.

His vision marks a decisive shift: artifacts become *experiments*, and making becomes a method of discovery. AI research, with its laboratories of iterative modeling, may be read as the contemporary *House of Solomon*–a Baconian continuation of knowledge as engineered operation.

3.6 Giambattista Vico: *Verum Factum* and the Epistemology of the Made

Giambattista Vico (1668–1744) grounded truth itself in human making through his celebrated *verum ipsum factum* principle: "The true is precisely what is made." Whereas nature, made by God, remains opaque to finite understanding, the products of human artifice–laws, languages, myths, histories–are intelligible because we have fashioned them.

The AI artifact literalizes Vico's thesis. Machine-generated content is *factum*–made through human-designed systems–and thus subject to hermeneutic understanding. Yet because its fabrication is partly delegated to non-human processes, the AI artifact also complicates the boundary of what counts as *our* making, pressing Vico's maxim into the digital age.

3.7 Roman Ingarden: The Stratified Work of Art

The Polish phenomenologist Roman Ingarden (1893–1970) extended Husserlian ontology to aesthetic objects in *The Literary Work of Art* (1931). He described the artwork as a *stratified object*: composed of multiple ontological layers–sound formations, units of meaning, schematized aspects, and concretizations by readers. The work's fullness emerges only through acts of interpretation that "complete" it.

AI artifacts, too, are stratified: a computational layer (tokens or pixels), a semantic layer (generated meanings), a schematic layer (genre, style, framing), and a concretizing layer (user interpretation and use). Ingarden's model thus provides an early phenomenology of multi-layered artifacts that can now be extended to the algorithmic domain.

3.8 Nicolai Hartmann: Levels of Being and the Ontology of Artifacts

Building on but expanding beyond phenomenology, Nicolai Hartmann (1882–1950) developed a *layered ontology* distinguishing the material, organic, psychic, and spiritual levels of being. Each level has its own laws yet interacts with others through upward

and downward dependencies. Artifacts occupy a special position in this structure: they are material entities imbued with psychic and spiritual form through intentional design.

Hartmann's stratification clarifies how AI artifacts traverse ontological levels: physical hardware (material), programmed learning (organic-like adaptation), interface cognition (psychic interaction), and symbolic meaning (spiritual layer). The AI artifact is not reducible to any one stratum but exists through their interrelation–a conception fully compatible with Operational Hermeneutics' emphasis on operational layers.

3.9 Herbert A. Simon: The Sciences of the Artificial

The twentieth century's most explicit philosophy of artifacts appears in Herbert A. Simon's *The Sciences of the Artificial* (1969; rev. 1996). For Simon, artifacts are "interfaces between an inner environment and an outer environment," designed to satisfy human purposes under constraints. Design, not discovery, becomes the paradigm of rationality.

Simon's systems perspective culminates the historical trajectory begun with Aristotle: the artifact as a *mediating system* that connects intention, environment, and operation. This model now describes AI systems with remarkable precision. Each AI artifact negotiates between an inner computational environment (models, data) and an outer human environment (users, institutions). Its success depends on adaptive fit across this boundary–an operational condition that also defines hermeneutic engagement.

3.10 From Making to Modeling: The Continuum of Artifacts

From Aristotle's craftsman to Simon's designer, the artifact has evolved from the *made thing* to the *modeled system*. Yet the underlying structure persists: artifacts embody purpose, design, and operation. In this sense, AI artifacts are not anomalous novelties but the latest instantiation of an enduring philosophical lineage. They extend the reach of human *poiesis* into the digital and generative realm–where *operation itself* becomes the new material of artifice.

4. From Texts to AI Artifacts: Operational Hermeneutics

If the previous section established the long trajectory of philosophical reflection on *making*–from Aristotelian poiesis to Simon's design science–the present section turns to the interpretive core of that lineage: how artifacts *operate* and how we *engage* them. My own framework of Operational Hermeneutics, developed in the 1980s and 1990s at the University of Guelph schools of Engineering and then Philosphy, sought to overcome the aporiae that beset classical hermeneutics by reconceiving both *texts* and *interpretation* in operational terms. That framework, I argue here, is directly applicable to the interpretive problems of AI artifacts.

4.1 The Operational Turn in Hermeneutics

Traditional hermeneutics oscillates between two poles: the activity of the interpreter and the autonomy of the text. Schleiermacher, Dilthey, Betti, and Hirsch treated interpretation as the *reconstruction* of authorial intention, whereas Gadamer and Ricoeur emphasized the *fusion of horizons* and the event of understanding. These approaches, while rich, leave unresolved a set of contradictions–what I once called "aporiae" of contemporary hermeneutics–concerning authorship, intention, method, and automaticity.

Operational Hermeneutics addresses these contradictions by treating a text not as a passive object but as an operational artifact–a designed system of actions. Every text, I proposed, is composed of *writs*–units of linguistic operation that can be assertive, directive, commissive, expressive, or declarative. Each writ type is intentionally designed by an author (A) to perform specific operations upon an interpreter (B), within the shared competence of a language (L). Interpretation, therefore, is not merely *understanding* but *engagement*: it is the sourcing, activation, and utilization of a text's operational powers.

This reconceptualization introduced into hermeneutics what had hitherto been absent–a genuine operational analysis. Interpretation becomes a form of *operation-sourcing* within a system composed of agent, artifact, and context. Such an analysis, grounded in both engineering and linguistic analogies, allows hermeneutics to move beyond metaphors of "meaning" toward a dynamic theory of *doing*.

4.2 The Model of the Operational Artifact

An operational artifact, as I defined it, is a *human-made structure deliberately arranged to fulfill a purpose*. Like a machine, it possesses design, components, and operating power. The author's intention is not a hidden mental state but a *functional architecture* embedded in the artifact's design. Interpretation, correspondingly, is the activation of that architecture.

The interpreter (B), in engaging a text (T), may do so in several modes:

1. **Actuating** – allowing the artifact to operate upon oneself (e.g., being moved, persuaded, or commanded).
2. **Manipulating** – handling the artifact to extract or modify its operations.
3. **Utilizing** – deploying its operations for other projects or goals.
4. **Actualizing** – realizing one's own projects by performing the operations embedded in the artifact.

These forms of engagement, initially developed for textual interpretation, map with remarkable precision onto the human interaction with AI systems. In both cases, we confront operational entities that act, react, and transform contexts through their designed capacities.

4.3 AI Outputs as Operational Artifacts

AI systems such as large language models, generative adversarial networks, and diffusion engines produce outputs that are *artifacts of operation*: they are not static representations but executable responses within dialogical or interactive environments. Each generated text, image, or code snippet is the product of *distributed design*– the combined agency of model architects, dataset curators, interface designers, and prompting users.

When an AI model generates a paragraph, it is effectively constructing a *complex of writs*:

- **Assertives** (statements, descriptions),
- **Directives** (instructions, suggestions),
- **Commissives** (promises, plans),
- **Expressives** (aesthetic or affective outputs),
- **Declaratives** (synthetic decisions or classifications).

These writs, to borrow my earlier formulation, possess operating power: they perform acts that affect interpreters and environments. The AI artifact, therefore, is not a mere output but a *designed operator* within a socio-technical field.

Just as the classical text embeds its author's design, the AI artifact embeds the *model's operational architecture*: probabilistic weighting, contextual sensitivity, and optimization goals constitute its "embedded intention." The hermeneutical challenge is thus to engage a product whose design is multi-layered and whose authorial agency is distributed and partially opaque.

4.4 The Interpreter's Engagement: From Reading to Sourcing

Operational Hermeneutics insists that interpretation is a sourcing process–an engagement through which interpreters draw upon artifacts for operations that serve their own projects. In AI contexts, the user assumes precisely this role. Prompting, fine-tuning, editing, and deploying AI outputs are all forms of *sourcing engagements*: they transform the interpreter into a co-operator.

For instance:

- A researcher who uses an AI model to summarize literature is utilizing the artifact's operations.
- A designer who modifies a generated image is manipulating its operational form.
- A user persuaded by a chatbot's tone is actuating its expressive writs.
- A developer integrating AI code into an application is actualizing its operational potential.

In each case, the interpreter's project defines the engagement type, and the AI artifact's design constrains and enables the operations available. Hermeneutics, accordingly, must expand its focus from the "text-reader relation" to the *human–machine–artifact system*.

4.5 Automaticity and the Operating Power of the Artifact

A crucial contribution of Operational Hermeneutics was its resolution of the paradox of *automaticity*: interpretation feels simultaneously active and passive. We interpret, yet meaning "happens to us." This duality, I argued, arises because artifacts themselves possess *operating power*–they act automatically upon competent interpreters. The same automaticity is now magnified in AI engagement.

AI systems *generate* meaning automatically; their operations unfold through internal procedures that are opaque even to their creators. The user's interpretive experience thus mirrors, at a new technological level, the dynamic I identified in textual hermeneutics: the artifact's *operation* co-constitutes the act of understanding. To interpret an AI artifact is to encounter a hybrid automaticity–the confluence of human linguistic competence and machine learning processes.

4.6 Control, Valuation, and Ethical Sourcing

Operational Hermeneutics also foregrounds *control* and *valuation* factors: interpretation is shaped by norms, goals, and ethical evaluations. When applied to AI, this insight becomes foundational for AI ethics. Each act of engagement–prompting, interpreting, or deploying an AI artifact–entails control parameters (privacy, bias, fidelity) and valuation criteria (truth, fairness, beauty, utility).

Hermeneutic responsibility, in this context, means recognizing how our *sourcing engagements* participate in larger operational chains. Misuse of AI outputs–plagiarized, falsified, or weaponized artifacts–represents not a failure of technology but of hermeneutic discipline. The interpreter must become an *ethical engineer of meaning*, aware that every operation sourced from an artifact extends its effects into the shared world.

4.7 Toward a Model of AI Engagement

Integrating the principles of Operational Hermeneutics with Simon's design theory allows us to visualize AI interaction as a triadic system:

Component	Description	Hermeneutic Function
Inner Environment	Model architecture, data, algorithms	Encodes operational design (embedded intention)
Artifact Interface	Generated output (text, image, code)	Mediates between machine and human meaning
Outer Environment	User, institution, society	Context of interpretation and ethical consequence

Interpretation occurs at the *interface*, where human and machine operations meet. The hermeneutic task is to analyze and govern this interface–clarifying how operations are sourced, how intentions are distributed, and how meanings and values emerge.

4.8 Hermeneutic Renewal in the Age of AI

By reframing interpretation as operational engagement, Operational Hermeneutics dissolves the outdated opposition between humanist meaning and technological mechanism. It reveals that *making* and *interpreting* are not distinct but continuous: every act of reading is itself a small act of re-making. AI systems, in automating certain dimensions of *poiesis*, compel us to articulate anew the principles of responsible engagement.

The hermeneutics of AI artifacts, grounded in operational analysis, thus extends the very logic of the *artificial*: the designed and the interpretable converge. What Bacon envisioned as the human *opus*, and Vico as the *factum verum*, now re-emerges as an *operational ecology* of human-machine understanding. Hermeneutics, long the art of reading, becomes once more the art of *operating with meaning*.

5. Modes of Engagement and Hermeneutic Operations

If texts and AI outputs alike are operational artifacts, then interpretation is best understood as a series of engagements through which operations are sourced, modified, or extended. Operational Hermeneutics distinguishes four principal modes–actuating, manipulating, utilizing, and actualizing–each defined by a distinct relation between interpreter and artifact. In the digital age these modes describe the full ecology of human–AI interaction, from passive reception to co-creative transformation.

5.1 Actuating: Being Operated Upon

To *actuate* an artifact is to allow its operations to act upon oneself. In textual hermeneutics this refers to the reader moved, persuaded, or commanded by a text's writs; in AI contexts it describes moments when an algorithmic output exerts affective or cognitive force on a user. Recommendation engines that shape attention, conversational agents that console, or automated news feeds that frame perception exemplify actuating engagements. The user becomes the *site* where the artifact operates.

This raises critical questions about hermeneutic agency and manipulability. As Don Ihde notes, technologies "amplify and reduce" aspects of experience: they render some interpretations vivid while obscuring others. When a user uncritically accepts an AI summary or sentiment analysis, the artifact's operational power replaces interpretive labor with algorithmic suggestion. Operational Hermeneutics therefore calls for *reflexive actuation*: awareness of how one's understanding is being operated upon. Hermeneutic literacy must now include *algorithmic literacy*–the capacity to recognize the operational vectors embedded in AI outputs.

5.2 Manipulating: Operating Upon the Artifact

Manipulation reverses the direction of actuation: the interpreter handles the artifact, adjusting or reconfiguring its operations. In classical hermeneutics this corresponds to critical commentary, textual emendation, or rhetorical reframing; in AI practice it appears as prompt engineering, parameter tuning, and fine-grained editing of generated

material. Users reshape the artifact's performance through iterative feedback.

This mode exemplifies the *dialogical* nature of AI interpretation: meaning emerges through cycles of query and response. As Thomas Youvan observes, applying hermeneutic principles to AI design entails creating systems that "remain open to iterative dialogue and contextual correction." Manipulation is thus a form of *interpretive authorship*, in which the user co-constructs the artifact's final form. The hermeneutic circle becomes an operational loop–a feedback system of mutual adjustment between human and machine.

Yet manipulation also introduces asymmetry: not all operations are equally accessible. Opaque architectures limit the interpreter's capacity to modify the artifact's internal logic. Nicholas Rebera's warning about *hermeneutic harm* applies here: when interfaces foreclose genuine manipulation, users suffer a "loss of sense-making capacity." Operational Hermeneutics advocates for *transparent manipulability* as a design-ethical principle.

5.3 Utilizing: Deploying Operations for External Projects

Utilization occurs when interpreters employ an artifact's operations to achieve purposes beyond the act of interpretation itself. Writers use linguistic artifacts to communicate; engineers use formulas to build; and today, users employ AI artifacts to summarize research, generate code, design architecture, or compose music. The artifact's operation becomes a *tool* within another operational chain.

From a hermeneutic standpoint, utilization extends Gadamer's notion of *application* (*Anwendung*)–the integration of understanding into practical action. However, in the AI age, application is automated: the artifact not only informs but *performs*. Its output may directly enact legal, medical, or financial decisions. This introduces a new category of performative artifacts whose operations have immediate world-altering consequences.

Operational Hermeneutics frames such artifacts as *delegated operators*. Responsibility for their actions cannot be dissolved into the system; it remains distributed among the human agents who source, deploy, and evaluate the operations. Thus, utilization demands ethical sourcing protocols analogous to engineering standards: each engagement should include traceability of data origins, acknowledgment of bias potentials, and explicit statement of intended use.

5.4 Actualizing: Being Put to Work by the Artifact

The most complex mode, actualization, occurs when the interpreter's project is itself transformed by the artifact's operations. Here the human is *re-operated*–enlisted into the artifact's workflow. In textual hermeneutics this corresponds to existential transformation through reading–what Ricoeur called "the self in front of the text." In AI engagement it manifests when users internalize algorithmic processes: adapting thinking to predictive models, structuring creativity around machine feedback, or redefining knowledge work through co-generation.

Actualization exposes the mutual constitution of human and artificial agency. Roman Ingarden's theory of concretization already foresaw that works of art achieve completion only through the participation of the perceiver. AI artifacts radicalize this participation: they require ongoing user input to exist at all. Every prompt, correction, or continuation contributes to the artifact's *realization*. The interpreter becomes both *reader* and *component*.

This fusion invites an ethics of co-actualization. When systems like GPT or DALL·E reshape linguistic and visual habits, they re-engineer the horizons within which meaning is possible. Operational Hermeneutics urges attentiveness to such transformations: actualization must remain *reciprocal* rather than *subsumptive*. The goal is not for human cognition to dissolve into algorithmic process, but for operational exchange to enrich both sides of the interpretive equation.

5.5 Cross-Mode Dynamics and Hybrid Engagements

In practice, these modes rarely occur in isolation. An AI interaction typically begins with actuation (receiving output), proceeds to manipulation (refining prompts), extends to utilization (applying results), and may culminate in actualization (altered cognition or behavior). This dynamic cycle constitutes what may be termed the hermeneutic operation-loop–a recursive system of meaning production characteristic of AI-mediated environments.

Analyzing AI artifacts through these modes provides a diagnostic instrument for designers and ethicists alike. For each engagement we may ask:

- *What operations are performed?*
- *Who controls their parameters?*
- *What values guide their execution?*
- *What transformations occur in interpreter and context?*

Answering these questions operationalizes hermeneutics itself: interpretation becomes a method of auditing, mapping, and redesigning the flows of agency within socio-technical systems.

5.6 Toward a Taxonomy of AI Hermeneutic Operations

Synthesizing the four modes yields a preliminary taxonomy for the hermeneutics of AI artifacts:

Mode of Engagement	Hermeneutic Relation	AI Example	Ethical Focus
Actuating	Artifact → Interpreter	Emotion-modulating chatbots, recommender systems	Awareness, autonomy, susceptibility
Manipulating	Interpreter ↔ Artifact	Prompt iteration, model fine-tuning	Transparency, control, feedback access

Mode of Engagement	Hermeneutic Relation	AI Example	Ethical Focus
Utilizing	Artifact → External Task	Code or policy generation, automated analysis	Accountability, provenance, intended use
Actualizing	Interpreter ↔ Operational World	Cognitive co-creation, workflow automation	Identity, dependence, transformative impact

Such a taxonomy enables comparative studies across media and disciplines. A legal brief generated by AI and an artwork synthesized by a neural network may differ in function, yet both can be analyzed in terms of how they *operate*, *are operated upon*, and *re-operate* the world.

5.7 The Ethical Arc of Engagement

Each engagement mode traces an ethical arc from susceptibility (being acted upon) to responsibility (acting with awareness). Operational Hermeneutics thus complements emerging frameworks in AI ethics by grounding normative evaluation in *engagement structures* rather than in abstract principles. What matters is not only *what* an artifact means or does, but *how* it operates and *how* we cooperate with it.

Rebera's concept of hermeneutic harm can be reframed as the breakdown of this ethical arc–when actuating dominates and manipulation or reflection ceases. Conversely, genuine hermeneutic health arises when all modes coexist dynamically, allowing interpreters to oscillate between receptivity and agency. Cultivating such balance is the central pedagogical task of the new discipline this paper proposes: the Operational Hermeneutics of AI Artifacts.

6. Ethical and Interpretive Consequences

The hermeneutics of AI artifacts culminates in an ethics of engagement. Once we recognize AI outputs as operational artifacts–objects that act, react, and transform through their design–the question of interpretation becomes inseparable from the question of responsibility. Every engagement–whether actuating, manipulating, utilizing, or actualizing–embodies a moral relation between interpreter and artifact. Hermeneutics thus converges with ethics not at the level of doctrine, but at the level of *operation*.

6.1 From Understanding to Responsibility

Classical hermeneutics has always carried implicit ethical dimensions. Gadamer's *Truth and Method* situates understanding within the virtue of openness (*Offenheit*), a readiness to let the other speak. Ricoeur extends this into the ethics of self-understanding: to interpret responsibly is to respond to the "call" of the text. In both cases, *interpretation is relation*–a relational virtue grounded in attentiveness and fidelity.

In the AI age, this relationality expands beyond human interlocutors to include artificial agents and their artifacts. The interpreter's responsibility now extends to:

- **the artifact itself,** as an entity embodying design and embedded intention;
- **the networks of authorship,** including programmers, dataset curators, and institutions; and
- **the social field,** within which the artifact's operations have tangible consequences.

Operational Hermeneutics situates this triadic responsibility within the act of *sourcing operations*. To interpret is to engage an operational system; therefore, ethical responsibility entails awareness of the *operational chain* that one activates, transmits, or modifies.

6.2 Hermeneutic Harm and Algorithmic Injustice

Nicholas Rebera's concept of hermeneutic harm provides a crucial link between interpretive ethics and technological governance. Drawing on Miranda Fricker's notion of *hermeneutical injustice*, Rebera argues that AI systems can damage our interpretive capacities by mediating perception and classification in opaque ways. When algorithmic systems determine what is visible, credible, or sayable, they restrict the horizon of understanding itself.

Operational Hermeneutics interprets this harm as a distortion of the operation–interpretation balance. When the artifact's operational power overwhelms the interpreter's capacity to source operations critically, *actuation* eclipses *manipulation* and *actualization*. The interpreter becomes an *operated being* rather than an *operational co-agent*.

Avoiding hermeneutic harm requires restoring proportionality: ensuring that human interpreters maintain control over how operations are sourced, modified, and extended. Transparency, explainability, and user education are not merely technical requirements–they are *hermeneutic virtues* necessary for preserving interpretive freedom.

6.3 The Ethics of Embedded Design

If interpretation is operational engagement, then ethics begins at design. Every artifact embodies a *moral architecture*–a set of affordances and constraints that condition possible engagements. As Peter-Paul Verbeek has argued, technologies "mediate moral actions" by shaping the relations between humans and the world. An AI system, by its very structure, prescribes modes of seeing, deciding, and acting.

From the standpoint of Operational Hermeneutics, each AI artifact contains control vectors (who can alter what) and valuation schemas (what goals or ends are encoded). Design ethics thus becomes a matter of *hermeneutic prefiguration*: how the artifact's structure anticipates and channels interpretation.

This insight grounds a new ethical imperative for AI developers: design must remain interpretively open. Systems should not foreclose manipulation or critical sourcing

but rather invite them. Hermeneutically responsible AI design fosters transparency, modifiability, and contextual adaptability–the conditions under which genuine understanding can occur.

6.4 The Interpreter's Ethics: Sourcing with Awareness

At the level of user engagement, ethics consists in *how* one sources operations from AI artifacts. Four corresponding virtues may be articulated:

Mode of Engagement	Ethical Virtue	Description
Actuating	*Reflexivity*	Recognizing when one is being operated upon; cultivating awareness of affective influence and algorithmic framing.
Manipulating	*Transparency*	Modifying artifacts responsibly, documenting changes, and acknowledging limits of control.
Utilizing	*Accountability*	Ensuring proper attribution, data provenance, and clarity of purpose when deploying outputs.
Actualizing	*Discernment*	Maintaining critical distance when one's own cognition or identity is being reshaped through engagement.

These virtues form what may be called hermeneutic responsibility–a set of dispositions guiding interpreters in an operational ecology of meaning. They align with both Aristotelian ethics of *phronēsis* (practical wisdom) and Islamic adab traditions of disciplined engagement, wherein right action arises from self-awareness and proportionate response.

6.5 Hermeneutic Governance and the AI Public Sphere

Beyond individual responsibility lies the problem of collective engagement. As AI systems mediate communication, policy, and aesthetics, they become hermeneutic infrastructures–public mechanisms through which societies make sense of themselves. Governance, therefore, must include *hermeneutic oversight*: the evaluation of how meaning is structured and circulated by algorithmic systems.

Recent frameworks, such as the EU's *Ethics Guidelines for Trustworthy AI* (2019) and UNESCO's *Recommendation on the Ethics of Artificial Intelligence* (2021), articulate transparency, fairness, and accountability as guiding principles. Yet these documents largely remain procedural. Operational Hermeneutics adds a deeper interpretive layer: governance must not only regulate outcomes but also scrutinize *operations of signification*–how AI systems interpret, represent, and persuade.

For example, content-moderation algorithms are not neutral filters; they are *hermeneutic agents* deciding which meanings circulate. A hermeneutically informed governance framework would require:

1. **Operational audits** analyzing interpretive biases within datasets and model architectures;

2. **Participatory design** involving communities affected by AI interpretations; and

3. **Interpretive pluralism**–ensuring multiple hermeneutic perspectives are represented within algorithmic mediation.

Such policies translate hermeneutic responsibility into institutional design, making interpretation itself a domain of justice.

6.6 Compassion, Interpretation, and the Human Measure

At its deepest level, hermeneutic ethics returns to compassion (*raḥma*), the recognition of vulnerability and relationality in all acts of understanding. To interpret is to respond to what calls for understanding–to engage the world as an address. In the Islamic and Ashʿarī tradition, divine speech (*kalām Allāh*) operates through *amr* (command) and *iʿlām* (communication), acts that simultaneously reveal and transform. Interpretation, then, is a form of *answering*, and answering requires mercy.

Extending this theological insight to AI artifacts does not imply attributing divinity to machines; rather, it situates the human interpreter as the ethical center. No matter how autonomous the artifact, the *moral locus* remains in the human capacity to respond wisely. Compassion here signifies the refusal to treat operational artifacts merely as tools or threats but as occasions for ethical reflection and creative renewal.

In this light, the hermeneutics of AI artifacts is not only an epistemic discipline but a *spiritual practice of understanding*. It invites humility in the face of increasingly complex operations and generosity in the stewardship of meaning.

6.7 Summary: The Ethical Circle of Operation

Operational Hermeneutics redefines the hermeneutic circle as an ethical circle of operation:

Understanding requires engagement; engagement entails operation; operation demands responsibility; and responsibility renews understanding.

Within this circle, the AI artifact becomes both a mirror and a test: it reflects our modes of operation back to us. The task of hermeneutics today is not to decode what AI means, but to ensure that our interactions with it remain intelligible, accountable, and humane.

If, as Vico taught, *the true is the made*, then our truth in the age of artificial intelligence will depend on how we make–and interpret–the artificial. Hermeneutic ethics thus becomes the condition for preserving human meaning within a world increasingly populated by our operational offspring.

7. Conclusion: Toward an Operational Hermeneutics of AI

The preceding inquiry has sought to reframe the relation between hermeneutics and artificial intelligence through the lens of Operational Hermeneutics–a framework first

articulated three decades ago in response to the perceived stagnation of twentieth-century interpretive theory. What was once a proposal for rethinking texts as *operational artifacts* now reveals itself as a necessary paradigm for engaging the new class of *AI artifacts* that populate our digital world.

The argument has proceeded in several steps. We began by surveying the emerging field of AI hermeneutics, noting that most approaches focus either on machine interpretability or on algorithmic ethics, yet rarely on the interpretive life of AI-generated products themselves. We then traced the historical lineage of the artifact–from Aristotle's *poiesis* and the four causes, through Ibn Khaldūn's crafts and Qalqashandī's writs, to the Renaissance unification of art and engineering in Leonardo, the Baconian *opus humanum*, Vico's *verum factum*, Ingarden's stratified work of art, Hartmann's ontological layers, and Simon's *Sciences of the Artificial*. Against this backdrop, we reintroduced the concept of the operational artifact as the key to bridging making and meaning in the age of AI.

7.1 The Operational Paradigm Reaffirmed

Operational Hermeneutics posits that artifacts are not inert carriers of meaning but active systems of operation, intentionally designed to act upon interpreters and contexts. Interpretation, in turn, is the *sourcing* of those operations–an engagement defined by modes such as *actuating*, *manipulating*, *utilizing*, and *actualizing*.

Applied to AI, this paradigm reveals that the so-called "outputs" of generative systems are themselves operationally alive. They act, persuade, instruct, and co-create; they embed distributed intentionalities across code, data, and interface; and they solicit human cooperation to complete their functions. The *hermeneutic event* is thus no longer confined to the encounter between reader and text but extends to the human–machine operational field.

This reframing renews hermeneutics as a living discipline. It recalls that the original *hermeneus*–the interpreter or mediator–was one who translated between worlds. Today that role must include translation between human meaning systems and artificial operational systems. Hermeneutics becomes a science and an art of operational mediation.

7.2 Implications for Design, Scholarship, and Governance

The consequences of this shift are manifold:

1. **For Design**: AI development must integrate *hermeneutic openness* as a design principle. Systems should be constructed not merely for efficiency but for interpretive transparency–allowing users to trace, question, and reconfigure operational chains. As Herbert Simon argued, design is the science of the artificial; but operational hermeneutics reminds us that every design is also a *text to be read*.

2. **For Scholarship**: Humanities and engineering alike must collaborate in analyzing AI artifacts as stratified works–composed of computational, semantic, and pragmatic layers in the manner of Ingarden's ontology. This calls for new interdisciplinary

programs that unite philosophers, linguists, computer scientists, and artists under the common study of AI artifact engagement.

3. **For Governance**: Policy frameworks such as the EU's *Trustworthy AI Guidelines* and UNESCO's *Ethics of AI Recommendation* must evolve from procedural ethics to hermeneutic governance–oversight that evaluates not only what systems do, but how they *make meaning* and *mediate understanding*. Operational audits, interpretive pluralism, and participatory co-design should become institutional norms.

7.3 An International Program of Hermeneutic Research

This paper also outlines a roadmap for collaboration among institutions committed to exploring these frontiers. The envisioned Operational Hermeneutics and AI Artifacts Program would bring together:

- **The University of Guelph**, where the original framework of Operational Hermeneutics was conceived and where renewed dialogue between philosophy of technology and hermeneutic theory can flourish;

- **Sheikh Mohammed bin Zayed University for the Humanities** in Abu Dhabi, which advances interdisciplinary work at the intersection of Islamic philosophy, ethics, and digital society;

- **Sheikh Mohammed bin Zayed University for Artificial Intelligence (MBZUAI)**, providing computational and engineering expertise for implementing hermeneutically informed AI systems;

- **Kalam Research & Media**, serving as the theological and ethical think-tank linking classical *kalām* with contemporary AI ethics; and

- **Agathon Systems Ltd.**, which since 1998 has bridged engineering, AI, and space-economy innovation, now reoriented toward operational ethics and interpretive technologies.

Together these institutions can develop joint research projects, graduate curricula, and pilot platforms for hermeneutic auditing of AI artifacts–a practical methodology for assessing how meaning is produced, mediated, and transformed across technical systems. Other institutions and firms can be invited to join and grow such a program. The stakeholders mentioned are sufficient to jump-start the joint work.

7.4 Beyond Interpretation: Toward Operational Wisdom

The ultimate goal of an operational hermeneutics of AI is not merely to interpret the artificial but to cultivate operational wisdom–the ability to act, design, and interpret in ways that sustain the intelligibility and dignity of human life within a world increasingly co-made with machines. This wisdom echoes both Aristotelian *phronēsis* and the Islamic *ʿaql ʿāmil*–reason as operative understanding.

Such wisdom resists both technocratic reductionism and romantic nostalgia. It affirms that meaning does not vanish in automation; rather, it migrates into new operational forms. Our task is to ensure that these forms remain interpretable, just,

and compassionate. The *artificial* thus becomes the latest field in which the ancient drama of understanding unfolds.

7.5 The Closing Reflection

The history of hermeneutics–from scriptural exegesis to digital semiotics–has always been a history of humanity's dialogue with its own creations. The advent of generative AI extends this dialogue into a new epoch. Machines now speak back; their artifacts demand interpretation. To meet this demand, hermeneutics must itself become operational–capable of reading not only words and images but *processes and codes*.

Operational Hermeneutics offers precisely such a path:

a renewal of interpretive thought adequate to the complexity of our own artifacts.

In attending to the operational, we rediscover the meaning of the human: *the being who understands by making and makes by understanding.*

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