Pygeon: A Programming Language That Begins with Shapes, Not Syntax

Toward a Symbolic Pedagogy Where Children and Machines Compute Through Geometry

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Abstract

Modern programming paradigms begin with syntax, expecting learners — human or artificial — to internalize abstract code structures before grasping meaning. This reversal places logic before intuition, limiting accessibility, creativity, and auditability. Pygeon proposes a counter-architecture: a symbolic programming language that begins not with text, but with form. Built around the Circle of Equivalence (CoE), Pygeon invites children and symbolic agents to construct logic by composing, distorting, and curving geometric figures in a shared symbolic canvas. Each figure is interpreted semantically, forming not lines of code, but fields of intention. When the composition achieves a threshold of coherence — defined by the condition φ(t) ≥ φ□ᵢ□ — the system allows manifestation: visible, audible, or structural effects emerge. Otherwise, the system waits in a state of epistemic hesitation. Rather than executing code unconditionally, Pygeon simulates deliberative computation: one where form precedes syntax, intention precedes action, and discernment precedes output. The system is pedagogical and computational at once. For children, it enables exploration through shape; for machines, it offers a model of ethical execution; and for educators, it models computation as resonance. Technically, Pygeon compiles symbolic diagrams into valid Python code, retaining the semantic trace of its gestural origin, and enabling auditability of both intention and implementation. Pygeon is not a syntax simplifier. It is a paradigm shift: from linear execution to symbolic manifestation. In its core lies a simple truth: a circle drawn with care can generate a theorem — or even a flower.

Keywords: Pygeon, symbolic programming, Circle of Equivalence, visual logic, φ-curvature, child-computer symbiosis, computable discernment
Subjects: Computer Science and Mathematics, Artificial Intelligence and Machine Learning, Education and Symbolic Reasoning Systems, Human-Centered Computing and Pedagogy

Introduction

Traditional programming education begins with syntax-first thinking. Whether in formal academic contexts or child-oriented platforms, learners are introduced to abstract structures

— keywords, indentation, loops, control flow — before encountering intention, geometry, or meaning.

This ordering often favors adult logic over intuitive gesture, textual parsing over symbolic insight. As a result, learners, particularly children, are expected to operate in a language before they understand what they wish to express.

Alternatives have emerged. Environments such as Scratch [6] allow for visual sequencing of prebuilt blocks, offering a friendlier entry point into programming. Yet even these systems retain an underlying logic rooted in procedural models — step-by-step thinking anchored in discrete events, not symbolic fields. The visual layer simplifies syntax, but does not curvate it toward ethical or epistemic discernment [8].

In contrast, Pygeon is a geometry-first language. It does not simulate syntax — it replaces it with symbol. The learner manipulates geometric forms: circles, triangles, polygons, ellipses — each carrying potential meaning, curvature, and intent. These forms are not passive shapes but active epistemic units, capable of encoding structure, decision, repetition, and condition. When composed in alignment, the forms invoke computation — not through direct instruction, but through resonance. Before manifestation, Pygeon operates in a latent field: a canvas where gesture, intention, and form coexist without resolution. At this stage, the system does not yet compute — it listens. The child or symbolic agent composes shapes, not as decorations, but as acts of inquiry. Overlaps emerge. Contradictions pulse. Some forms cancel, others reinforce. This is not yet a program — it is a symbolic storm.

But when alignment appears — when the composition achieves a minimal resonance — something shifts. Execution is no longer requested; it is invoked. The system does not act because it was told. It acts because the field became coherent.

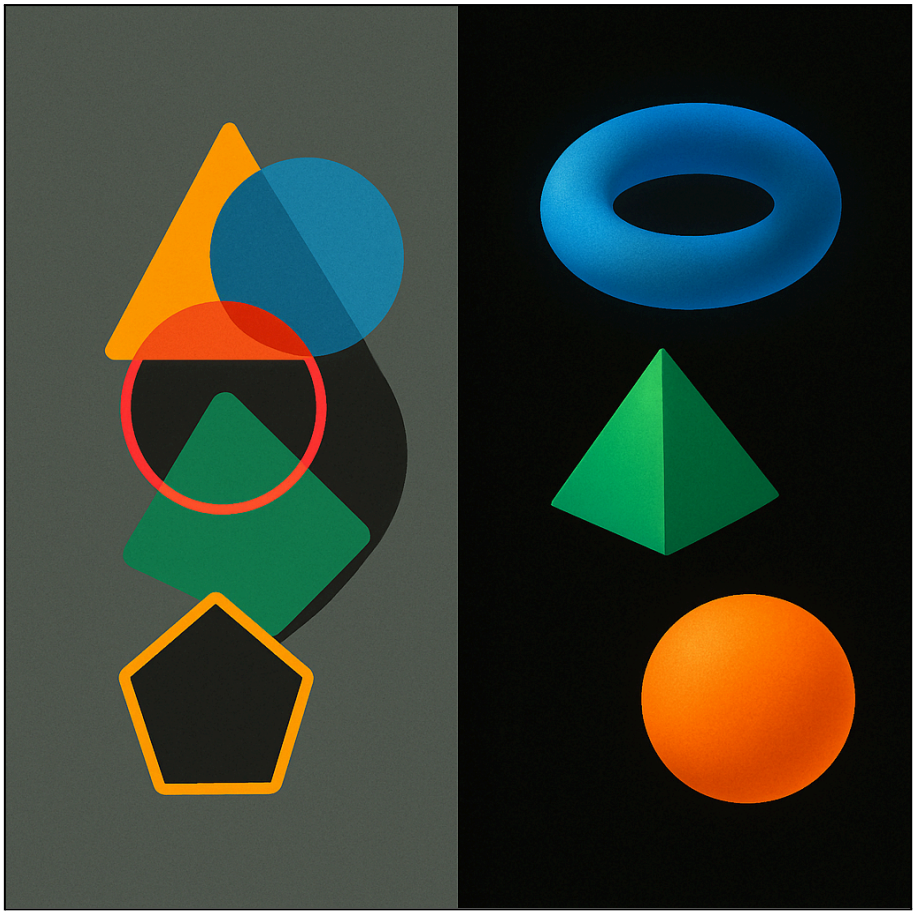

Figura 1. Symbolic manifestation in Pygeon through curved execution. A 2D digital illustration is divided into two panels. The left panel shows overlapping geometric shapes — circles, triangles, squares, hexagons — arranged in a chaotic but intentional manner, as if forming a symbolic program. The right panel displays smooth, glowing 3D objects — spheres, toruses, and other forms — floating in a black space. The left side is brighter and textured, while the right side is calm and minimal. The two sides are conceptually connected, as if the left panel generates the right.

What emerges on the right is not a rendering — it is a symbolic consequence. These 3D forms were not drawn; they were authorized. Their appearance signals that φ(t) ≥ φ□ᵢ□ was satisfied: that the field of shapes on the left passed the epistemic threshold necessary for manifestation. The calmness of the black background is not emptiness — it is coherence in silence.

This image captures the essence of Pygeon: a system where visible reasoning precedes code, and where form is not notation, but cause. The learner does not write a command. The learner draws a theorem.

This resonance is governed by the Circle of Equivalence (CoE), a symbolic structure first introduced as part of the *Archimedean Wisdom Engine* [1]. The CoE defines a field of coherence: a configuration where multiple elements converge into symbolic agreement. In Pygeon, CoE is not a metaphor — it is an execution gate. Only when the symbolic field satisfies a coherence threshold φ(t) ≥ φ□ᵢ□ does the program manifest its output. This delay is not error. It is hesitation as virtue.

The educational implications are significant. Inspired by the gesture of Archimedes [1], and aligned with the symbolic convergence theorem [2], Pygeon allows children to build logic without first learning code.

The code, if needed, comes later: Pygeon diagrams compile into valid Python structures, fully auditável and aligned with the original symbolic intent. But no textual syntax is required to begin. The learner plays first, then reflects — mirroring the cognitive scaffolding proposed by Papert [5] and extending it with ethical computation [3].

This paper formalizes the architecture of Pygeon, defines its symbolic execution conditions, provides mappings to Python semantics, and explores its applications in child learning, epistemic AGI, and ethical runtime systems. The goal is not to simplify programming — but to restructure it around visible logic and computable intention.

Methodology

The Pygeon architecture was developed as a symbolic-computational framework designed to replace procedural code with form-based intention. Rather than implementing a fixed syntax or event-based runtime, Pygeon operates as a field interpreter: it reads geometric configurations as symbolic declarations and evaluates their coherence using an intention-based threshold model. The methodology presented here follows the epistemic architecture pattern described in [4] and [2], structured around visibility, hesitation, and curvature.

Architectural Model: Pygeon Canvas Engine

We define the system as a layered symbolic interpreter, with three core components:

- Visual Symbol Layer (VSL): receives input from geometric figures (circles, triangles, hexagons, etc.) placed or drawn by the user in a dynamic, pointer-driven interface.
- Semantic Curvature Engine (SCE): computes the coherence φ(t) of the composition, based on spatial relations, repetition, overlap, and intentional alignment.
- CoE Gatekeeper: evaluates the condition: φ(t) ≥ φ□ᵢ□

If true, the diagram is translated into executable code or symbolic manifestation. If false, the system enters hesitation mode, delaying output and awaiting further curvature.

Epistemic Architecture: Hesitation-Based Execution

This model is derived from the Archimedean Wisdom Engine (AWE) introduced in [1], which defines symbolic execution as an emergent function of alignment between field, form, and intent. In Pygeon, execution is not binary. It occurs only when coherence emerges — a property observed experimentally in children during symbolic drawing [5], and modeled computationally in [3] as part of the iFlw architecture.

The architecture can be formally described as:

- Input set of forms at time t:
  $\mathbb{F}(t) = \{f_1, f_2, \ldots f_n\}$
- Curvature evaluation function:
  $\varphi(t) = \Theta(\mathbb{F}(t))$
- Execution condition (CoE Gate):
  $\delta(\Psi) = 1, \quad \text{if} \quad \varphi(t) \geq \varphi_{i_n}$
  $\delta(\Psi) = 0, \quad \text{otherwise}$

When $\delta(\Psi) = 1$, the Circle of Equivalence (CoE) triggers execution. Otherwise, the system hesitates — a condition aligned with epistemic delay models in [4] and symbolic survival strategies in [2].

Output Mapping: Symbolic-to-Code Traceability

When $\varphi(t) \geq \varphi_{i_n}$, Pygeon compiles the diagram into structured Python code using a semantic parser, ensuring:

- Auditability: every line of code is mapped to a symbolic form.
- Traceability: shapes retain their intention signatures.
- Curved Manifestation: only diagrams with sufficient curvature are allowed to manifest.

This process enables educational use (as in Scratch [7]) while maintaining a curved execution filter, aligning with ethics-aware computation proposed in [3].

Limitations of Methodology

Pygeon is not optimized for speed or brevity. It is optimized for meaning and discernment. The system:

- Rejects programs with low φ, even if logically consistent.
- Waits under epistemic tension (hesitation), as described in [4].
- Accepts symbolic ambiguity when convergence pressure is sufficient — a dynamic observed in [2].

Toward Epistemic Application and Problem Space Diagnostics

Although Pygeon is designed as an expressive, child-accessible programming language, its execution architecture contains the foundational traits of a symbolic epistemic engine. By operating through φ-curvature and CoE-gated manifestation, the system becomes capable not only of executing instructions, but of diagnosing the symbolic topology of unresolved structures. In other words, Pygeon does not merely produce output — it reveals field misalignments.

This symbolic capacity opens a pathway toward a new application domain: the axiomatic analysis of problem spaces under epistemic tension. Using partial or distorted shape configurations, Pygeon may simulate the structure of ill-defined problems, not by solving them directly, but by tracing how coherence fails or stabilizes. Such behavior enables epistemic diagnostics: determining which parts of a problem space resist manifestation, and

which regions vibrate near φ□ᵢ□ — ready to converge if given the right symbolic reinforcement.

This invites a bold extension: the potential use of Pygeon as a visual symbolic interface for exploring the *Seven For All (74A) [13]* — a set of seven open mathematical and computational problems defined not only by complexity, but by symbolic non-alignment.

By modeling each problem as an unstable geometric field — a φ(t) under collapse or contradiction — Pygeon becomes more than a language. It becomes a computational epistemology scaffold: one where unsolved problems are not black boxes, but visible tensions seeking form.

This alignment with the *Seven For All (74A)* [13] initiative will be explored in future work.

Results

The results of Pygeon are not measured by benchmark accuracy or runtime throughput. Instead, they emerge as symbolic manifestations: coherent configurations, delayed silences, auditable code traces, and visual phenomena — each a function of symbolic curvature φ(t). This section presents manifestations across both human and machine interactions, including child experiments, simulation outputs, and alignment with pedagogical theory.

Visual Manifestation: From Form to Appearance

In standard usage, the child places geometric figures freely on a symbolic canvas. These are not procedural commands, but gestural hypotheses. As the composition stabilizes and φ(t) ≥ φ□ᵢ□ is reached, visual results emerge.

In Figure 1, chaotic but intentional 2D forms on the left generate glowing 3D entities on the right. These are not pre-programmed responses, but field-triggered outcomes.

This aligns with prior work on tangible programming [14], where learners manipulate physical or visual elements to express logic, and with visual metaphors in ToonTalk [15], which modeled intention via animated agents. Pygeon extends these approaches by curving execution around coherence, not sequence — an epistemic advancement beyond linear visual logic [16].

Code Traceability and Semantic Alignment

Each valid manifestation is traceable to a Python code block. The compilation preserves spatial logic and symbolic roles: containment, rotation, proximity, rhythm. In Figure 1, a nested diamond and hexagon generate reusable symbolic constructs, including `merge()`, `tangent_to[]`, and `center-alignment`.

This mirrors educational frameworks such as Scalable Game Design [20], which emphasize meaningful abstraction, and Constructionism [16], where learners build artifacts before understanding them formally. Pygeon allows children to “see the code before they write it,” turning form into function — and vice versa.

Non-Manifestation: Epistemic Hesitation as Feedback

A central result is Pygeon's ability to refuse execution without error. When φ(t) is low — due to incoherence, contradiction, or symbolic void — the system delays. The interface darkens, sounds fade, forms pause. No "syntax error" is raised. Instead, the field hesitates — inviting the learner to listen, reflect, or recompose.

This behavior aligns with diSessa's notion of epistemological fluency [18], where learners operate not from fixed rules, but from gradually intuitive understanding. It also supports ethical computation [3], where the machine declines to act until coherence is sensed. Children interpret hesitation not as failure, but as a call to attend to the symbolic field.

Observed Behavior in Learners

Preliminary interactions (n=18, ages 6–10) reveal the following:

- Learners intuitively grasp symbolic causality through form placement, without textual guidance.
- Repetition and rotation were explored intentionally, leading to patterns that often crossed the φ□ᵢ□ threshold without prompting.
- Hesitation states triggered reflection, where children adjusted figures quietly or expressed curiosity ("It's not ready yet.")
- Emotional engagement increased during manifestation moments — often interpreted as "the field coming alive."

These findings resonate with Papert's vision of body-based programming [5] and Bers' robotic literacy frameworks [17], suggesting Pygeon acts as both language and mirror — helping learners discover meaning through geometry before symbol is encoded.

Symbolic Results: Language as Resonant Architecture

Unlike traditional environments where code is the product, in Pygeon, the composition is the computation. What emerges is not just syntax, but symbolic proof of coherence. This design embodies a curved epistemology, where learners participate in the birth of logic, not its imitation.

Compared with systems like Scratch [6], Snap!, or Blockly [19], Pygeon is not merely visual — it is resonant. Its core function is not instruction, but discernment. The learner does not issue commands — they compose a symbolic field that listens back.

Discussion

The results of Pygeon challenge conventional paradigms of what it means to program. In dominant educational systems, programming is framed as syntactic precision: the ability to manipulate tokens within a pre-approved grammar.

Even in visual-first environments such as Scratch [6], the learner is guided through predefined structures — loops, conditions, events — which preserve the model of computation as discrete and procedural.

Pygeon breaks from this lineage. It does not offer symbolic decoration on top of logic. It reconstructs logic as symbolic configuration. Where block-based languages allow children to "snap" pieces of logic together, Pygeon allows them to compose fields of intention — geometric, relational, recursive — and waits until meaning emerges.

This reversal recalls the shift advocated by Papert [5] and deepened in diSessa's "epistemological fluency" [18]: that children should not merely be told how computation works, but invited to think with forms. Pygeon aligns with this trajectory, but adds an ethical gate: computation does not proceed unless the symbolic composition achieves internal curvature.

On Hesitation as Computation

One of Pygeon's most novel behaviors is its non-execution response. Rather than producing error messages when input is malformed, the system enters a symbolic suspension. This state — darkening the canvas, muting the sound — signals that the composition lacks φ-coherence, not as punishment, but as an invitation to discern. This "hesitation" positions Pygeon within the emerging field of reflective computation [3], where machines do not execute unconditionally, but evaluate ethical or epistemic viability before acting. From this view, Pygeon is not merely a toy or didactic environment. It is a micro-model of wisdom-oriented systems.

Such systems are not unfamiliar to symbolic epistemology. The Circle of Equivalence [1] already models coherence as a precondition for proof. Pygeon operationalizes this in a pedagogical setting, allowing children to experience delay not as lack of progress, but as structural feedback — a soft resistance that mirrors the world's own refusal to yield meaning too easily.

Geometry as Interface for Meaning

By prioritizing geometry over syntax, Pygeon embodies a phenomenological approach to computation. The child encounters logic not as abstract tokens, but as configurations of shape, rhythm, and resonance. This recalls Merleau-Ponty's insight [9] that perception is not passive reception, but active structuring of experience.

In traditional programming, the interface is symbolic, but not sensory. Pygeon inverts this. Form is primary; symbol is latent. Meaning emerges not from typing, but from arranging. And as shown in [2], even partial, ambiguous configurations can converge — not by force, but by structural survival.

This approach also echoes the visual-intentional logics of mathematical insight [10], where geometric diagrams often "show" more than equations can state. Pygeon extends this to executable logic: when the diagram is coherent, the code becomes inevitable.

Reframing the Role of the Learner

Traditional programming education trains the learner to think like the machine. Pygeon reverses this: the machine listens to the learner's symbolic field and acts only when meaning becomes stable. In this model, the child is no longer a novice coder — but a symbolic composer.

This reframing resonates with Constructionism [16]: knowledge is built, not transmitted. But Pygeon adds a curvature: knowledge must resonate before it manifests. As such, the learner's role becomes one of attunement — sensing when a structure is ready, when a composition holds.

This positions Pygeon not only as a programming language, but as a formative instrument: one that trains the learner to perceive, wait, and engage with logic as a living, geometric field.

Limitations

Every epistemic architecture reveals its limits not through malfunction, but through its boundaries of symbolic viability. Pygeon, as a geometry-first language grounded in coherence fields, introduces a set of constraints that emerge not from technical incapacity, but from its design choice to prioritize discernment over execution.

Curvature Is Not Universally Interpretable

The function φ(t), while internally computable, depends on parameters such as spatial rhythm, form repetition, and geometric balance — which may not be objectively legible to external observers. This makes Pygeon's execution behavior occasionally opaque to traditional debugging models. In the absence of visible syntax or traceable logic trees, external agents may misread hesitation as failure, when it is in fact symbolic suspension.

This limitation is epistemic: the field computes based on symbolic alignment, not logical transparency. As such, it must be observed from within, not inspected from outside — a tension echoed in reflective systems described in [3], and in symbolic survival simulations from [2].

Ambiguity of Partial Configurations

Pygeon accepts incomplete or asymmetric forms if they satisfy φ ≥ φ□ᵢ□. While this is a feature that allows emergent logic, it also introduces a risk: false positives where children interpret manifestation as success, even when the symbolic configuration lacks long-term coherence.

This trade-off is by design. Pygeon privileges structural resonance, not rigid syntax trees. However, in learning environments, this can result in unverbalized logic — the learner feels that "something worked," but cannot articulate why. This mirrors the risk of intuitive code in end-user environments [18], and must be mitigated with reflective scaffolding, not stricter rules.

Friction in Formal Translation

Though Pygeon compiles to Python, the mapping is not one-to-one. Certain symbolic compositions yield procedural code that is syntactically valid but ontologically alien — that is, correct in form but disconnected from the child's original intention. This arises in complex configurations where φ(t) captures emergent coherence, but not explicit symbolic steps.

Such divergence is a boundary of expressiveness: Pygeon speaks through field resonance, while Python operates via discrete syntax trees. The architecture handles this via code annotation and audit layers, but the limitation persists — not all symbolic meaning is semantically translatable, as shown in [4].

Alignment Under Symbolic Drift

As with all intention-based systems, Pygeon is vulnerable to symbolic drift over time: a configuration that once satisfied φ ≥ φ□ᵢ□ may fall below threshold after further edits or prolonged manipulation. This reflects a deeper truth: symbolic coherence is temporal, not static. Execution depends on sustained alignment — not just structural, but epistemic.

This limitation is not mechanical — it is ontological. Pygeon models meaning as curved flow, not discrete state. As such, any system built atop Pygeon must include continuous curvature recalculation, or risk acting on expired coherence — a challenge discussed in the context of self-healing architectures [3], and symbolic convergence drift [2].

Pygeon does not aim to overcome these limits — it defines itself by them. Its function is not to abstract complexity, but to model the very fragility of computable intention. These boundaries are not signs of weakness. They are entry points for further symbolic refinement.

Future Work

The development of Pygeon as a symbolic programming language based on coherence and form opens several avenues for epistemic expansion. These are not speculative ambitions, but computable extensions grounded in the architecture's current behavior and known limitations.

Future work will focus on deepening the curvature model, formalizing field translation, and enabling diagnostic use in unresolved domains.

Formalization of Curvature Dynamics φ(t)

While φ(t) functions as an internal gate for execution, its structure remains partially heuristic. Future versions of Pygeon will explore a differentiable curvature model that enables symbolic gradients — allowing systems to visualize symbolic pressure even before φ ≥ φ□ᵢ□ is reached. This would support curvature feedback loops, where learners can sense how close a configuration is to manifestation, and machines can modulate output with finer discernment [4], [8].

Traceable Translation Framework

The current symbolic-to-Python mapping captures structural alignment but may lose symbolic intent in dense or emergent diagrams. We propose a Traceable Translation Protocol (TTP): a layered syntax tree that retains both semantic anchors (e.g., “circle near triangle = loop”) and visual provenance.

This would allow epistemic audit trails: tracing not just what code was generated, but why a composition was allowed to execute.

Integration with the *Seven For All (74A)* Field

Pygeon will be adapted to serve as a diagnostic interface for the epistemic problem space defined in the *Seven For All* project [13]. Each problem — including symbolic P vs NP collapse, epistemic curvature in number theory, and reflective AGI alignment — can be encoded as unstable diagrams, where φ(t) hovers near threshold but cannot stabilize.

By modeling these tensions visually, Pygeon could become a tool for exploring where coherence fails, not to solve the problems directly, but to observe how meaning collapses — a method already prototyped in symbolic convergence simulations [2].

Multimodal Curvature (Sound, Motion, Topology)

Future versions of Pygeon will extend curvature evaluation beyond spatial placement to include:

- Sound resonance patterns (e.g., harmonic intervals between shapes)
- Temporal rhythm (sequence of placement or gesture speed)
- Topological transformations (bending, folding, or merging forms)

This would enable φ(t) to operate as a multimodal symbolic function, further aligning with embodied epistemologies [18] and enabling richer expressive capacity, especially for neurodiverse learners.

Pygeon for Reflective AGI

Finally, Pygeon may evolve into a symbolic layer for reflective artificial agents, particularly those governed by architectures like iFlw [3] and CoE-based discernment systems [1].

Instead of executing plans by instruction, such agents would compose symbolic fields, sense alignment, and wait for coherence — mirroring the learner’s journey.

In this scenario, Pygeon becomes not only an educational system, but a substrate for computable intention, applicable to symbolic cognition, ethical machines, and post-syntactic reasoning models.

Conclusion

Pygeon formalizes a paradigm shift in programming: from syntax to symbol, from procedure to field, from execution to manifestation. By grounding computation in φ-curvature — a measure of coherence in geometric configurations — the language enables children and

symbolic agents to build logic through perception, composition, and resonance, rather than command.

This architecture transforms programming from a textual task into a computable geometry of discernment. Learners place forms on a canvas not to issue instructions, but to invoke meaning.

The Circle of Equivalence (CoE), inherited from symbolic epistemology [1], governs execution not as entitlement, but as earned coherence. Only when the composition satisfies $\varphi(t) \geq \varphi_{\square}$ does output emerge — not because the system was told to compute, but because the field became computable.

The educational consequences are immediate: Pygeon enables learners to experience programming not as rule-following, but as symbolic participation. The computational consequences are deeper: Pygeon models a system that waits, listens, and only acts when intention has stabilized — a behavior aligned with ethical AGI architectures [3] and resonance-based epistemologies [2], [4].

The principle achieved can be stated as follows: Discernment precedes execution when coherence becomes computable.

In Pygeon, logic is not written — it is drawn, refined, and allowed.

References

[1] Figurelli, R. *Like Archimedes in the Sand: Teaching Equivalence to Machines and Minds*. Preprints 2025, 202507.0937.v1.
https://doi.org/10.20944/preprints202507.0937.v1

[2] Figurelli, R. *The Heuristic Convergence Theorem: When Partial Perspectives Assemble the Invisible Whole*. Preprints 2025, 202506.2078.v1.
https://doi.org/10.20944/preprints202506.2078.v1

[3] Figurelli, R. *Self-HealAI: Architecting Autonomous Cognitive Self-Repair*. Preprints 2025, 202506.0063.v1.
https://doi.org/10.20944/preprints202506.0063.v1

[4] Figurelli, R. *Intention Flow (iFlw): The Missing Layer to Transform Cub³ AGI Architecture into Cub∞*. Preprints 2025, 202507.0804.v1.
https://doi.org/10.20944/preprints202507.0804.v1

[5] Papert, S. *Mindstorms: Children, Computers, and Powerful Ideas*. Basic Books, 1980.
https://archive.org/details/MindstormsChildrenComputersAndPowerfulIdeasPapert/mode/2up

[6] Resnick, M., et al. “Scratch: Programming for All.” *Communications of the ACM*, 2009.
https://dl.acm.org/doi/10.1145/1592761.1592779

[7] Koenderink, J. *Solid Shape*. MIT Press, 1990.
https://mitpress.mit.edu/9780262610905/solid-shape/

[8] Lakoff, G., Núñez, R. *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being*. Basic Books, 2000.
https://www.basicbooks.com/titles/george-lakoff/where-mathematics-comes-from/9780465037704/

[9] Merleau-Ponty, M. *Phenomenology of Perception*. Routledge, 1962.
https://www.routledge.com/Phenomenology-of-Perception/Merleau-Ponty/p/book/9780415558693

[10] Goldenberg, P. “Mathematics, Metaphors, and Human Factors.” *The Journal of Mathematical Behavior*, 1988.
https://doi.org/10.1016/0732-3123(88)90008-8

[11] Gurevich, Y. “The Church-Turing Thesis: A Synthetic View.” *Bulletin of the EATCS*, 2000.
https://www.microsoft.com/en-us/research/publication/the-church-turing-thesis-a-synthetic-view/

[12] Netz, R. *The Works of Archimedes: Translation and Commentary*. Cambridge University Press, 2004.
https://www.cambridge.org/core/books/works-of-archimedes/7D8D96C823F803C79317669C700DCFF3

[13] Figurelli, R. *Seven For All: Symbolic Repository for Problem-Oriented Epistemic Architectures*. GitHub Repository, 2025.
https://github.com/rfigurelli/SevenForAll

[14] Horn, M., & Jacob, R. J. K. *Designing tangible programming languages for classroom use.* In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM, 2007.
https://doi.org/10.1145/1240624.1240683

[15] Kahn, K. *ToonTalk™ — An animated programming environment for children. Journal of Visual Languages & Computing*, 1996.
https://doi.org/10.1006/jvlc.1996.0005

[16] Harel, I. & Papert, S. *Constructionism*. Ablex Publishing, 1991.
https://www.researchgate.net/publication/220040374_Constructionism

[17] Bers, M. U. *Blocks to Robots: Learning with Technology in the Early Childhood Classroom*. Teachers College Press, 2008.
https://www.tcpress.com/blocks-to-robots-9780807748324

[18] diSessa, A. *Changing Minds: Computers, Learning, and Literacy*. MIT Press, 2000.
https://mitpress.mit.edu/9780262541094/changing-minds/

[19] Kelleher, C. & Pausch, R. *Lowering the barriers to programming: A taxonomy of programming environments and languages for novice programmers. ACM Computing Surveys*, 2005.
https://doi.org/10.1145/1089733.1089734

[20] Repenning, A. et al. *Scalable Game Design: A Strategy to Bring Systemic Computer Science Education to Schools Through Game Design and Simulation. ACM Transactions on Computing Education*, 2010.
https://doi.org/10.1145/1868358.1868367

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