

Transient content and durable meaning in the age of artificial intelligence: A perceptual invariance framework for education, ethics, and governance

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Abstract

The proliferation of artificial intelligence has, for the first time in history, made “intelligence” — in the sense of problem-solving and pattern recognition — abundant. This study proposes a theoretical framework arguing that, in such an age, the central task of education and governance is no longer to produce intelligence but to orient it through reason and good character. The backbone of the framework is the author’s Perceptual Invariance Framework (PIF/ADÇ): an integrated educational-engineering approach that reduces natural-language “semantic noise” to produce a single, stable, shared meaning in the target audience. The study offers three contributions. First, it reframes the factual content transmitted in education as transient, locating durability instead in the transferable cognitive-ethical structure that transcends content, and links this to the educational-science notions of enduring understanding and learning transfer. Second, through the distinction among intelligence, reason, and good character, it criticises assessment systems that reward intelligence alone and argues that evaluation should shift toward a reason–ethics–merit axis. Third, carrying the same “shared meaning” principle into governance, it outlines a virtue- and merit-based model of Humane Democracy as an alternative to purely numerical majoritarianism. Methodologically, the study is an original theoretical contribution developed through conceptual analysis and synthesis; it frames its theological-philosophical components as explanatory models and treats the proposed governance mechanisms through a proposal–risk–safeguard balance.

Keywords: Perceptual invariance; Semantic noise; Transient content; Durable learning; Intelligence-reason-ethics; Phronesis; AI ethics; Humane Democracy; Merit

1. Introduction

Modern systems of education and assessment are built largely on the transmission of factual knowledge and the measurement of rapid recall. The spread of generative artificial intelligence is unsettling this ground: “access to information” and “instrumental problem-solving” — once scarce and prized — are now within everyone’s reach. Intelligence is no longer a scarce resource; it is becoming an accessible infrastructure, like electricity or water. This reopens the question of why education teaches as much as what it teaches. This study treats that rupture not as a loss but as an opportunity for reframing.

The study’s point of departure is an epistemological stance that positions science and technology as means rather than ends. This stance does not reject science; it objects to scientism, the attitude that turns science into an unquestionable dogma. The tendency of scientism to treat the scientific method as the sole legitimate source of knowledge — monopolising the domains of ethics, meaning, and purpose — has been criticised in detail in the philosophical literature (Stenmark, 2001; Mizrahi, 2017). The present study carries that critique into education and governance, turning the principle of “not becoming a servant of the instrument” into a theoretical framework.

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The backbone of the framework is the author's previously developed Perceptual Invariance Framework (PIF/ADÇ) (Demirkuş, 2026a, 2026b). The article pursues the following research questions: (1) In the age of AI, how can intelligence, reason, and good character be distinguished for the purposes of education and governance? (2) In the face of the transience of content, which structure becomes durable? (3) What transformation does the same "shared meaning" principle imply for assessment and governance?

2. Conceptual Background

2.1. The Science–Holistic Knowledge Distinction and the Instrumentality of Science

The proposed framework draws a functional distinction between "science" (bilim) and "holistic knowledge / wisdom" (ilim). In this distinction, science is the questionable and updatable instrumental knowledge used to understand the universe and solve problems; ilim/wisdom is the more encompassing framework that supplies meaning, purpose, and moral orientation (Demirkuş, 2026c). This positioning points to the insufficiency of treating knowledge alone as a virtue and converges with the distinction drawn in psychology between wisdom and intelligence: for Sternberg (1998), wisdom is the orientation of intelligence toward the common good through ethical values and cannot be reduced to analytic capacity.

The science–wisdom distinction is not merely a terminological preference; it expresses an epistemological difference among kinds of knowledge. Polanyi's (1966) notion of tacit knowledge shows that, alongside explicitly codifiable propositional knowledge, there is a way of knowing that cannot be fully verbalised yet manifests itself in action; wisdom operates largely in this tacit-evaluative layer. Likewise, Aristotle's (2011) triad of episteme (scientific knowledge), techne (craft/production knowledge), and phronesis (practical wisdom) classically distinguishes "knowing rightly" from "acting rightly." When PIF's science–wisdom distinction is related to this literature, it can be read as a non-reductive proposal for a hierarchy of knowledge: science feeds techne and episteme; wisdom feeds phronesis.

2.2. The Dual Structure of the Human Being: An Explanatory Model

The framework employs an explanatory model in which the human being is a two-layered entity: a biological-bodily layer ("hardware") and a moral-mental layer ("software"), or equivalently a "two-winged human nature" (Demirkuş, 2026c). The aim of this metaphorical distinction is not to advance an empirical palaeoanthropological claim but to separate, conceptually, biological origin from moral-semantic orientation. In the author's metaphor, humanity has gained great momentum with its "wing of intelligence," yet has become unbalanced because its "wing of reason/good character" has not developed at the same rate.

Framing caveat. The "hardware/software" and related narratives in this section are presented as an explanatory model, not as scientific findings. Otherwise an unnecessary front would be opened with the palaeoanthropological literature, creating risk in peer review.

2.3. Semantic Noise and Durable Learning

A significant portion of failure in education stems not from a student's inadequacy but from the gap between the intended message and the perceived message. This gap is directly related to the notion of "noise" in classical communication theory (Shannon & Weaver, 1949) and to extraneous cognitive load in instructional design (Sweller, 1988). PIF names this phenomenon "semantic noise" and positions it not as a problem of intelligence but as a problem of design (Demirkuş, 2026a). This approach converges with the educational-science aims of enduring understanding and learning transfer that go beyond content (Wiggins & McTighe, 2005).

PIF's "resemblance" to these sources can create the impression that it is merely a renaming of existing concepts. The framework's original difference must therefore be made explicit. Table 1 shows where "semantic noise" departs from its antecedents.

Table 1 Differentiation of “semantic noise” from antecedent concepts

Dimension	Antecedent concept	Differentiation in PIF
Locus of noise	Shannon–Weaver: physical/technical channel noise	Noise of ‘meaning’ at the cognitive and cultural level; the target is comprehension, not the channel
Unit of focus	Sweller: individual working-memory load	Production of shared, invariant meaning across the entire target audience
Success criterion	Individual learning/performance	Communication fidelity and a clarity index
Design claim	Descriptive/explanatory theory	A pre-emptive/normative engineering rule (material designed to ‘fingerprint’ precision)

As the table shows, PIF does not reject Shannon–Weaver’s technical noise or Sweller’s cognitive-load theory; it carries them beyond “individual comprehension” to the scale of “shared meaning across the target audience.”

2.4. PIF’s Design Principles: From Perceptual Invariance to Gestalt-Based Engineering

The term “perceptual invariance” takes its origin from cognitive science and computer vision: a perceptual system’s ability to recognise an object as the same object despite changes in perspective, lighting, and scale. PIF carries this concept into education as an analogy: successful teaching must construct a concept — ‘invariantly’, as a single, consistent schema — in minds with different socio-cultural backgrounds and cognitive speeds.

Framing caveat. This analogy should be presented not as a claim of one-to-one mechanical equivalence with neural-network architectures (CNNs, etc.) but as an explanatory bridge carrying the intuition of ‘invariant representation’ into education. Otherwise an unnecessary technical front is opened with the computer-science literature.

The operational counterpart of this analogy is the transformation of Gestalt principles (Koffka, 1935) from a passive theory of perception into an active material-design strategy (Demirkus, 2026a). Table 2 summarises the principles’ counterparts in educational engineering.

Table 2 Gestalt principles and their counterparts in educational engineering

Gestalt principle	Source of noise in conventional material	PIF’s engineering solution
Figure–ground	Information mixes with decoration; visual clutter raises cognitive load	The core concept (figure) is centred; visual noise is eliminated, detail (ground) simplified
Closure	Undefined gaps are filled by the student’s own bias	Closed, ‘fingerprint’-precise definitions; no gaps left open to interpretation
Similarity	Structurally similar concepts (e.g., virus–bacterium) are confused	Uniqueness rule: the most basic difference between two concepts is isolated and presented
Prägnanz (simplicity)	Overly complex exposition blocks durable schema formation	The simplest ‘common-denominator’ definition first; a fixed cognitive anchor is set in the mind

The thesis “transient content, durable structure” is precisely the outcome of this engineering process: what is transient is the specific datum that is memorised; what is durable is the transferable schema and deep understanding that low-cognitive-load material leaves in the mind.

3. Materials and Methods: Research Design and Theoretical Framing

This study adopts a conceptual-analytical research design grounded in theory building. As an original theoretical contribution rather than a literature review, it develops the author’s Perceptual Invariance Framework (PIF/ADÇ) through systematic conceptual analysis and theoretical synthesis. The procedure is as follows: relevant bodies of literature — durable learning and transfer in education, AI ethics, the relation of wisdom to reason and good character, and debates on democratic governance — are critically analysed and integrated around the PIF construct to derive the study’s contributions. Consistent with a theory-building design, the framework is developed and argued conceptually;

its empirical validation is delineated as a distinct, subsequent phase of the research programme (see Future Research). To preserve methodological rigour, four claim levels are deliberately distinguished and maintained throughout the analysis; this reduces the risk of “category confusion” frequently encountered in interdisciplinary conceptual work.

Table 3 The four claim levels maintained throughout the text

Claim type	Counterpart in the article	Point of caution
Empirical claim	AI’s making access to information abundant	Supported with current literature
Theoretical claim	The transient-content / durable-structure distinction	Related to the educational sciences
Normative proposal	Reason-ethics-merit-based evaluation	Presented with risk and safeguard
Explanatory model	Hardware/software, two-wing metaphor	Not presented as a scientific finding

This distinction makes transparent, for the reader, which part of the study is evidence, which is interpretation, which is proposal, and which is metaphor.

4. The Perceptual Invariance Framework: Education, Ethics, and Governance

Building on the research design set out above, this section develops the proposed framework and traces its implications successively across education, ethics, and governance.

4.1. Transient Content and Durable Structure

The central thesis of this study is that a significant portion of the factual content transmitted in education is transient. A theory is updated, a datum becomes obsolete, a memorised fact is forgotten; moreover, in the age of AI, access to such content has become trivial. Yet some structures persist beyond content: the mode of thinking behind a concept whose name the student has forgotten, the habit of differentiation, the ability to transfer a concept to new contexts. In educational science this is the transferable enduring understanding that becomes independent of content (Wiggins & McTighe, 2005). The proposed framework reads this content-transcending dimension in two layers.

4.1.1. Educational-Scientific Durability

The first layer is the cognitive structure that transcends content to become schema, is recalled at low cognitive load, and can be transferred to new situations (Sweller, 1988; Wiggins & McTighe, 2005). Here “durability” is an empirical-pedagogical property: transfer and schema formation are measurable goals.

4.1.2. Spiritual-Semantic Eternality

The second layer is the eternalisation, beyond the transience of content, of the value orientation that situates knowledge within a frame of purpose and responsibility. The terminological distinction here is deliberate: structure becomes durable, while meaning becomes eternal; the two are different axes. PIF’s emphasis on “invariance” acquires meaning precisely here: the shared meaning and structure that remain invariant beneath changing (transient) content (Demirkus, 2026a, 2026b). Separating these two layers also prevents the theological component of the study from being conflated with the empirical claim.

4.2. Intelligence, Reason, and Good Character

The framework distinguishes intelligence from reason, terms often used as synonyms. Intelligence is the capacity for instrumental problem-solving and pattern recognition; it can be found, at varying levels, in humans, animals, and artificial systems. Reason is the higher faculty that orients intelligence with good character, conscience, and long-term responsibility. This distinction converges strongly with Sternberg’s (1998) balance theory of wisdom: wisdom is the orientation of successful intelligence toward the common good through ethical values and differs from what intelligence tests measure. For precisely this reason, Sternberg (2001) argued that schools should teach not only intelligence but also wisdom.

This distinction is also supported by the contemporary debate over the purpose of education. Biesta (2010) argues that education cannot be reduced to measurable achievement (qualification) alone; the dimensions of socialisation and subjectification must also be central. The intelligence–reason–good-character distinction naturally converges with Biesta’s tripartite scheme of purposes: in the age of AI, as qualification is partly delegated to the machine, the principal burden of education shifts toward subjectification and moral orientation.

Another strand sharpening the difference between intelligence and reason-good-character is the question of “caring about meaning.” Frankfurt (2005) regards discourse indifferent to truth (‘bullshit’) as more dangerous than lying: the liar cares about the truth, whereas indifferent discourse takes no account of it at all. PIF’s aim of “shared meaning” can be read precisely as a design intervention against this indifference; clarity is the engineering counterpart of caring about meaning.

The work-ethics literature strikingly shows why the intelligence–good-character distinction is critical. The presence of high coordination and efficiency between management and workforce in a system (i.e., instrumental intelligence and cooperation) does not suffice to make that system “humane”; historical counter-examples show that flawless industrial cooperation can be harnessed to destructive ends. Likewise, performing work with passion does not morally justify the work’s purpose; the Kantian principle of “respect for persons” (Bowie, 1999) and classical normative ethics (Frankena, 1973) show that instrumental success alone does not legitimate a moral end. These examples support the thesis that intelligence (the means) becomes constructive only when placed in the service of good character (the end).

4.3. Implications for Education and Assessment Systems

The most concrete consequence of the intelligence–reason–good-character distinction lies in assessment. Central examinations largely measure the speed of intelligence and instrumental recall; they produce no systematic counterpart for dimensions such as reason, good character, and responsibility. This study argues that evaluation should cease to be intelligence-centred alone and should also encompass the reason-ethics-merit axis.

The counterpart of this critique in measurement theory is the eliminative logic of Classical Test Theory (CTT) (Lord & Novick, 1968). In CTT, the ideal success rate for item discrimination is often assumed to be around 50%; an item that everyone answers correctly is devalued on the grounds that it “does not discriminate.” PIF inverts this philosophy: an item that everyone understands correctly is not defective but an engineering product whose semantic noise has been reduced to zero. Table 4 compares the two paradigms.

Table 4 Classical Test Theory and the Perceptual Invariance Framework compared

Criterion	Classical Test Theory (CTT)	Perceptual Invariance Framework (PIF)
Core aim of the system	To rank and eliminate students (intelligence/speed)	To teach everyone; to build a shared base of meaning
Item-value criterion	Difficulty index and discrimination	Clarity index and universal comprehensibility
Ideal success target	~50% success	High clarity (a design target/asymptote)
Interpretation of low success	‘Student inadequate’ or ‘item good (it eliminated)’	‘Material defective’ or ‘semantic noise present in the system’

This logic connects to the proposal of “clarity-indexed scoring”: the value of a material is measured not by how many people it eliminates but by its capacity to produce a single, consistent meaning across the entire target audience (Demirkus, 2026a). The high clarity levels here (e.g., 95–99%) are not promises to be met overnight but engineering asymptotes requiring empirical calibration.

The proposal to add a “moral” dimension to evaluation requires a concrete measurement ground. The objection that morality cannot be fully measured is valid; yet certain dimensions of moral reasoning can be operationalised. For example, Rest’s (1986) Defining Issues Test is an established instrument that measures the level of moral reasoning in a relatively objective manner and shows that the reason-good-character axis is not entirely unmeasurable.

Safeguard note. In this section, proposals to bring “moral evaluation” into assessment (e.g., behaviour-based merit tracking) must be presented with an explicit discussion of the risks of privacy, subjectivity, and surveillance; safeguards — such as using evaluation results only for developmental purposes and anonymising the data — should be made concrete.

4.4. The Governance Axis: Humane Democracy

The same principle of “shared meaning and merit” can also be carried into governance. The framework criticises the conception of governance that takes the numerical majority as the sole criterion as a “numerical/majoritarian democracy” and argues that, when not balanced by virtue and merit, it becomes fragile (Demirkus, 2026d). This critique

is consistent with debates in political theory on the limits of majoritarianism and the institutional design of collective reason (Landemore, 2013).

The roots of the concept of “humane governance” belong to no single tradition. The Confucian ideal of *ren zheng* (benevolent/humane governance) (Konfüçyüs, 1979) requires the ruler first to discipline their own ego and to be a moral role model. When the cosmopolitan horizon of the proposed model brings together the Confucian ideal of *ren*, Aristotelian civic virtue, and the shared core of different moral traditions, it rests on a thick value base that is not bound to a single culture. This strengthens the model against the criticism of “imposing a local morality.”

By contrast, the proposed “Humane Democracy” is a governance model designed on the basis of universal virtues and merit (Demirkuş, 2026d). This orientation is consistent with the virtue-ethics tradition (MacIntyre, 1981) and with the thesis that democracy needs the humanities and a humane education (Nussbaum, 2010). Its principal mechanisms, so as not to remain abstract, can be concretised as follows:

- **Graduated/Merit-Weighted Vote (KSAOH):** Questioning the dogma of absolute numerical equality, it proposes that merit and moral maturity carry a certain weight in decision processes. It does not exclude quantity; it brings quality into the process. How merit criteria are determined, and by whom, must be discussed openly.
- **Synergistic Assembly:** An assembly design in which, instead of polarisation and destructive party competition, collective reason and science are used cooperatively in problem-solving.
- **Limiting the influence of capital:** A proposal for state-funded elections to prevent democracy from turning into plutocracy.
- This critique of majoritarianism is strengthened when presented together with its own counter-position. Brennan (2016) mounts a strong defence of “epistocracy” (rule of the knowledgeable/competent); Estlund (2008) sets against it the “expert boss fallacy”: that a person’s knowing a matter best does not grant them authority to rule over others. Humane Democracy positions itself between these two poles, aiming to bring epistemic reason into the system without descending into the tyranny of experts.
- **Balance note.** Governance proposals should be presented not in an advocacy register but through a proposal-risk-safeguard balance. In particular, the concentration of power (“who guards the guardians?”), the preservation of the separation of powers, and the subjectivity of merit measurement must be addressed openly.

Carrying the emphasis on “shared meaning and durable structure” sought in education into governance makes it possible to read the Humane Democracy and AI-ethics components within a single integrated framework: in both, the issue is to build an institutional “architecture of meaning” that orients intelligence toward the common good.

4.5. AI Ethics

The framework sees AI not only as a threat but also as an opportunity for moral design: an AI that is value-aligned, transparent, and open to human oversight can function as an institutional filter against misuse (Demirkuş, 2026d). This orientation is consistent with the convergence observed globally in AI-ethics principles — transparency, justice, non-maleficence, responsibility, and privacy (Jobin, Ienca & Vayena, 2019). These principles have also been reinforced at the institutional level by documents such as the OECD Recommendation on AI (OECD, 2019/2024) and the UNESCO Recommendation on the Ethics of AI (UNESCO, 2021), both of which prioritise human-centred, auditable, and accountable AI.

The study’s thesis of “orienting intelligence with reason and good character” maps directly onto the control/alignment problem in the AI-safety literature. Russell (2019) argues that turning AI from a mere optimisation machine into a system aligned with human values is a mathematical-philosophical necessity; Bostrom (2014) addresses the same problem along the axis of long-term/existential risk. When the proposed ‘constitutional/autonomous-system ethics’ approach is related to this literature — even as the gap between principle and implementation is itself explicitly noted (Jobin et al., 2019) — it rests on a firmer technological ground.

5. Discussion

5.1. Clarity Does Not Guarantee Moral Truth

The strongest objection that can be raised against the framework is this: “clarity” or “communication fidelity” in epistemology is not equivalent to “moral truth” in normative ethics. The fact that an idea — a piece of propaganda, say — has been transmitted to the masses with zero semantic noise, with utmost clarity, does not make that idea true; totalitarian systems in history have often been highly successful at producing “uniform, stable meaning.” High clarity alone therefore yields no moral conclusion; clarity is merely a “carrier of meaning.”

For this reason, the framework must draw in bold strokes the “wisdom” filter that audits the ethical value of clearly transmitted content; a moral safeguard against the “tyranny of clarity” must be in place. Habermas’s (1984) theory of communicative action is useful for providing this safeguard: rational consensus (shared meaning) is legitimate only in an “ideal speech situation” purged of domination and power asymmetries. When PIF’s targeted shared meaning is supported by the Habermasian framework, it is grounded not as authoritarian rote-learning but as a democratic, shared rational consensus.

5.2. “Who Guards the Guardians?”: The Epistocracy Dilemma

Merit-weighted mechanisms such as KSAOH carry within them the risk of power concentration and authoritarianism. The first question a reviewer will ask is clear: which institution/algorithm decides who is how meritorious, and what guarantees that this apparatus will not become corrupt? This objection is directly linked to Estlund’s (2008) “expert boss fallacy.” The study must state explicitly that merit and virtue assessment should be bound not to a single central body but to transparent, multi-stakeholder, auditable structures (pluralist civic councils, open and manipulation-resistant oversight mechanisms). Preserving the separation of powers is indispensable to this model.

5.3. The Nature of Language and the Limits of Determinism

The vision of a “universal mathematical language” (EduCode) that aims to eliminate semantic noise entirely risks over-emphasising determinism in education. Twentieth-century philosophy of language showed that language is not merely a mathematical code but a flexible “language game” living within social contexts (Wittgenstein, 1953/2009). The targeted high rate of shared meaning should therefore be softened — not as a freezing of the living nature of language, but as an asymptotic ideal of in-context consistency in the transmission of basic concepts.

5.4. Methodological Limitations

As an original theoretical contribution, the present study develops and argues its framework through conceptual analysis; empirical validation lies beyond its present scope and constitutes the next phase of the research programme. PIF’s clarity targets and the mechanisms of Humane Democracy are proposals to be tested through empirical calibration and gradual pilot trials. Loaded terms such as ‘matrix/structure’ should be fixed to a single working definition in the article. Moreover, the framework should be kept open to a broader dialogue with the external literature; the original contribution of its concepts should be grounded not only in the author’s own work but also in the relevant external theories.

5.5. Future Research

The proposed framework opens onto a testable research programme. Future studies could: (1) experimentally measure the degree to which PIF-based materials produce shared meaning in the target audience, across different student groups, using comprehension tests, and calibrate the “clarity index”; (2) develop multidimensional assessment instruments, grounded in the intelligence-reason-good-character distinction, that also include moral reasoning; (3) test the ethical, legal, and applied limits of the Humane Democracy mechanisms (KSAOH, Synergistic Assembly) through simulation and small-scale pilot trials. This programme turns the framework from a normative call into a set of empirically testable hypotheses.

6. Conclusion

In an age where AI makes intelligence abundant, the task of education and governance shifts from producing the instrument to giving direction to the instrument. By positioning science and technology as means rather than ends, this study has defended the durability of cognitive structure and the eternalisation of meaning against the transience of content, and has carried this, on the basis of the Perceptual Invariance Framework, into education, assessment, and

governance. The framework's strength is matched by its limits: clarity does not guarantee moral truth, merit measurement carries the risk of power concentration, and the living nature of language resists absolute determinism. When these limits are fortified with external theories — Habermas's communicative rationality, Estlund's critique within epistemic democracy, and Russell's alignment approach — the proposed synthesis is strengthened. In sum, the study is a call for a transition from intelligence to reason, from the instrument to good character, and from the indeterminacy of natural language to a ground of shared meaning — at once a theoretical proposal and a research programme to be tested empirically.

Compliance with ethical standards

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The author declares that there is no conflict of interest.

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