

Preparing Meaning for Contingency: Rethinking Reading in the Age of AI

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Abstract

As artificial intelligence makes polished explanations, summaries, and other knowledge-like artifacts increasingly abundant, the value of reading cannot be understood only as the acquisition of already articulated knowledge. This essay proposes a complementary view. Reading prepares a repertoire through which future encounters may become meaningful. It enlarges the range of things that can later appear as questions, relations, analogies, and objects worthy of attention. To describe a second mode of learning that begins not from an already articulated problem but from an encounter with an unsettled world, the essay introduces the provisional term *contingency-mediated learning*. Such learning occurs when prior conceptual preparation meets an unplanned encounter and gives rise to perplexity, relation-recognition, hypothesis, or aesthetic arrest. The argument is developed through examples involving trust and distrust, self-reinforcing power, dynamical-systems language, mathematical beauty, and the political imagination of the starry sky. The essay distinguishes this proposal from established theories of generative learning, argues that contingency can disclose both problems and possible relations, and places aesthetic judgment near the beginning rather than the end of inquiry. It concludes that reading and encounter are not rival methods. Reading can prepare meaning for contingency; contingency can return questions to reading. In an age of abundant answers, this recursive relation may become increasingly important for preserving the human capacity to recognize what is worth asking.

Keywords: reading; contingency-mediated learning; problem genesis; aesthetic judgment; inquiry; artificial intelligence; relation manifestation; mathematical beauty; epistemic formation

Essay Note

This essay begins from a simple experiential contrast. There are periods in which learning is organized around long, stationary contact with books, papers, lectures, and other structured symbolic materials. There are also periods in which movement through ordinary life becomes more prominent: walking, observing, waiting, noticing, becoming distracted, being interrupted, and encountering objects or situations that were not selected in advance as learning materials. The essay asks whether these two conditions disclose different aspects of knowing.

The argument does not oppose reading to experience, nor does it claim that walking, spontaneity, or contingency is intrinsically epistemically superior. The central proposal is relational. Prior reading can alter what becomes noticeable later. A concept first acquired in a textbook may remain dormant until an unrelated encounter activates it. Conversely, an encounter can produce a question that makes a later return to books newly purposeful. The two modes can therefore form a recursive circuit rather than a hierarchy.

The essay provisionally calls the second mode *contingency-mediated learning*. The term is chosen partly to avoid confusion with the established educational-psychological literature on *generative learning*, where generation usually concerns the learner's active organization and integration of provided learning materials with prior knowledge [5, 2]. Contingency-mediated learning, as used here, concerns an earlier and less structured moment: how something not yet articulated as a learning problem becomes a question, relation, analogy, or object of inquiry through an encounter.

Three claims organize the essay. First, reading can prepare conditions under which future contingencies become meaningful. Second, contingency can disclose not only isolated questions but possible relations among phenomena that had previously appeared separate. Third, aesthetic judgment can function as one mode of disclosure: among countless possible objects and problems, something arrests attention and appears worth pursuing before its value has been fully justified.

These claims remain modest. An encounter can generate a hypothesis without validating it. A felt analogy can be illuminating without establishing structural identity. Aesthetic salience can guide attention without guaranteeing truth or importance. The essay therefore treats contingency as a source of inquiry, not as a substitute for verification.

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Status. This working essay records an exploratory philosophical position. Its central distinctions are intended as provisional conceptual tools rather than settled educational or psychological constructs. Historical examples are used to clarify the argument and do not replace specialist historical inquiry.

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Statement on the use of language models. The exploratory discussions and preparation of this essay involved OpenAI's ChatGPT. ChatGPT supported conceptual reconstruction, source discovery followed by source verification, argumentative criticism, and drafting in $\text{\LaTeX}$. The author selected the questions, examples, conceptual commitments, and final argumentative direction and bears responsibility for the manuscript.

1 When Reading Becomes Less Stationary

There is a familiar picture of learning: a person sits before a book, receives a sequence of symbols, follows an argument, remembers distinctions, and gradually enlarges what can be explicitly said. The picture is incomplete, but it is not false. Much of education depends upon precisely this possibility. A textbook can compress decades or centuries of inquiry into a path that another person can traverse in hours. A well-written history can place events into a sequence that no individual life could directly witness. A mathematical treatise can make available structures that would be extraordinarily difficult to reconstruct independently. Reading is one of civilization's most powerful devices for inheriting the work of other minds.

Yet another mode of learning becomes visible when stationary reading is interrupted. One walks through a city. Attention is repeatedly displaced. A flower appears where no flower had been sought. A building organizes movement in a way that suddenly feels politically meaningful. A conversation leaves behind a residue of distrust that seems to intensify itself. A relation of power is encountered not as a term in a theory but as something that reorganizes what can be said and done. One looks upward at the night sky and discovers that a proposition once encountered in a history book has become a question.

The difference is not simply that one mode is textual and the other sensory. Nor is it that one is passive and the other active. Reading can be intensely active; walking can be cognitively empty. The deeper difference concerns the *origin of the problem*. In much structured learning, the learner enters after someone else has already experienced perplexity, articulated a question, selected relevant distinctions, and organized a route toward an answer. In an encounter, by contrast, one may participate in the earlier and less orderly process by which something becomes a problem at all.

John Dewey placed perplexity near the beginning of reflective thought. In *How We Think*, he described reflection as arising from a state of hesitation, doubt, or difficulty, followed by inquiry directed toward resolving what has become problematic [3]. His later account of inquiry similarly began from an indeterminate situation that must be transformed rather than from a proposition that merely awaits an answer [4]. The present essay takes this old insight seriously under a new technological condition. What happens to reading when systems capable of producing already articulated explanations become extraordinarily abundant? What remains distinctive about the slow accumulation of concepts if polished symbolic answers can be generated almost immediately?

One possible answer is to defend reading as a superior source of reliable content. Sometimes that is correct, but it is not sufficient. Artificial intelligence can already summarize, explain, compare, translate, reorganize, and elaborate large bodies of symbolic material with remarkable speed. The relevant question is therefore not simply whether books remain useful. They do. The more interesting question is whether reading has a function that becomes more visible precisely when information and explanation become cheap.

The proposal of this essay is that reading prepares meaning for contingency. Reading does not merely transfer propositions. It furnishes concepts, distinctions, analogies, historical examples, formal structures, and styles of attention that may remain latent until some later encounter makes use of them. What is learned today may not become epistemically active today. It may instead alter the set of things that can become salient tomorrow.

This changes how one might understand the temporal structure of learning. A book can be read at time t_0 without yielding an immediate problem. Months or years later, an event at t_1 can activate part of what was read. The earlier reading and the later encounter jointly condition whether a new question becomes manifest at t_1 .

The value of the earlier reading is therefore partly deferred. It is realized when the world later supplies an occasion that the reader can now recognize. In this sense, reading expands not only a stock of knowledge but a space of future intelligibility.

The argument matters in the age of artificial intelligence because the relative scarcity of different epistemic activities is changing. A coherent answer can be produced rapidly. A polished explanation can arrive before confusion has matured into a question. A learner can be surrounded by articulated knowledge while participating less often in the genesis of inquiry. The danger is not merely misinformation or cognitive laziness. It is possible to become highly supplied with answers while becoming less practiced at noticing what should become a question.

The pages that follow distinguish two learning modes, examine how problems and relations can manifest through contingent encounter, and then consider aesthetic judgment as a mechanism of attention. The aim is not to romanticize spontaneity. Contingency can mislead; analogy can overreach; beauty can seduce. The claim is narrower and, perhaps, more important: some dimensions of knowing occur before verification, at the point where the world first becomes questionable. Reading can help prepare that point of contact.

2 Two Modes of Learning

For the purposes of this essay, it is useful to distinguish *structured learning* from *contingency-mediated learning*. The distinction is analytic rather than absolute. A single afternoon can contain both. A textbook can provoke an unexpected insight; a walk can become highly structured by a prior research question. The distinction concerns where the organization of the epistemic episode principally comes from.

Structured learning begins with material that has already been selected and articulated as learnable. A chapter has a title. A theorem has a statement. A historical controversy has a recognized vocabulary. Even when the learner must perform difficult inferential work, much of the surrounding problem-space has already been prepared. In an idealized case, the learner begins with an articulated problem, works through organized material, reconstructs the relevant reasoning, and arrives at an understanding.

This mode is indispensable. It is how humans inherit mathematics without rediscovering arithmetic, philosophy without independently recreating its entire conceptual history, and history without reliving the past. The organization of knowledge is itself an achievement. To criticize structured learning because it is structured would be to forget that civilization depends upon the possibility of transmitting hard-won distinctions.

There is, however, another sequence. An encounter first produces felt salience or perplexity. A problem is then formed, concepts are sought or recalled, and only later may a provisional resolution become available.

Here the learner does not initially know what the lesson is. The world has not labeled the relevant variable. An episode of distrust does not arrive with the heading “dynamical systems.” A political relation does not announce which theory of power should be used. The night sky does not display a citation to a history of political cosmology. What becomes learnable must first be recognized as such.

The term *contingency-mediated learning* is proposed for this second mode. “Contingency” emphasizes that the encounter was not wholly selected in advance for its pedagogical function. “Mediated” emphasizes that accident alone is not enough. The learner brings a history of reading, memory, practice, expectation, and sensibility through which the encounter acquires significance. The same street, flower, conflict, or star can remain merely present for one person and become a research question for another.

The term should be distinguished from the established literature on *generative learning*. In educational psychology, generative learning typically refers to learners actively making sense of provided material by organizing it and integrating it with prior knowledge [5, 1]. Recent work on AI-mediated mathematics education has explicitly asked where the locus of this generation resides when AI systems can perform parts of the generative activity [2]. That literature is highly relevant to the contemporary transformation of learning, but the present concern lies one step earlier. The question is not primarily how a learner generates meaning from material already identified as learning material. It is how an event

becomes material for inquiry at all.

The distinction can be expressed in terms of a problem-space. Structured learning usually places the learner inside a partially articulated space Q of recognized questions. Contingency-mediated learning can participate in changing what belongs to that space. Schematically, the composition of the question-space need not remain fixed:

$$Q_{t+1} \neq Q_t.$$

An unnoticed phenomenon becomes a possible question. A previously separate pair of phenomena becomes a possible relation. A concept once learned in one domain becomes applicable, perhaps only analogically, in another. The change is not yet knowledge in the strong sense. It is a change in what can be investigated.

This distinction also clarifies why the two modes should not be ranked simply as higher and lower. Without structured learning, contingency often lacks conceptual purchase. A person who has never encountered the language of attractors, feedback, hysteresis, or stability may still experience a self-reinforcing relation of distrust, but the experience will not spontaneously offer the dynamical hypothesis that another person might formulate. Conversely, someone who reads dynamical-systems textbooks without encountering a phenomenon that calls those concepts into new use may possess the vocabulary without generating a new question.

The relation is therefore recursive. Structured learning can create conceptual preparedness; a contingent encounter can then make a new question manifest; and that question can send the learner back to structured study with a different purpose.

The return is important. Once a question has become one's own, reading changes character. One no longer reads only to receive what another author decided was important. One reads in search of a distinction, counterexample, historical precursor, mechanism, or method that can bear upon a difficulty already felt. The same book can therefore be read twice in epistemically different ways: first as inherited structure, later as a resource recruited by a problem that emerged elsewhere.

This is one reason the opposition between "book learning" and "experience" is too crude. A powerful encounter may depend upon years of reading. A powerful reading may depend upon an encounter that made its claims newly intelligible. The more productive contrast is between receiving an already articulated problem and participating in the process through which the problem becomes articulated.

3 The Genesis of a Question

A finished question hides its own prehistory. Once written on a page, a problem appears to have existed in that form all along. "Why does distrust persist?" "What stabilizes political power?" "Why is this conjecture important?" "How did astronomical order enter political imagination?" Each sentence gives the impression of an object ready for examination. Yet the historically and phenomenologically earlier situation is often much less articulate.

Before a question there may be only discomfort. Something does not fit. A recurring interaction feels strangely closed. A pattern seems to reproduce itself. An explanation that once sounded adequate suddenly becomes unsatisfying. Dewey's language of perplexity remains useful here because it preserves the interval between an event and its conceptual determination [3]. The person has not yet solved a problem because the problem itself is still being formed.

Structured knowledge often compresses this interval. A textbook may recount why a problem historically mattered, but the account arrives after the fact. It can say that earlier thinkers were puzzled by a phenomenon, that several approaches failed, and that a new concept eventually resolved the difficulty.

This narrative is valuable, yet narrated perplexity is not identical to being perplexed. The reader receives a representation of uncertainty from a position in which the uncertainty has already been made legible.

This does not imply that only direct experience is authentic. No person could directly reenact the genesis of every important question. The point is more limited: there is an epistemic difference between being told that a difficulty once existed and encountering a situation in which one's own conceptual organization becomes insufficient.

That difference matters because the path from perplexity to question is itself formative. Consider an episode of distrust. One may first notice only that interaction has become difficult. Later one observes that defensive behavior produces more defensive behavior, that reduced openness makes cooperative evidence scarce, and that each actor increasingly interprets the other through a suspicious frame. The initial statement "we do not trust one another" then becomes insufficient. A different question appears: does distrust reorganize the relation in ways that help reproduce distrust?

The problem has changed from a descriptive property to a dynamical one. Nothing in the original experience contained the word "dynamics." The transformation required comparison, memory, and conceptual availability. If the observer has previously learned about positive feedback, stable regimes, basins of attraction, or hysteresis, another question may then become possible: could some social relations exhibit attractor-like behavior?

At this point the prior textbook has done something more important than supply a definition. It has made available a possible form of question. The concept of an attractor may have been learned years before without any connection to trust. The encounter now activates it as an analogical resource. This is not deduction. It is closer to abductive or conjectural reconstruction: observed self-reinforcement is interpreted in the presence of an available dynamical concept, and an attractor-like hypothesis becomes thinkable.

The hypothesis may later fail. Perhaps the relevant social process lacks anything that should rigorously be called an attractor. Perhaps the state variables cannot be adequately defined, the apparent stability is institutionally imposed, or the analogy obscures agency and interpretation. None of these possibilities cancels the epistemic event. The important fact is that a new line of inquiry became available.

This suggests a different account of what reading accumulates. Let K_t denote explicit knowledge at time t . An ordinary acquisition model emphasizes growth in K_t . But reading may also alter a less visible set $\mathcal{P}_t$: the set of patterns, distinctions, analogies, and questions that the person is capable of recognizing under future conditions. The educational consequence of reading may therefore be represented not only as

$$K_t < K_{t+1},$$

but also as

$$\mathcal{P}_t \subsetneq \mathcal{P}_{t+1}.$$

The person has not merely learned another proposition. The world has become capable of surprising them in more articulated ways.

This is why prior knowledge can make contingency more, rather than less, productive. It is tempting to imagine that spontaneity requires conceptual innocence, as though books contaminate direct perception. Often the opposite is true. Without a repertoire, an interruption remains merely an interruption. Dewey himself emphasized that perplexity requires relevant prior experience if it is to develop into productive reflection [3]. What matters is not the absence of concepts but the willingness to let an encounter reorganize their use.

The genesis of a question is therefore neither purely internal nor purely external. The world does

not hand us finished questions, and the mind does not fabricate them independently of encounter. A question emerges from a relation between a prepared but incomplete repertoire and something that resists or exceeds its current organization. Contingency-mediated learning names this relation at the moment it becomes generative.

4 Reading as Preparation for Manifestation

If reading is not understood only as immediate acquisition, another possibility becomes visible: reading prepares conditions of manifestation. A sentence, diagram, historical case, or mathematical structure can remain dormant in memory until a later encounter makes it newly relevant. The meaning of the earlier reading is not exhausted at the moment of comprehension.

This temporal delay is easy to overlook because educational systems often require immediate evidence that learning has occurred. A student reads, then answers a question. A lecture is followed by an examination. A paper is summarized shortly after it is assigned. Such practices reasonably test retention and understanding, but they privilege short epistemic horizons. They can make it appear that the value of a text should be demonstrable almost immediately.

Yet some reading works otherwise. One reads about a political economy of accumulation and does not know where the concept will later become vivid. One studies a dynamical system and does not anticipate that the idea of an attractor will later be recalled during an interpersonal conflict. One encounters a philosophical distinction whose usefulness remains obscure until a future decision makes the distinction unavoidable. The earlier text becomes active retrospectively.

The process resembles what Michael Polanyi emphasized in a different context when arguing that knowing exceeds what can be exhaustively articulated [10]. The present argument is not that all delayed epistemic effects are tacit knowledge in Polanyi's technical sense. It is that explicit reading can transform dispositions of attention, comparison, and recognition in ways not reducible to the sentences one can immediately reproduce. A learned concept can become part of the background from which later salience emerges.

This motivates a stronger formulation: reading can change what is capable of appearing *as* something. A city street can appear as a mere route, as architecture, as a distribution of commercial rents, as an organization of visibility, as a mechanism for governing flows, or as a field in which power and value become spatially legible. The material scene does not by itself select among these possibilities. Prior formation participates in disclosure.

Hermeneutic traditions have long insisted that understanding is historically conditioned rather than produced by an unformed spectator. Gadamer's account of historically effected consciousness is one major articulation of this general point [6]. The argument here is narrower and directed toward learning: reading contributes to the horizon within which a later contingency can become a question. The fact that prior formation conditions disclosure does not make disclosure arbitrary. It means that learning changes the relation between a person and what the world can become for that person.

One might call the result *conceptual readiness*. Let R_t denote a repertoire of distinctions, images, formal structures, historical cases, and analogies available at time t . Let E_{t+1} be a later encounter. The same encounter can generate different epistemic outcomes depending on R_t . Schematically, one may write

$$Q_{t+1} = H(R_t, E_{t+1}),$$

where H does not denote a fixed psychological law but only the dependence of question formation on both prior repertoire and encounter.

A different repertoire R'_t may yield no question, or a different question altogether. Reading therefore does not determine what an encounter will mean. It alters the space of possible meanings.

This provides one answer to the question of why reading remains necessary when artificial intelligence can provide information on demand. If the only function of reading were retrieval, one might plausibly delegate more of it. But on-demand retrieval presupposes that one already knows what to ask for. The more foundational role of prior formation concerns the production of that very demand. Why did a person recognize a phenomenon as interesting? Why did one analogy occur rather than another? Why did a contradiction become intolerable instead of invisible?

An AI system can certainly assist in these processes and sometimes provoke them. The argument is not based upon a rigid human-machine boundary. It is instead about temporal and relational structure. A learner who repeatedly inhabits bodies of thought acquires a history of conceptual encounters. That history can be reactivated under conditions no earlier author anticipated. The value of reading lies partly in preparing resources that are not tied to a single predetermined task.

This is why apparently “useless” reading can later prove generative. A concept learned without immediate application may become the missing term in a future question. Poincaré defended mathematics against a narrowly utilitarian demand by emphasizing the fecundity of connections and the importance of theories not chosen solely for immediate application [9]. The same logic can be generalized: reading whose future use is not yet known can widen the field of later recognition.

The educational implication is subtle. If reading is justified only by the propositions a learner can immediately reproduce, then a large part of its generative value will remain invisible. Some of its significance lies in future encounters that cannot be scheduled. Reading prepares a mind for events whose epistemic importance is not yet known.

In this sense, reading prepares meaning for contingency. It does not assign meaning to every future event. It does not abolish surprise. It allows surprise to become articulated.

5 When Contingency Discloses Relations

The first claim of this essay concerned problem manifestation: an encounter can make something become a question. A second claim goes further. Contingency can also make a *relation* visible among phenomena that had previously remained separate.

This is important because theoretical work often begins not with a single object but with a suspicion of common structure. One notices that distrust tends to reproduce conditions favorable to further distrust. Later one encounters a relation of power that appears to preserve the conditions of its own reproduction. Elsewhere one reads about capital accumulating advantages that facilitate further accumulation. These phenomena differ profoundly in content, history, normativity, and mechanism. Yet an observer may experience a moment in which their similarities become salient: each seems capable, under some conditions, of reorganizing subsequent relations in ways that support its own continuation.

The resulting thought is not yet a theory. It is a witnessed possibility of relation. The observer has become aware that what looked like three isolated descriptions might belong to a broader family of self-reinforcing relational processes. The relation is conjectural rather than proven.

The availability of dynamical-systems concepts can then deepen the question. If a relational state changes the transition structure of the system that reproduces it, one can represent the intuition schematically as

$$x_{t+1} = F(x_t, R_t, E_t),$$

where x_t denotes a relational state, R_t a current configuration of relations, and E_t a surrounding

environment. If the current state also changes the relation structure,

$$R_{t+1} = G(R_t, x_t, E_t),$$

then the two update equations are mutually coupled: the current relational state participates in changing the later relation structure, and that changed relation structure in turn enters the evolution of the relational state. This is the feedback loop of interest.

A state may, in this sense, participate in constructing a world in which its own reproduction becomes easier. Distrust can alter communication so that trustworthy evidence becomes harder to generate. Power can influence resource and institutional arrangements that preserve asymmetry. Capital can purchase conditions that enlarge future opportunities for accumulation. The mechanisms are not identical, and no single equation establishes that they belong to the same dynamical class. But the encounter of these cases can motivate the comparative hypothesis.

This is a second form of contingency-mediated learning. The contingency does not merely disclose a new object. It juxtaposes experiences, memories, and conceptual structures in a way that permits a relation to be noticed. Separate experiences can become newly adjacent in thought; a resemblance becomes salient; a possible relation is entertained; and only then does a comparative hypothesis begin to take shape.

Such moments are often retrospectively cleaned up in formal scholarship. The final paper presents definitions, propositions, mechanisms, and citations. It may be difficult for a reader to see that the inquiry began because two things unexpectedly looked alike. Yet the capacity to notice structural resemblance across domains is one source of theoretical invention.

Poincaré repeatedly emphasized the role of choosing and comparing relations in mathematical and scientific work. In *Science and Method*, he argued that nature forces mathematics toward problems that pure combinatorial freedom might never have selected, and he connected the perception of inner harmony with what is scientifically and aesthetically worth attention [9]. The present argument extends that intuition beyond mathematics: the world can supply juxtapositions that reorganize the map of possible relations.

The idea can be stated in terms of two changing spaces. Reading expands a space of possible questions $\mathcal{Q}$, but it also expands a space of possible relations $\mathcal{R}$:

$$\mathcal{R}_t = \{\text{relations and structural correspondences that can become thinkable}\}.$$

A person who has studied dynamical systems possesses possibilities of comparison unavailable to the same person beforehand. A self-reinforcing social relation can now be encountered not only morally or descriptively but dynamically. Conversely, social experience can return pressure upon the mathematical analogy by forcing distinctions among feedback, attractor-like stability, path dependence, hysteresis, and institutional lock-in.

This reciprocal pressure is crucial. If the dynamical concept is merely imposed, then the analogy becomes decorative. If the encounter can modify which dynamical concept seems appropriate, then the cross-domain relation is epistemically productive. The point is not to translate all social phenomena into mathematics. It is to let a concept from one domain become a question-generating instrument in another while preserving the possibility that the second domain will resist the translation.

Thus the second claim can be stated simply: contingency can disclose connections. Sometimes theory begins because the world places two things near one another in experience before scholarship has placed them near one another in argument. Reading supplies possible forms of relation; encounter selects, disturbs, and recombines them.

6 Aesthetic Arrest and the Selection of What Matters

A third feature of contingency-mediated learning concerns selection. The world supplies far more possible objects than inquiry can pursue. Reading supplies far more concepts than any person can simultaneously activate. Artificial intelligence can now generate still more candidate explanations, analogies, questions, and conjectures. Under such abundance, inquiry depends not only upon what can be thought but upon what arrests attention.

This is where aesthetic judgment enters the argument. The term is used broadly and provisionally. It does not refer only to judgments of artistic beauty. It names the experience in which one object, pattern, question, or relation appears unusually worth attending to before a complete epistemic justification has been supplied. One stops. Something feels elegant, strange, deep, disproportionate, harmonious, or somehow promising. The judgment can later be revised, but it initially reallocates attention.

The sequence may therefore begin with contingency, followed by an experience of aesthetic salience. That salience reallocates attention; sustained attention can help a question take form; and only then does inquiry become organized.

Aesthetic judgment, on this account, is not a certificate of truth. To find a conjecture beautiful does not make it true. To find an analogy elegant does not establish an isomorphism. The epistemic function is earlier: aesthetic salience can help determine what receives the scarce resources of sustained thought.

Mathematics provides a particularly clear illustration. There are infinitely many statements one might formulate and innumerable difficult problems one might construct. Yet mathematical communities do not treat all difficulty as equally valuable. Some problems are experienced as contrived; others appear to reveal unexpectedly deep structure through a simple statement or a surprising connection. Poincaré explicitly linked mathematical work to aesthetic judgment and argued that among innumerable combinations, the mathematician is guided by a sense of harmony and beauty [9]. Hadamard's later study of mathematical invention likewise emphasized the role of unconscious work, incubation, and forms of aesthetic selection in mathematical discovery [7].

The point becomes more pressing when AI can enlarge the candidate space. If a machine can propose thousands or millions of conjectures, difficulty alone cannot decide which deserve years of collective attention. Novelty alone cannot decide either, because arbitrary novelty is cheap. A future mathematics saturated with machine-generated candidates may therefore make an old human problem newly visible: what makes a question worth pursuing?

One possible answer is that value is entirely downstream and measurable by eventual consequences. But inquiry cannot wait for consequences before allocating attention. Selection must occur under uncertainty. Mathematicians, scientists, philosophers, and artists therefore rely partly upon anticipatory judgments: this structure seems fertile; this analogy seems to open a landscape; this question seems capable of reorganizing many others. Such judgments are fallible, historically conditioned, and partly social. Nevertheless, without them, inquiry would drown in possibility.

The same structure appears outside mathematics. Why does one person walk past a flower while another becomes curious about its form? Why does a night sky become beautiful rather than merely dark? Why does a repeated pattern in political life appear theoretically significant rather than merely unfortunate? The answer cannot be reduced to the object alone. Prior formation matters. A person learns what kinds of symmetry, tension, anomaly, historical resonance, or formal economy can be perceived as significant.

Reading therefore prepares aesthetic judgment as well as conceptual recognition. It does not program a fixed taste. It enlarges the repertoire through which salience can occur. A mathematician who has encountered many proofs can perceive an economy or unexpected connection that a novice cannot yet appreciate. A historian can see symbolic density in an object that another observer experiences only visually. A person familiar with dynamical systems can feel that a self-reinforcing relation has a form

worth isolating.

This makes aesthetic judgment part of epistemic formation. It operates between abundance and inquiry. If knowledge acquisition is represented as the accumulation of propositions, this function remains peripheral. If inquiry begins with the selection of what deserves sustained attention, it becomes central.

The AI age intensifies this point because the bottleneck shifts. When answers are scarce, the ability to obtain an answer is visibly valuable. When candidate answers, questions, and structures become abundant, selection becomes a larger part of the problem. We can imagine

$$|Q_{\text{generated}}| \gg |Q_{\text{humanly pursuable}}|.$$

Some process must map the first set into the second. Evaluation criteria, institutional priorities, social needs, proof prospects, and expected usefulness will all matter. Yet none fully eliminates judgment. The question “what deserves a life of attention?” cannot be answered by difficulty alone.

Contingency-mediated learning gives aesthetic judgment a place to become visible to the learner. In a textbook, historical selection has already occurred. The chapter contains problems that someone judged worth preserving. The learner may never confront the larger field of alternatives from which those problems were selected. An encounter in ordinary life can restore this earlier moment: among countless things, something unexpectedly matters. One discovers not only an object but one’s own criterion of arrest.

For this reason, contingency can disclose a third kind of relation: the relation between a knower and what the knower finds worthy of attention. This relation is neither arbitrary preference nor established truth. It is an event of orientation. Inquiry often begins there.

7 The Starry Sky and the Return of an Old Question

Consider a simple historical example. A reader can learn from books that astronomy, cosmology, and political order have been closely related in many societies. In early China, scholarship has documented a long-standing symbolic and practical importance attached to the celestial pole and the circumpolar region, including connections between the cosmic center and the political center [8]. As historical knowledge, the proposition can be understood, remembered, and cited.

Yet the epistemic experience changes when one later encounters the night sky itself. The proposition “astronomical order influenced political imagination” is already articulated. The encounter can produce a different question: among so many ordered things in the world, why did the sky become such a powerful source of political symbolism? Why might the region near the celestial pole, around which the surrounding sky appears to turn, have been especially suggestive for imaginaries of centered order?

The observer looks again. The question is no longer merely whether a historical tradition associated celestial and political order. The new question concerns the experiential and structural affordances of that association. A relatively stable center surrounded by apparent rotation can suddenly appear not as a neutral astronomical fact but as a form with political imaginative potential.

The thought must be expressed cautiously: an experienced celestial structure may suggest a political analogy of centered order, but the suggestion is conjectural rather than evidential. Looking at the sky does not establish a historical causal explanation. It cannot tell us how a specific court, text, ritual tradition, or political actor understood the heavens. Nor should the modern observer project contemporary concepts backward. Historical claims still require texts, archaeology, specialist chronology, and comparison. The encounter generates a question that must return to history.

This return exemplifies the recursive structure of the essay. First reading supplies knowledge of a connection. Encounter then produces perplexity about the connection’s genesis. A new question appears,

and the second reading becomes an investigation in which history is reread as evidence rather than merely received as settled knowledge.

The second reading is not merely repetition. Its purpose has changed. One now searches for whether the proposed experiential structure appears in primary sources, architecture, ritual orientation, political language, or competing cosmologies. The earlier proposition has become a research problem.

The example also illustrates aesthetic arrest. The night sky contains an enormous amount of visual information, but the observer does not process it as an exhaustive astronomical dataset. Something appears beautiful, ordered, or compelling. That aesthetic response directs attention. The thought “why this?” follows. Aesthetic salience thereby mediates between perception and question formation.

This matters because textbooks often preserve the result while hiding the attraction that made the result worth pursuing. A history of astronomy can tell us which observations mattered. A history of political thought can tell us which celestial metaphors became influential. But a person encountering the sky may temporarily re-enter the less stabilized space in which the relation itself is surprising.

The value of such re-entry should not be exaggerated. Historical understanding cannot be reconstructed merely by simulating an ancient gaze. The observer’s perception is already shaped by modern astronomy, urban light, contemporary political vocabulary, and prior reading. There is no innocent return to an original experience. Yet precisely because the encounter is historically situated, it can expose the difference between knowing *that* a relation existed and beginning to understand how a relation could become thinkable.

That difference is central to contingency-mediated learning. A historical statement can be inherited. The perplexity from which a new interpretation grows must occur somewhere again. The night sky can become one such place.

8 Reading After the Abundance of Answers

Artificial intelligence changes the argument by altering the economics of articulation. A learner can now obtain a summary, explanation, comparison, outline, or preliminary synthesis almost immediately. The quality is uneven and verification remains necessary, but the marginal cost of producing knowledge-like structure has fallen dramatically. This creates a peculiar situation: symbolic completion can arrive before epistemic formation has had time to unfold.

The traditional educational sequence often assumed scarcity. One encountered a difficult text because no shorter route could provide the same conceptual inheritance. One practiced exposition partly because producing a coherent explanation was itself demanding. One searched through sources because retrieval required labor. AI does not eliminate these activities, but it can externalize portions of them. Recent educational research has therefore begun to ask how generative learning changes when AI can perform the generation that was previously used as evidence of learner sense-making [2].

The present essay adds another concern. Even if AI produces excellent answers, a person still faces the question of what should become a question. If the learner asks only after a difficulty has become explicit, AI can be extraordinarily useful. But a world of on-demand answers does not automatically produce the encounters through which a difficulty first becomes one’s own.

Indeed, answer abundance can create a temptation toward premature closure. A vague discomfort can be immediately converted into a prompt. The system supplies categories, interpretations, and candidate solutions. This can accelerate inquiry, but it can also shorten the interval in which the learner remains with an incompletely articulated problem. The risk is not that AI “does the thinking” in some absolute sense. The risk is that the epistemic process becomes biased toward rapidly stabilized formulations.

One can describe the contrast schematically. In one case, perplexity is rapidly articulated and a generated answer arrives almost immediately. In the other, perplexity is allowed to persist through observation,

reformulation, and comparison until a question becomes clearer; assisted inquiry begins only after that maturation.

The second process is slower, but its slowness is not automatically a virtue. Sometimes rapid articulation is exactly what is needed. The point is to preserve the option of allowing a problem to transform before outsourcing its formulation.

This is where reading acquires a new role. If AI increasingly handles retrieval and first-pass explanation, reading need not be defended merely as a slower version of the same service. Reading can be understood as long-term epistemic formation: the cultivation of repertoires that later condition salience, analogy, and judgment. Its effect may be invisible until contingency activates it.

This also clarifies why reading and AI should not be placed in opposition. A productive cycle might begin with reading that creates conceptual readiness. An encounter then gives rise to a question; AI can help expand the inquiry; and the learner can return to sources and the world with a more articulated problem.

AI is especially powerful after the question begins to form. It can search for neighboring literatures, generate counterarguments, propose formalizations, translate across disciplines, and identify what would have to be tested. The learner can then return to books, data, people, environments, or experiments with a more articulated inquiry.

The less desirable cycle is different. AI acceleration can raise output expectations, leaving less time for encounter and increasing dependence on pre-articulated questions. Those expectations can then justify still further acceleration.

Here productivity gains are absorbed into output demands. The person receives more knowledge-like structure but less temporal room for problem genesis. This is not an inevitable consequence of AI; it is an institutional possibility. It depends upon how schools, universities, workplaces, publication systems, and individual routines convert efficiency into expectations.

A deeper difficulty follows. When the production of polished epistemic artifacts becomes cheap, visible form becomes a weaker indicator of the history through which an artifact emerged. Two texts can look equally coherent while one is the residue of years of observation and another is generated in seconds. This does not imply that duration guarantees truth or that rapid work lacks value. It means that surface form alone reveals less about epistemic genesis.

Under these conditions, the capacity to generate one's own questions may become a more important marker of intellectual agency. The relevant scarcity is not simply information but orientation: what is worth asking, what relation is worth testing, what anomaly is worth preserving rather than immediately smoothing away.

Reading can contribute to this orientation by stocking a life with concepts that have not yet found their future occasions. It prepares latent possibilities. Contingency selects among them. AI can then amplify the inquiry. Such a division of labor is not fixed, but it offers one way to imagine an epistemic ecology in which acceleration does not abolish encounter.

9 The Discipline After Encounter

An argument for contingency must include an argument against its romanticization. Encounters feel powerful partly because they arrive with immediacy. A newly perceived analogy can produce the conviction that something deep has been found. A beautiful structure can seem self-validating. A personally experienced pattern can acquire more weight than distant evidence. These are precisely the moments when inquiry needs discipline.

The first limit is that salience is not truth. A phenomenon can arrest attention because it confirms a prior expectation, triggers an emotion, or resembles a familiar pattern. The fact that a connection appears

does not establish that the connection is explanatory. Contingency-mediated learning should therefore distinguish *manifestation* from *validation*.

A problem can manifest without being well posed. A relation can manifest without being real. An analogy can manifest without being structurally adequate. An aesthetic judgment can manifest without tracking epistemic value. The encounter initiates inquiry; it does not conclude it.

The attractor example shows why this distinction matters. To observe self-reinforcement in distrust and then recall dynamical systems is intellectually productive. To declare that distrust is an attractor merely because the analogy feels elegant would be premature. A stronger claim would require decisions about state variables, time scales, perturbations, stability criteria, and the meaning of convergence. Social interpretation, strategic agency, institutional design, and historical contingency may make the formal analogy partial or misleading.

The disciplined sequence is therefore conceptual rather than merely rhetorical. An encounter may invite an analogy; the analogy may motivate a hypothesis; the hypothesis must then be operationally clarified, confronted with evidence, and revised when necessary.

The same applies to the starry-sky example. The immediate experience that a stable celestial center seems politically suggestive can motivate historical investigation. It cannot substitute for it. One must ask whether the relevant symbolic vocabulary actually appears in texts, institutions, or spatial practices, whether other astronomical structures mattered more in particular periods, and whether political centralization caused cosmological interpretations rather than the reverse.

A second limit is that contingency is unevenly distributed. People do not encounter the same worlds. Mobility, work, wealth, disability, safety, geography, social position, and institutional access shape what can appear. To celebrate wandering encounter without acknowledging these conditions risks turning a contingent privilege into a universal prescription. The argument should therefore concern epistemic structure rather than a lifestyle ideal. Contingency-mediated learning can occur in a laboratory, workplace, conversation, archive, household, classroom, or digital environment as well as on a city walk.

A third limit concerns memory and selection. We remember the encounters that later became fruitful and forget countless unproductive moments. Retrospective narratives can therefore exaggerate serendipity. What appears as a sudden insight may depend upon long preparation, repeated failed attempts, unnoticed cues, and social conversation. Hadamard's discussion of mathematical invention is valuable partly because it refuses a simple picture of instantaneous inspiration; preparation, incubation, illumination, and later conscious verification are intertwined [7].

A fourth limit is educational. A learner cannot be asked to rediscover everything through encounter. The human lifespan is too short, and accumulated knowledge is too vast. Structured learning exists because it saves time. The purpose of distinguishing contingency-mediated learning is not to replace curricula with unstructured experience but to preserve a complementary capacity that curricula can easily obscure.

The two modes therefore require a norm of alternation. One should sometimes accept inherited questions and learn the best available answers. One should sometimes remain with a difficulty long enough to discover that the inherited question is not yet the right one. One should sometimes use AI to accelerate search. One should sometimes delay prompting in order to see what one's own confusion becomes. There is no universal ratio.

The relevant educational skill may be meta-epistemic: recognizing which mode a situation presently requires. Is this a case where the problem is settled enough that efficient acquisition is appropriate? Or is this a case where premature structure would erase the very phenomenon that needs to be understood?

This discipline also protects aesthetic judgment from becoming aestheticism. Beauty can guide attention, but inquiry must remain capable of rejecting a beautiful hypothesis. The mature relation between aesthetic and epistemic judgment is therefore neither separation nor identity. Aesthetic judgment can nominate; epistemic inquiry must test.

Contingency, in short, should be treated as a source of candidate significance. Its gift is not certainty. Its gift is that something can become worth asking.

10 Conclusion: Reading for a Future Question

The age of artificial intelligence makes an old fact about knowledge easier to see: answers and questions do not occupy the same place in inquiry. A civilization can become extremely efficient at producing articulated answers while still depending upon slower processes through which something first becomes questionable.

This essay has proposed a way to describe one of those processes. Structured learning begins from a world already organized as learnable. It gives us theories, histories, methods, propositions, examples, and formal vocabularies. Contingency-mediated learning begins when a prepared person encounters something that was not fully selected in advance as a lesson and the encounter changes what can be asked.

The first central claim was that reading prepares conditions of manifestation. Its value is not exhausted by what can be recalled immediately after reading. A concept can remain latent until a future event activates it. Reading can enlarge the space of possible questions, $\mathcal{Q}$, by changing what later experience can become.

The second claim was that contingency can disclose relations. An encounter with distrust, another with power, and prior knowledge of capital or dynamical systems can suddenly make a possible common structure visible. Such a moment does not prove a theory, but it can generate one. Reading expands not only possible questions but possible relations, $\mathcal{R}$.

The third claim concerned aesthetic judgment. Among innumerable possible stimuli and candidate problems, something arrests attention. In mathematics, difficulty is not identical to beauty or value. In ordinary experience, not every object becomes a question. Aesthetic salience can function as an early orientation mechanism: this seems worth staying with. It nominates a possible object of inquiry before epistemic judgment determines whether the object deserves confidence.

Taken together, these claims describe a recurring pattern. Reading can create readiness; a contingent encounter can produce aesthetic arrest or perplexity; a problem or relation can become manifest; a hypothesis can then be formed and investigated; and inquiry can return the learner to both reading and the world with altered questions.

The sequence is not universal, but it captures a form of learning that becomes difficult to see when education is described only as information transfer. It also explains why reading remains important even if machines become better at supplying information. Reading can help constitute the background from which a future world becomes legible in new ways.

This role is especially important under conditions of abundance. AI can produce more explanations than one person can read, more candidate questions than one person can pursue, and perhaps eventually more mathematical conjectures than a community can seriously investigate. The scarcity therefore moves. Attention, judgment, problem selection, and the capacity to perceive fertile relations become more consequential.

A narrow response would be to train people to ask better prompts. That is useful, but it begins too late. Before the prompt there is the question; before the question there may be a felt anomaly; before the anomaly becomes articulate there is a history of concepts, encounters, and sensibilities that makes the anomaly perceptible. Education in the AI age must therefore remain concerned with the formation of the person who notices.

This does not mean that reading should become aimless preparation for unspecified future inspiration. Structured learning still has direct purposes. Nor does it mean that every contingency should be honored

as profound. Most passing events need not become research problems. The argument is instead that one function of reading deserves greater recognition precisely because it resists immediate measurement: reading prepares future encounters whose significance cannot be known in advance.

A book may therefore succeed long after it has been closed. A dynamical-systems concept may return during an experience of distrust. A history of political cosmology may return under the night sky. A mathematical idea may return when an unexpected pattern appears in another domain. The earlier reading becomes part of the conditions under which a later event can acquire meaning.

One can then state the central thought in its simplest form:

We do not read only to know how the world has already been explained. We also read so that, when an unexplained world arrives, we may be capable of recognizing that there is a question here.

And sometimes the gift of contingency is greater still. It does not merely bring an object before us. It brings a relation before us. It reveals that two things we had kept apart may belong together, or that one question may secretly be another. Theory begins after that moment, not before it.

Reading prepares meaning. Contingency calls it forth. Inquiry decides what can remain.

References

- [1] Garvin Brod. “Generative Learning: Which Strategies for What Age?” In: *Educational Psychology Review* 33 (2021), pp. 1295–1318. DOI: 10.1007/s10648-020-09571-9.
- [2] Hoyun Cho. “Relocating the Locus of Generation: The AI-GLM Framework for Generative Learning in AI-Mediated Mathematics Education”. In: *Educational Psychology Review* 38.116 (2026). DOI: 10.1007/s10648-026-10210-y.
- [3] John Dewey. *How We Think*. Boston: D. C. Heath & Co., 1910.
- [4] John Dewey. *Logic: The Theory of Inquiry*. New York: Henry Holt and Company, 1938.
- [5] Logan Fiorella. “Making Sense of Generative Learning”. In: *Educational Psychology Review* 35.50 (2023). DOI: 10.1007/s10648-023-09769-7.
- [6] Hans-Georg Gadamer. *Truth and Method*. Trans. by Joel Weinsheimer and Donald G. Marshall. 2nd revised. London: Continuum, 2004.
- [7] Jacques Hadamard. *An Essay on the Psychology of Invention in the Mathematical Field*. Princeton, NJ: Princeton University Press, 1945.
- [8] David W. Pankenier. “The Cosmic Center in Early China and Its Archaic Resonances”. In: *Proceedings of the International Astronomical Union* (2011). Published online 26 July 2011.
- [9] Henri Poincaré. *The Foundations of Science: Science and Hypothesis, The Value of Science, Science and Method*. Trans. by George Bruce Halsted. New York: The Science Press, 1913.
- [10] Michael Polanyi. *The Tacit Dimension*. Garden City, NY: Doubleday, 1966.