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On the Origin of Knowledge

Retained Distinction and the Status of Record-Presence

Abstract

Knowledge is retained distinction.

In its minimal physical sense, knowledge is not belief, justification, semantic possession, conscious awareness, propositional assertion, explanation, certainty, or truth-warrant. These may appear in stronger knowledge forms, especially in human, scientific, linguistic, institutional, and reflective contexts. They are not the minimal condition.

The minimal condition is simpler and more general:

A system knows, in the minimal sense, when a prior distinction has been registered and retained as present accessible state under specified reference conditions.

This paper inherits the architecture established by the preceding papers. Paper 1 established the Relative Reference Point and the RRP Set: RRP, OP, OA, OR, RAS, and RSD. It showed that information is physical difference made relationally available as operational distinction for a locus. Paper 1a then grounded the physical pathway into that architecture. Signal is preserved contrast through which relation can become available to a locus. Signal-bearing contrast may become OP where it becomes available as distinction under RRP conditions. Paper 1b made the realism-facing guardrail explicit: finite access is target-constrained but not target-complete. The present paper develops the knowledge facet of that same architecture.

The present paper begins after that point.

It does not ask how difference becomes information. Paper 1 answered that.

It does not ask how physical contrast becomes available. Paper 1a answered that.

It asks what status an available, classed, and registered distinction has when it persists as present accessible state.

The answer is minimal knowledge.

The canonical carrier of minimal knowledge is the Registered Abstraction State. A RAS is an OA-keyed token-state produced by OR from an OP-supported contrast field at a specified RRP, retained over an operational horizon at a reference scale. A RAS is not established by carrier persistence alone. In the knowledge facet, it is retained relation: present accessible state whose discriminable form depends on which prior alternative was registered.

Knowledge therefore begins as past-dependent present structure.

The past itself is not possessed. The original event is not contained inside the record. The retained state does not carry total reality. It preserves a classed distinction under the conditions that made the distinction available, registerable, and retainable. Knowledge is thus not a return to the past, but the persistence of prior difference as present discriminable state.

This paper distinguishes three knowledge statuses.

Trivial Knowledge is record-presence. An OA-keyed, OR-produced RAS exists and remains re-identifiable over the relevant operational horizon. It is knowledge in the minimal record-present sense.

Knowledge Inference Potential is grounded deployability. A retained discriminator is embedded within, or coupled to, an organisation that could consult it through an admissible RSD pathway, although no realised deployment has yet occurred.

Non-Trivial Knowledge is realised deployment. A retained discriminator is actually redeployed through RSD so that later registration, transition, inference, control, or downstream trajectory selection depends on which discriminator was present. In the strong case, that dependence is tested by BD-family comparator discipline.

This ladder prevents three collapses.

It prevents every persistent or externally readable physical state from being called knowledge.

It prevents every retained record from being treated as operative.

It prevents every deployed state from being treated as warranted, true, objective, or justified merely because it is retained and used.

Minimal knowledge-status is record-status, not truth-status. A false record may still be retained distinction. A misleading memory, corrupted measurement, misclassified token, defective map, or erroneous institutional record may still be knowledge-bearing in the minimal physical sense if it preserves a registered distinction as present accessible state. Its error belongs to a further evaluative layer: whether the retained distinction preserves the relation it purports to carry under the relevant reference conditions.

This paper therefore separates knowledge from belief without collapsing knowledge into mere matter. It separates knowledge from truth without denying truth. It separates knowledge from semantic content without denying semantic knowledge. It separates minimal record-presence from stronger deployable, non-trivial, corrected, warranted, objective, and justified forms.

Compressed:

Knowledge is retained distinction.

Minimal knowledge is not belief, justification, or semantic possession.

The canonical carrier of minimal knowledge is RAS.

A RAS is past-dependent present state.

Trivial Knowledge is record-presence.

Knowledge Inference Potential is grounded deployability.

Non-Trivial Knowledge is realised deployment.

Truth, warrant, objectivity, and justification are stronger evaluative layers.

The next paper turns from retained distinction to applied distinction.

That is intelligence.

1. Knowledge as retained distinction

1.1. The problem after Signal

The previous papers established two necessary conditions for knowledge.

First, difference must become information. A physical difference does not become informational merely because it exists, persists, can be described, or can be interpreted by an external observer. It becomes informational only where it is available as distinction for a locus under specified reference conditions.

Second, contrast must become physically available. A finite locus does not receive total reality. It encounters reality through physically mediated relation. Signal is the preservation of contrast through which such relation can become available.

Once signal-bearing contrast becomes OP, and once OP-supported alternatives become classable by OA, one alternative may be selected through OR into state.

At this point, registration is being used in the primitive architectural sense established by the RRP Set. It is not yet the full observation-facet claim. OR names the event of classed selection into state; RAS names the retained abstraction state if that registration persists over the relevant horizon. The present paper asks only what status that retained distinction has once it remains available as present state.

A contrast may become available and vanish. A signal may reach an interface and fail to register. A registration may occur and fail to persist. A transient state may be caused by a prior difference and then disappear below the operational horizon. In such cases, signal or registration may have occurred, but knowledge-status has not yet been established. Knowledge begins only where the registered distinction is retained. The knowledge question is therefore not the signal question, and it is not yet the observation question. Signal asks how contrast becomes physically available. Knowledge asks what status a registered distinction has when it persists as present accessible state.

This retention need not be conscious. It need not be propositional. It need not be semantic. It need not be justified. It need not be true. It need not be useful. It need not be deployed.

But some prior distinction must persist as a present discriminable state.

1.2. Knowledge is not possession

Ordinary language treats knowledge as something possessed.

A person has knowledge. A book contains knowledge. A machine stores knowledge. A culture transmits knowledge. A database holds knowledge. A discipline accumulates knowledge. A model encodes knowledge. An institution preserves knowledge in records, rules, and procedures.

These expressions are useful. They are also compressed.

Possession-language hides the operational question.

What is being possessed? Where is it located? What difference has been retained? What made that difference available? What abstraction regime classed it? What event registered it? What

state preserves it? Over what horizon does it persist? What later process could consult it? What would fail if the retained distinction were removed, scrambled, degraded, or bypassed?

Without those questions, knowledge becomes too easy to attribute.

A stable mark is called knowledge because it persists.

A correlation is called knowledge because it can be interpreted.

A memory is called knowledge because it feels familiar.

A dataset is called knowledge because it stores records.

A model is called knowledge because it produces answers.

A social practice is called knowledge because it has been inherited.

A biological structure is called knowledge because evolution has shaped it.

These uses may be locally defensible. They are not yet operationally disciplined.

Knowledge, in the sense developed here, is not possession of a thing. It is the retention of a distinction under conditions that make the distinction identifiable. The retained state may later support inference, action, observation, control, communication, correction, explanation, or justification. Those are stronger uses. They presuppose the more basic condition: some prior difference must first be registered into present accessible state.

The paper therefore begins by removing knowledge from possession.[1]

Knowledge is not an extra substance added to a system after physical process has occurred.

It is a specific organisation of physical process: the registration and persistence of distinction.

1.3. Knowledge is not belief first

Human knowledge often appears as belief.

A person knows that a path is safe, that a tool is sharp, that a name refers to a person, that a theorem follows, that a meeting occurred, that an instrument is calibrated, or that a claim has been supported by evidence.

In such cases, knowledge may involve belief, justification, language, memory, social warrant, self-report, assertion, explanation, responsibility, and truth-conditions.

Those are important forms.

They are not the minimal condition.

A cell may preserve a chemically registered distinction without belief. An immune system may retain antigenic distinction without assertion. A nervous system may carry learned weighting without propositional content. A machine may preserve a token-state without awareness. A written record may carry a distinction without itself believing anything. A trained procedure may preserve discriminating structure without reflective understanding. An institution may retain a category without a single conscious subject possessing it as a belief.

If knowledge is defined only from the human case, the primitive is mistaken for one of its elaborations.

Belief, justification, and explicit judgement are powerful late developments. They may reorganise, correct, defend, communicate, and evaluate retained distinctions. They do not explain how a distinction becomes retained in the first place.

The minimal question is not whether a system believes.

It is whether a prior difference has become a present discriminable state.

That state may later become belief-bearing. It may become propositionally articulated. It may become justified. It may be tested, corrected, rejected, or integrated into explanation. But the physical and operational basis is retained distinction.

Knowledge is therefore broader than belief.[2]

This does not make belief irrelevant. It places belief at a stronger level of organisation.

1.4. Knowledge is not semantic content alone

Knowledge is also not reducible to semantic content.

A word, proposition, diagram, equation, code, map, model, theory, or legal category may carry knowledge in a human, scientific, computational, or institutional context. But its content is not intrinsic to the mark, sound, inscription, token, or carrier alone.

A word carries distinction because a linguistic community stabilises an abstraction class. A diagram carries distinction because viewers are trained to interpret spatial relation under a convention. A measurement carries distinction because an instrument and calibration regime transform physical variation into a readable record. A model carries distinction because its variables, equations, and transformations preserve selected relations under a formal frame. A legal category carries distinction because an institution stabilises procedures of personhood, evidence, admissibility, responsibility, and remedy.

In every case, semantic content depends on a prior regime of distinction, abstraction, registration, retention, and redeployment.

The symbol does not become knowledge merely by existing.

It becomes knowledge-bearing where it functions as a retained discriminator under reference conditions.

This paper therefore treats semantic knowledge as a later organisation of retained distinction. Semantic systems do not float above physical registration. They are built from stabilised token-relations that can be preserved, transmitted, interpreted, corrected, and redeployed by suitable loci.

A word printed on a page is not the same knowledge for every system. It may be ink distribution to one instrument, visual pattern to another, readable word to a literate person, legal instruction to an institution, training data to a computational system, or inert mark to a system without the relevant abstraction regime.

The carrier is real.

The semantic relation is regime-dependent.

The retained distinction is what makes semantic content possible, not what semantic content replaces.

1.5. Knowledge is retained distinction

The minimal formulation is:

Knowledge is retained distinction.

More precisely:

Knowledge is an OA-keyed, OP-anchored, OR-produced Registered Abstraction State retained as present accessible state under a specified Relative Reference Point.

This formulation separates the necessary stages.

There must be a field of possible alternatives. That is OP.

There must be a regime that classes those alternatives as same, different, relevant, irrelevant, signal, noise, within tolerance, or outside tolerance. That is OA.

There must be a registration event by which one alternative is selected into state. That is OR.

There must be persistence over an operational horizon as an identifiable retained token. That is RAS.

Where stronger knowledge is claimed, there must also be a pathway by which the retained state can be consulted or actually redeployed. That is RSD.

A retained distinction is therefore not any stable state. It is a state whose identity depends on a prior contrast and a registration pathway.

An intentionally inscribed mark may be retained distinction where an inscription event selects one classed alternative and the resulting token remains identifiable under the relevant abstraction regime. A retained memory state may be retained distinction if it preserves a prior registered difference in later accessible state. A trained parameter may be retained distinction if its present value depends on prior exposure and remains available to condition later processing. A written word may be retained distinction if it preserves a socially stabilised contrast in a readable carrier. A calibration mark may be retained distinction if it preserves a prior measurement relation in present usable form.

Knowledge begins where the past is fixed in the present as discriminable state.

The word “fixed” should not imply permanent stability. Retention is horizon-relative. A state may retain distinction for a second, an hour, a lifetime, a civilisation, or a geological interval, depending on the regime and claim. The relevant question is whether the distinction persists over the operational horizon being evaluated.

Knowledge is retained distinction over a horizon.

1.6. The past in present accessible state

Knowledge is not the past itself.

It is not a return to the event, object, condition, or relation that produced it. It is not possession of the original source. It is not the whole prior situation carried forward unchanged.

Knowledge is present structure whose form depends on that past.

A retained state carries a relation to prior alternatives. Its current identity is fixed not by carrier microdetail alone, but by the way the carrier was driven into one alternative rather than another. The present state is knowledge-bearing because it preserves a distinction that could have been otherwise.

A record of an event is not the event. A memory of an encounter is not the encounter. A photograph is not the scene. A written instruction is not the intention that produced it. A

fossil is not the organism. A database entry is not the action it records. A calibration mark is not the physical process calibrated. A trained parameter is not the training history.

Each is present state.

Each may be related to the past.

Each preserves only some distinction from that past under a regime of abstraction, registration, retention, and possible redeployment.

The phrase “record of the past” must therefore be read precisely.

A record is not an intrinsic inscription of meaning. It is present state whose discriminable form depends on a prior alternative under a specified abstraction regime.

The past becomes knowledge only by becoming retained as present accessible distinction.

This gives the paper its knowledge-specific realist position.

Knowledge is not arbitrary construction because the retained state is constrained by the registration pathway that produced it. Knowledge is not unmediated possession because the retained state preserves only selected relation under an abstraction regime, reference scale, operational horizon, and retention condition. In the terms of reference-indexed realism, the prior event, condition, or relation functions as target; the retained state functions as finite record or model; and residual marks what the record does not contain.

The past constrains the present record.

The present record does not contain the past whole.

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2. RAS as the canonical carrier of minimal Knowledge

2.1. RAS in the knowledge facet

The canonical carrier of minimal knowledge is the Registered Abstraction State.

A RAS is an OA-keyed token-state produced by OR from an OP-supported contrast field at a specified RRP, persisting over an operational horizon at a reference scale.

Paper 1 introduced RAS as part of the RRP Set. In this paper, the same concept receives its knowledge-facet interpretation. RAS is the minimal physical form in which a registered distinction becomes present accessible state.

This does not mean that every RAS is true, useful, justified, semantic, conscious, or deployed. It means that the retained state carries a prior registered distinction.

A RAS has four knowledge-relevant consequences.

First, it is not arbitrary state. It must be produced by registration. A physical configuration does not become a knowledge-token merely because it exists. It must be the result of selection from an available field of alternatives.

Second, it is not intrinsic content. Its identity depends on the abstraction regime under which the system treats some differences as equivalent and others as distinct.

Third, it is not scale-free. A retained token is identifiable only at the reference scale and over the operational horizon for which persistence is being evaluated.

Fourth, it is not automatically deployed. It may exist as record-presence without yet being consulted as a controlling discriminator for later registration, inference, action, or downstream transition.

A RAS is therefore knowledge in the record-present sense.

It is minimal knowledge because it preserves a distinction.

It is minimal because no further deployment, truth, justification, or semantic articulation has yet been required.

2.2. RAS is relational to OR

A RAS is relational to the registration event that produced it.

A carrier state does not carry knowledge merely by occupying a position in physical state-space. It carries knowledge only insofar as it is the outcome of an Ontic Registration event.

OR is the event by which one alternative from an available contrast field becomes selected into state under an abstraction regime.

The registration event fixes which distinction the retained state carries. Without reference to the registration event, the carrier is only a physical configuration. With reference to the registration event, the carrier becomes a token of which alternative was selected.

A memory cell stores one state rather than another because a write event selected it. A retained biological state carries distinction where a pathway registered one available alternative into a state that persists. A measurement record carries distinction because an instrument registered one value range rather than another. A written mark carries distinction because an inscription event produced one token rather than another. An institutional record carries distinction because a procedure accepted and classified one case rather than another.

The retained state is knowledge-bearing because it is the persisting outcome of registration.

This is why RAS cannot be defined by carrier microdetail alone. The same carrier configuration may be meaningless under one regime, a record under another, and a different record under a third. What matters is not the isolated carrier but the relation among contrast field, abstraction regime, registration event, reference conditions, and retained state.

A RAS is inscription by registration.

It is not content by mere occupation.

2.3. RAS is OA-keyed

A RAS is keyed to Ontic Abstraction.

This means that the retained state preserves a classed distinction, not total microphysical detail. OA determines how OP-supported alternatives become registerable as this rather than that. It fixes equivalence relations: same, different, relevant, irrelevant, signal, noise, within tolerance, outside tolerance, present, absent, valid, invalid, admissible, inadmissible, or other classed alternatives under the regime.

Without OA, there is no token identity.

A system that retained every microphysical difference without classing would not have a usable retained distinction. It would have unpartitioned physical change. There would be no stable same/different relation by which a later state could count as the same token, a different token, a degraded token, or a corrupted token.

A digital bit is not every physical fluctuation in a memory cell. It is a classed state within a tolerance regime. A written letter is not every variation in ink, pressure, curve, and fibre. It is a classed mark under a reading regime. A biochemical marker is not every molecular detail of the environment. It is a classed state under a pathway architecture. A legal record is not the full social event. It is a classed procedural state under an institutional regime.

OA makes retention identifiable.

The RAS retains what OA made registerable.

This is why abstraction is not a defect added to knowledge after the fact. Without abstraction, there is no retained token-state. The question is not whether abstraction is present. The question is whether the abstraction preserves the relation it is being used to carry strongly enough for the claim being made.

A RAS is therefore always abstraction-bound.

2.4. RAS is OP-anchored

A RAS is also anchored in OP.

Ontic Projection supplies the available contrast field from which registration selected one alternative. A retained state carries knowledge only because there was an available field of possible alternatives from which one alternative became actual as state.

If there is no non-degenerate contrast field, there is nothing determinate for registration to select. A state change may occur, but it is not a registered distinction in the relevant sense.

This is why knowledge requires more than persistence.

A stone may persist. A gradient may persist. A mark may persist. A molecule may persist. But persistence alone does not determine what distinction is retained. A retained distinction depends on the available contrast field in relation to which the state was selected.

A thermometer reading carries a thermal distinction because thermal variation was available through the instrument relation. A memory cell carries a stored value because alternative write states were available in the architecture. A receptor state carries a molecular distinction because molecular alternatives were available through binding conditions. A written word carries linguistic distinction because alternative marks and conventions were available within a symbolic regime.

OP supplies possible distinction.

OR selects one alternative.

RAS retains the selected state.

Without OP, RAS collapses into mere persistence.

The state may still be physically real. It may still be described. It may still later become evidence for an external system. But the knowledge claim requires a specified contrast field under which the retained state can be identified as preserving one alternative rather than another.

Knowledge is retention of selected possibility.

2.5. RAS is RRP-indexed

The content of a RAS is always indexed to a Relative Reference Point.

The RRP fixes the locus-interface-regime conditions under which distinction evaluation is well-posed. It includes the reference boundary, reference scale, operational horizon, discrimination/noise regime, contrast field, abstraction regime, registration status, deployment status where relevant, and comparator conditions required for the strength of the claim.

This does not make knowledge arbitrary.

The world constrains which distinctions can be made available, registered, retained, and redeployed. A false relation can fail under correction. A record can degrade. A token can drift. A scale can misfit. A memory can misclassify. A model can fail when exported beyond its valid regime.

But the retained token does not carry content outside every frame.

It carries content relative to the conditions under which the contrast was available, the abstraction was stable, the registration occurred, and the token remained identifiable.

The same physical state may preserve a distinction for one locus and not another. It may be readable under one interface and unreadable under another. It may persist at one scale and disappear at another. It may remain stable over one horizon and decay over a longer one. It may be deployable in one organisation and inert in another.

The content of knowledge is therefore relational.

It is fixed by registration-relay conditions, not by isolated substrate.

No RRP index, no well-posed knowledge claim.

This does not mean every ordinary use of knowledge must state the full index. Ordinary language can remain compressed. But where knowledge is being used technically, contested, exported across scales, or made explanatory, the index must be recoverable.

2.6. RAS is retained over a horizon

Knowledge is horizon-relative.

A registered state must persist long enough to remain re-identifiable over the operational horizon of the claim. Without this persistence, there may be registration, but not retained distinction.

A flash of neural activity may register a stimulus and vanish. A transient voltage may cross threshold and decay. A chemical state may form and relax. A measurement may be produced but not stored. A spoken word may be heard but not remembered. In these cases, distinction may have occurred, but minimal knowledge-status depends on whether a retained token remains.

Retention does not require permanence.

A short-lived memory can be knowledge over a short horizon. A temporary register can be knowledge within a computation. A biochemical state can be knowledge for a regulatory

interval. A written archive can be knowledge over centuries. A fossil may preserve target-constrained physical structure over geological time. Knowledge arises for an investigative locus only where contrast made available through that structure is classed, registered, and retained under the relevant regime.

The operational horizon must be specified because retention is not absolute.

A token may persist for one process but not another. It may remain stable for immediate action but not long-term inference. It may support local control but not historical reconstruction. It may survive physical storage but lose class identity under changed abstraction conditions.

Retention therefore requires both persistence and identifiability.

The state must remain there.

It must also remain classable as the relevant retained distinction.

Where carrier state persists but token identity collapses, knowledge-status weakens or fails. Where token identity persists despite carrier microvariation, knowledge-status is preserved.

The knowledge question is always: retained as what, for whom, under what conditions, over what horizon?

2.7. RAS is not automatically deployed

A RAS may exist without being used.

This distinction is essential.

A record may persist in an archive without being consulted. A retained memory state may remain without being activated. A database entry may be stored without being queried. A calibration value may exist without being applied. A written instruction may be legible but unread. A legal rule may exist without being invoked. A model parameter may remain stored without influencing output.

Minimal knowledge does not require realised deployment.

It requires retained distinction.

Deployment belongs to a stronger status. Where a retained distinction could be consulted by an appropriate organisation, Knowledge Inference Potential may be present. Where it is actually consulted or redeployed so that later registration or transition depends on which discriminator was present, Non-Trivial Knowledge may be present.

This is the distinction between record-presence and operative knowledge.

A RAS is record-present.

RSD is redeployment.

NTK requires realised redeployment under the knowledge facet.

The difference prevents knowledge from being over-strengthened. If every retained state had to be actively used to count as knowledge, archives, memories, stored values, and records would cease to be knowledge-bearing whenever they were inactive. That is too strict.

But if every retained state were treated as already operative, the framework would overclaim. A stored record would be treated as downstream-controlling merely because it exists. That is too weak.

The ladder resolves the problem.

Retained state gives TK.

Grounded deployability gives KIP.

Realised deployment gives NTK.

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3. The Knowledge status ladder

3.1. Why knowledge needs statuses

Knowledge is not a single undifferentiated condition.

A retained distinction may be present but inert. It may be accessible in principle but unused. It may be actively redeployed. It may alter downstream registration or transition. It may be corrected. It may be false. It may be true but inaccessible. It may be accessible but never consulted. It may be consulted but fail to matter.

Without status distinctions, all of these collapse into one word.

That collapse produces two opposite errors.

The first error is inflation. Every persistent mark, archive, memory, or stored state is treated as fully operative knowledge merely because it persists.

The second error is over-restriction. Only conscious, justified, actively used, propositionally articulated knowledge counts, and all lower retained distinctions disappear from the account.

The framework avoids both errors by treating knowledge through a status ladder.

The ladder is:

Trivial Knowledge: record-presence.

Knowledge Inference Potential: grounded deployability.

Non-Trivial Knowledge: realised deployment.

These are not separate substances or mechanisms. They are status positions within the inherited RRP Set.

TK asks whether a retained distinction exists.

KIP asks whether the retained distinction is physically or organisationally deployable.

NTK asks whether the retained distinction is actually redeployed so that later registration, transition, inference, control, or downstream trajectory selection depends on which discriminator was present.

The status ladder makes knowledge precise without making it anthropocentric.

3.2. Trivial Knowledge: record-presence

Trivial Knowledge is record-presence.

TK is present when an OA-keyed, OR-produced RAS exists and remains re-identifiable over the relevant operational horizon at the reference scale.

This is the minimal knowledge condition.

A prior distinction has been registered.

A retained state persists.

The state remains identifiable as the token of that distinction.

No realised deployment is required.

An inscription may be TK if it preserves a classed registration as present accessible distinction. A retained memory state may be TK if it preserves prior registration. A stored bit may be TK if its state remains identifiable under the architecture. A calibration mark may be TK if it preserves a measurement relation. A written record may be TK if it preserves a token under a reading regime. An institutional archive may be TK if it retains classed records under procedural conditions.

TK is “trivial” only in the technical sense that it does not yet require realised downstream dependence.

It is not unimportant.

Record-presence may be historically, biologically, legally, scientifically, socially, or computationally significant. A retained record can transform future possibility. But until deployability or deployment is specified, the warranted claim is record-presence.

TK prevents physical persistence from being under-described.

It also prevents persistent state from being over-described.

The correct claim is:

A retained distinction is present.

Not yet:

The system has used it.

Not yet:

The retained distinction has altered downstream outcome.

Not yet:

The record is true, justified, or objective.

TK is minimal knowledge-status.

3.3. Knowledge Inference Potential: grounded deployability

Knowledge Inference Potential is grounded deployability.

KIP is present when a retained discriminator is embedded within, or coupled to, an organisation that could consult it through an admissible RSD pathway, although no realised deployment has yet occurred.

KIP is stronger than TK because the record is not merely present. It is situated in a physically or organisationally well-posed pathway of possible use.

A retained memory state embedded in a functioning nervous system may be KIP if it can be activated. A database entry may be KIP if it is stored in a system that can query it. A calibration record may be KIP if an instrument or operator can apply it. A written instruction may be KIP if it is accessible to a reader or procedure that can use it. A legal record may be KIP if it can be invoked under an institutional pathway. A model parameter may be KIP if it can condition later processing.

KIP does not require actual consultation.

It requires grounded consultability.

A book locked in an unreadable language may be TK for some regime but not KIP for a given community. A database entry in a corrupted index may remain physically stored but not deployable. A retained memory state in an inaccessible pathway may be retained but not consultable. A record detached from the organisation that could read it may lose KIP while retaining TK. A fossil may supply contrast to an investigative regime, while the records produced through that regime may earn TK or KIP when retained and consultable.

KIP therefore depends on organisation, not mere possibility in the abstract.

A retained distinction is not KIP simply because some imaginable future observer might someday use it. The deployability pathway must be physically, operationally, technically, biologically, socially, or institutionally well-posed under the reference conditions of the claim.

The Relational Reachability developed in Paper 1c, heading 2.4, concerns whether a target-relative relation can become stabilisable from a locus's present organisation and available scaffolding, whereas KIP concerns possible consultation of an already-retained discriminator. Retained distinctions can extend reachability by supporting intermediate relations through which further distinctions become formable. But a constructible route to a further distinction does not itself establish KIP for that distinction before the requisite retained discriminator and grounded consultability pathway are present.

KIP is the status of knowledge as grounded potential for inference, use, retrieval, consultation, or redeployment.

It is present-accessible enough to be used, but not yet shown to be used.

3.4. Non-Trivial Knowledge: realised deployment

Non-Trivial Knowledge is realised deployment.

NTK is present when a retained discriminator is actually redeployed through RSD so that later registration, transition, inference, action, control, or downstream trajectory selection depends on which discriminator was present.

In the strong case, this dependence is comparator-stable. If the retained discriminator is removed, scrambled, neutralised, reset, bypassed, or otherwise disabled under adequate BD-family conditions, the downstream result collapses, degrades, or changes in the expected way.

NTK is not merely having a record.

It is not merely being able to consult a record.

It is retained distinction doing work.

A memory guides later action. A stored value controls later computation. A calibration record corrects later measurement. A learned immune distinction alters later response. A map

changes route selection. A legal record alters institutional classification. A scientific result constrains a later experiment. A model parameter changes output. A rule is applied to decide a case.

In each case, the retained distinction becomes operative.

The downstream process depends on which retained discriminator was present.

This is knowledge in the realised operational sense.

NTK aligns with the broader non-trivial discriminator architecture. When the emphasis is retained distinction, realised comparator-stable dependence appears as Non-Trivial Knowledge. When the emphasis is computation, the same underlying posture appears as Non-Trivial Computation. When the emphasis is intelligence, it appears as applied distinction. When the emphasis is observation, it appears as realised record-operativity.

The mechanism does not multiply.

The facet changes.

NTK is therefore not a new primitive. It is NTC under the knowledge facet, where the relevant discriminator is retained distinction.

3.5. The status ladder in compressed form

The knowledge ladder can be compressed as follows:

TK: a retained distinction exists.

KIP: a retained distinction is deployable in principle.

NTK: a retained distinction is actually redeployed.

These are knowledge-facet names. They should not be read as a global status ladder for every later paper. The structural roles are record-presence, grounded deployability, and realised deployment; this paper names those roles only where retained distinction is the object under evaluation. Later facets may inherit the same underlying stack while naming their own threshold statuses differently. The mechanism does not multiply, but the facet determines which status vocabulary is appropriate.

Or, more fully:

Trivial Knowledge is record-presence: an OA-keyed, OR-produced RAS exists and remains identifiable over the operational horizon.

Knowledge Inference Potential is grounded deployability: the retained discriminator is embedded within, or coupled to, an organisation that could consult it through an admissible RSD pathway.

Non-Trivial Knowledge is realised deployment: the retained discriminator is actually redeployed so that later registration, transition, inference, action, control, or downstream trajectory selection depends on which discriminator was present.

The ladder should not be read as an obligatory temporal sequence in every case. Mature systems may produce, retain, and redeploy distinctions rapidly. A single process may contain nested TK, KIP, and NTK relations. A retained state may be TK for one locus, KIP for another, and NTK inside a third. A record may be inert in an archive, deployable in a database, and operative in a decision system.

Status is RRP-indexed.

The relevant question is always:

What status does this retained distinction have for this locus, under this interface, scale, horizon, abstraction regime, deployment pathway, and comparator condition?

3.6. Why TK is not “weak belief”

Trivial Knowledge should not be read as weak belief.

It is not a poor version of human cognition. It is not a defective proposition. It is not an unjustified mental state. It is not a belief that lacks warrant.

It is record-presence.

A retained state exists as a token of prior registered distinction.

This matters because much philosophical vocabulary begins too late. It begins with subjects, beliefs, propositions, reasons, truth, and justification. Those are powerful forms of knowledge, but they presuppose more primitive physical and operational conditions.

Before a belief can be justified, there must be a retained distinction capable of being believed, recalled, stated, written, corrected, or compared.

Before a proposition can be true or false for a locus, there must be a token-relation capable of carrying the relevant distinction.

Before evidence can support a claim, there must be retained record.

Before memory can be accurate or inaccurate, there must be retained state.

Before scientific knowledge can be objective, records, measurements, models, methods, and correction pathways must preserve distinctions strongly enough to be compared.

TK names the minimal record-present condition underneath these stronger cases.

It is not a theory of human knowledge by itself.

It is the physical base from which stronger knowledge architectures can be built.

3.7. Why NTK is not “mere use”

Non-Trivial Knowledge should also not be weakened into mere use.

A retained state may be used in a loose sense without establishing that downstream outcome depends on which discriminator was present. A record may be consulted ceremonially. A memory may be recalled but not guide action. A rule may be cited but not determine the decision. A database may be queried but the output ignored. A model may be run but not constrain intervention. A measurement may be read but bypassed.

NTK requires more than contact with a record.

It requires discriminator-dependent downstream effect.

The retained distinction must be operative as retained distinction. If downstream outcome remains unchanged when the discriminator is removed, scrambled, bypassed, or neutralised, the NTK claim fails or must be weakened.

This is why BD-family comparator discipline matters for strong cases.

NTK asks:

Would the later registration, transition, inference, action, control, or outcome class differ if the retained discriminator had been otherwise, absent, corrupted, or inaccessible, under otherwise comparable conditions?

If yes, and if the dependence is localisable and comparator-stable, NTK is supported.

If not, the case may remain TK or KIP.

It should not be promoted to NTK by vocabulary alone.

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4. What minimal Knowledge excludes

4.1. Not every physical state is knowledge

Knowledge is broader than cognition, but narrower than physical state.

A physical state does not count as knowledge merely because it exists, persists, differs, or can be described. Matter has structure. Systems have states. Trajectories unfold. Gradients form. Surfaces mark. Molecules configure. Stars burn. Rivers flow. Weather patterns evolve.

These may become informationally relevant under appropriate RRPs.

They are not all knowledge by default.

Minimal knowledge requires retained distinction. The state must be identifiable as preserving a prior registered alternative under an abstraction regime. A mere physical configuration, without registration-relay conditions, is not yet knowledge in the technical sense.

Historical dependence does not alter this boundary. A footprint, deformation, chemical residue, worn path, molecular alteration, or fossil may preserve a real physical consequence of an earlier interaction. Such a state may later supply contrast to a signal and registration pathway.

Persistence, causal dependence, and external readability do not by themselves establish OP, OR, or RAS for the evaluated locus. Knowledge begins only where available contrast is classed, registered, and retained as present accessible distinction.

This blocks pan-knowledge.

If every state were knowledge, then the term would add no discriminator. Knowledge would become indistinguishable from physical existence. The paper therefore requires OP, OA, OR, RAS, RRP, and operational horizon discipline before minimal knowledge-status is assigned.

No retained registered distinction, no knowledge-status.

4.2. Not every signal is knowledge

Signal is not knowledge.

Signal is preserved contrast through a medium under possible discrimination conditions. It may become available as OP. It may be classed by OA. It may produce OR. It may generate RAS. But signal itself is not retained distinction unless registration and retention occur.

A spoken word is signal-bearing pressure variation. It becomes knowledge only where a distinction is registered and retained. A chemical cue is signal-bearing molecular contrast. It becomes knowledge only where its registered effect persists as an identifiable state. A voltage pulse is signal-bearing electrical contrast. It becomes knowledge only where it is written, stored, retained, or otherwise preserved as a token-state. A measurement signal becomes knowledge only where it produces a retained record.

This distinction matters because ordinary language often treats signal and knowledge as if they were the same. A system "receives information," so it is assumed to "know." But reception may fail before retention. A signal may arrive and disappear. A system may respond without record. A persistent physical alteration may remain without entering any registration-retention pathway.

Signal prepares possible knowledge.

It does not establish knowledge by itself.

No retained registered distinction, no knowledge-status.

4.3. Not every correlation is knowledge

Correlation is not knowledge by itself.

A correlation may be real. It may be statistically stable. It may be detected by an external analyst. It may be used later in a model. But correlation is not knowledge unless a distinction is registered and retained as present accessible state for a locus.

An external observer may discover that two variables covary. That discovery may produce knowledge in the observer's system or institution. But the correlated system itself does not thereby know unless it retains distinction under its own RRP conditions.

A river level may correlate with future flooding. The river does not know the flood. A star's position may correlate with seasonal change. The star does not know the season. A chemical gradient may correlate with nutrient availability. A cell may know only if the relevant distinction is registered and retained in a system state. A dataset may contain correlations, but those become knowledge only where registered distinctions are retained under a modelling, computational, or institutional regime.

Correlation may support knowledge.

Correlation may be evidence for knowledge.

Correlation may be knowledge-bearing once retained in a record.

But correlation as such is not knowledge.

This blocks external-description inflation.

4.4. Not every record is true

A retained record may be false.

This is one of the most important distinctions in the paper.

Minimal knowledge-status is record-status, not truth-status.

A memory may misremember. A measurement may be miscalibrated. A database may contain an error. A map may misrepresent terrain. A model may preserve the wrong relation.

A legal record may misclassify a case. A scientific inscription may result from contamination. An institutional archive may retain a false category. A biological system may retain maladaptive weighting. A machine may store corrupted data.

These cases may still involve retained distinction.

They may still be TK.

They may even be KIP or NTK if the retained false distinction is deployable or actually deployed.

Their error lies not in the absence of retention, but in the failure of the retained distinction to preserve the relation it claims, functions, or is used to carry under the relevant conditions.

This is why truth, warrant, fidelity, objectivity, and correction must be distinguished from minimal knowledge-status.

The framework can say:

There is retained distinction.

The retained distinction is false, distorted, corrupted, misclassified, miscalibrated, or misleading.

Those claims are not contradictory.

A false record is still a record.

A retained error is still retained distinction.

Truth-status is a stronger evaluative question.

4.5. Not every retained state is semantic

A retained state need not be semantic.

A retained biochemical state, immune memory, threshold shift, stored voltage, instrument calibration, trained parameter, or procedural classification may preserve distinction without carrying meaning in the human linguistic sense.

Semantic knowledge is a powerful special case. It requires stable symbol systems, interpretation regimes, shared abstraction classes, grammar, convention, training, institutional correction, or communicative practice. These are not minimal.

A system may retain distinction without meaning anything by it.

A cell may alter its pathway state. An immune system may retain antigenic distinction. A thermostat may retain a setting. A machine may store a value. A sensor may retain a calibration. A habit may preserve past distinction in action-readiness.

None of these requires semantic content first.

This does not reduce semantic knowledge to nothing. It grounds semantic knowledge in retained distinction. A word, sentence, diagram, theorem, legal rule, scientific model, or cultural memory becomes semantic knowledge because retained distinctions are stabilised within an interpretive and redeployable regime.

Semantic knowledge is retained distinction under symbolic and interpretive organisation.

It is not the minimal condition.

4.6. Not every retained state is operative

A retained state may be inactive.

A book may remain unread. A memory may remain unaccessed. A database may remain unqueried. A calibration file may remain unapplied. A rule may remain unused. A trained parameter may be bypassed. A legal record may never be invoked. A model may never guide an intervention.

This does not erase minimal knowledge-status.

It limits the status claim.

The appropriate classification may be TK rather than KIP or NTK. If the retained state is embedded in a functioning deployability pathway, KIP may be warranted. If it is actually redeployed with downstream dependence, NTK may be warranted.

The error is to treat retention and operativity as identical.

Retention preserves distinction.

Deployment makes retained distinction operative.

Knowledge-status must state which condition is present.

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5. Knowledge, truth, and error

5.1. Minimal knowledge-status is not truth-status

The word “knowledge” often implies truth.

In ordinary philosophical use, to know something is usually to stand in some appropriate relation to what is true. Human knowledge claims are typically evaluated through truth, evidence, justification, reliability, warrant, or objectivity.[3]

This paper does not deny those stronger uses.

It separates them from the minimal physical condition.

Minimal knowledge-status is the status of retained distinction. It asks whether a prior difference has been registered and retained as present accessible state. Truth-status asks whether the retained distinction preserves the relation it claims or is used to carry.

These are different questions.

A retained distinction may be true. It may preserve the relevant relation.

A retained distinction may be false. It may preserve a misclassification, distortion, hallucination, calibration error, corrupted token, or misleading abstraction.

A retained distinction may be indeterminate. The relation it carries may not yet be testable, resolved, or sufficiently indexed.

A retained distinction may be locally true and globally misleading. It may preserve a relation at one scale but fail at another. It may be valid over one horizon and fail over a longer horizon. It may be accurate for one locus and unusable for another.

The minimal knowledge question is:

Has distinction been retained?

The truth question is:

Does the retained distinction preserve the relevant relation under the conditions of the claim?

The second question presupposes the first but is not identical to it.

5.2. Error as retained misrelation

Error is not simply absence of knowledge.

Error can be retained.

A system may preserve a distinction that fails to match the relation it is taken to carry. A memory may retain a distorted event. A map may retain a wrong route. A model may retain a false variable relation. A measurement may retain a miscalibrated value. An institution may retain an unjust category. A machine may retain corrupted data. A body may retain maladaptive response.

These are not failures of retention.

They are failures of relational preservation, correction, or deployment.

Error occurs when what has been retained, omitted, compressed, misclassified, misweighted, corrupted, or placed outside the frame becomes consequential for the claim, action, prediction, intervention, or explanation being made.

The retained state may still be knowledge-bearing in the minimal sense. It is a record of some registration pathway. But its use as knowledge of the target relation fails.

This gives the framework a disciplined way to speak about false knowledge without contradiction.

There is retained distinction.

The retained distinction mispreserves the relation.

The knowledge-status is minimal or operational.

The truth-status is failed or weakened.

This distinction will matter later for observation and objectivity. Observation will ask how records are produced through bounded registration. The limits of observation will ask how abstraction creates error potential. Scale will ask how scalar misfit distorts relation. Operational envelope will ask how observation programs drift, overload, and collapse.

Paper 2 only needs to establish the underlying distinction:

Retention is not correction.

Record-presence is not truth.

5.3. Truth, warrant, and correction as stronger layers

Truth, warrant, and correction require further architecture.

A retained distinction becomes truth-apt where it is used or evaluated as preserving a target relation. It becomes warranted where the pathway by which it was formed, retained,

compared, corrected, or justified is strong enough for the claim being made. It becomes more objective where reference conditions, abstraction regime, scale, comparator family, error pathways, and residual limits are explicit enough to be tested and corrected.

These are not external decorations.

They are stronger regimes of retained distinction.

Scientific knowledge, for example, is not merely retained record. It requires controlled observation, instrument discipline, calibration, replication, modelling, statistical treatment, criticism, and correction. Legal knowledge requires procedural admissibility, record integrity, classification, authority, contestability, and institutional use. Personal knowledge may require memory, testimony, trust, embodiment, experience, and practical correction. Machine knowledge may require stored parameters, validation, deployment context, error analysis, and update conditions.

In each case, the minimal basis remains retained distinction.

But the stronger status depends on correction architecture.

This paper therefore does not attempt to solve truth, justification, or objectivity. It makes those questions possible by defining the retained state to which truth, error, warrant, and correction can attach.

Minimal knowledge is the base.

Corrected knowledge is a stronger achievement.

5.4. Knowledge can be local, partial, and fragile

Knowledge is regime-relative.

A retained distinction may be valid locally, partial in scope, fragile under noise, unstable over time, or dependent on narrow reference conditions. This does not make it unreal. It means that its status must be indexed.

A cell may retain a molecular distinction useful only within a local chemical regime. A memory may preserve enough relation for action but not enough for testimony. A map may preserve route structure but not terrain texture. A model may preserve aggregate relation but not individual variation. A legal record may preserve procedural distinction but not lived complexity. A scientific measurement may preserve magnitude within tolerance but not full system state.

Knowledge does not require totality.

It requires retained distinction under the claim being made.

This is why the paper belongs to reference-indexed realism.

Reality constrains what can be retained, tested, corrected, and used.

But no finite knowledge-state contains the real whole.

A retained distinction may be real, partial, abstraction-bound, scale-bound, corrigible, and operationally powerful at once.

The correct question is not whether knowledge is absolute or arbitrary.

The correct question is:

What distinction has been retained, under what reference conditions, with what persistence, what deployability, what realised use, what correction, and what residual limit?

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6. Sequence handoff

6.1. What Paper 2 has installed

This paper has installed the knowledge facet of the Part 2 architecture.

Paper 1 established the reference condition of information. Physical difference becomes information only where it is made relationally available as operational distinction for a locus under specified conditions.

Paper 1a established the physical pathway of availability. Signal is preserved contrast through which relation can become available.

Paper 2 has now established the retained-status consequence.

Knowledge is retained distinction.

The canonical carrier of minimal knowledge is RAS: an OA-keyed, OR-produced retained token-state anchored in OP and indexed to RRP.

Knowledge begins where a prior registered distinction persists as present accessible state.

This paper has also fixed the knowledge status ladder.

Trivial Knowledge is record-presence.

Knowledge Inference Potential is grounded deployability.

Non-Trivial Knowledge is realised deployment.

These statuses allow the framework to distinguish retained state, deployable record, and operative retained discriminator without collapsing them.

6.2. What remains unresolved

The paper has not defined intelligence.

A retained distinction may exist without being applied. It may be stored, archived, remembered, encoded, embodied, or preserved without altering downstream trajectory selection. It may be present as TK. It may be deployable as KIP. It may even be redeployed as NTK in a local process. But the question of intelligence emphasises a different facet.

Intelligence asks when distinction-conditioned organisation alters downstream trajectory selection for a locus.

That requires retained distinction in many cases, but it is not identical with retention. A memory unused is knowledge in the record-present sense, but not intelligence in the present episode. A record deployed to guide action becomes intelligence-relevant. A distinction embodied in morphology, habit, tool, rule, model, procedure, or institution becomes intelligence-relevant only where it is applied to alter downstream branch-space.

The difference is simple:

Knowledge emphasises retention.

Intelligence emphasises application.

The next paper therefore asks what happens when retained, available, inherited, embodied, or currently registered distinction is made operative in downstream trajectory selection.

6.3. Handoff to Intelligence

The handoff can now be stated cleanly.

Within the inherited RRP architecture, information for a locus is operational distinction under specified reference conditions.

Signal is preserved contrast.

Knowledge is retained distinction.

Intelligence is applied distinction.

Paper 3 begins from this position.

It does not need to redefine RRP, OP, OA, OR, RAS, or RSD. It inherits them. It asks how distinction-conditioned organisation alters downstream trajectory selection under specified reference boundary, reference scale, operational horizon, discrimination/noise regime, and comparator discipline.

A retained distinction becomes intelligence-relevant when it is applied.

A record becomes intelligence-relevant when it guides later selection.

A memory becomes intelligence-relevant when it alters action.

A rule becomes intelligence-relevant when it changes institutional outcome.

A model becomes intelligence-relevant when it changes inference, prediction, control, or intervention.

A biological state becomes intelligence-relevant when it alters repair, regulation, movement, inhibition, reproduction, or maintenance.

The intelligence paper will therefore carry forward the same architecture with a new explanatory emphasis.

The mechanism does not multiply.

The facet changes.

6.4. Final compression

The final position of this paper is:

Knowledge is retained distinction.

Minimal knowledge is not possession, belief, semantic content, justification, certainty, truth, or conscious awareness.

A system knows, in the minimal sense, when a prior distinction has been registered and retained as present accessible state under specified reference conditions.

The canonical carrier of minimal knowledge is RAS.

A RAS is OA-keyed, OP-anchored, OR-produced, RRP-indexed, and retained over an operational horizon.

A RAS is past-dependent present structure.

The past is not possessed whole.

It is retained as discriminable state.

Trivial Knowledge is record-presence.

Knowledge Inference Potential is grounded deployability.

Non-Trivial Knowledge is realised deployment.

A false record may still be retained distinction.

Truth, warrant, objectivity, and justification are stronger evaluative layers.

Knowledge becomes intelligence-relevant when retained distinction is applied.

The next question is therefore application.

That question is intelligence.

Endnotes

[1] Provenance comparator: Karl R. Popper, “Epistemology Without a Knowing Subject” (1968), separates objective knowledge from the requirement that it be privately possessed by a knowing subject. The present paper shares the anti-possession move but does not inherit Popper’s World 3 ontology: minimal knowledge here is physically retained distinction indexed to an RRP and carried by RAS.

[2] Comparator: Fred I. Dretske, Knowledge and the Flow of Information (1981), develops an information-theoretic naturalisation of knowledge in which information is connected to belief and cognitive use. The present paper places a more primitive threshold below belief: an OA-keyed, OR-produced RAS can satisfy minimal knowledge-status as retained distinction before semantic, cognitive, or propositional conditions are added. No technical inheritance is claimed.

[3] Opposing comparator: Timothy Williamson, Knowledge and Its Limits (2000), treats knowledge as a fundamental factive mental state rather than as an analysable conjunction of belief, truth, and justification. The present paper uses “minimal knowledge-status” differently: record-status is established by retained distinction and is explicitly separated from truth-status and mental-state requirements. The comparison is therefore discriminatory rather than inherited.

References

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