

The Projective Criterion of Truth

Phenomenology of R-04 Reason and the Harmonic Solution of the Three-Jug Problem

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Abstract. This article develops the thesis that the universal criterion of truth in packet-projective logic is expressed by the harmonic cross-ratio $(A, B; C, D) = -1$. Such a criterion becomes thinkable only in the special regime of R-04 reason, where the present is understood as a section of packeted past and packeted future, and where truth is sought not in a private metric but in an invariant of projective coherence. Philosophically, this proposal is placed in dialogue with Husserl's search for the grounding of objectivity, Schopenhauer's principle of sufficient reason, and Kant's transcendental unity of apperception. In the final section, the 3-5-8 jug problem is presented as a concrete example showing that the uniquely universal core of the solution is the projective construction of the midpoint 4 without measurement.

Keywords: projective logic; criterion of truth; R-04; Kant; Husserl; Schopenhauer; harmonic cross-ratio; three-jug problem

Central thesis. Truth is universal only where it survives an admissible change of perspective. In packet-projective logic this condition is given by the harmonic value of the cross-ratio. The universal criterion of truth is therefore not metric but projective, not local but invariant, not psychological but structural.

1 Why the question of a universal criterion becomes decisive again

The contemporary world no longer lives inside a single linear perspective. Science, digital modeling, instrument-based perception, historical reflection, and machine systems combine several horizons at once. We deal not only with what is given, but with reconstruction, calibration, renormalization, and translation between layers of description. For that reason, the old question of a criterion of truth returns in a stricter form: what remains true after the scale, viewpoint, measuring channel, and temporal orientation have changed?

In the authorial language of this article, the designation R-04 gathers into one node two motives from the monograph: the historical-epistemological

layer P04/P4 and the regime R_4 as complex and packet reason. In this regime, past and future are treated as merged packet regions, while the present functions as their section. Reason can therefore no longer be satisfied with a linear criterion suitable for only one chain of ground and consequence. It requires a criterion that remains stable when many perspectives are projected onto one support.

This is where the necessity of a universal criterion arises. Not because thought suddenly desires an abstract absolute, but because the structure of experience itself has become multi-horizonal. If the world opens as a plurality of admissible projections, truth must be what remains invariant across them.

2 The mathematical core: the harmonic cross-ratio

In the monograph, the criterion of structural truth is defined not by a metric but by a configuration of four points: two premises A, B , a synthesis C , and a contextual point D . Truth is understood as the harmonic closure of this quadruple. Thus the nucleus of universality is neither subjective conviction, nor statistical plausibility, nor local usefulness, but structural harmony.

$$\text{Truth}(A, B \vdash C \mid D) \iff (A, B; C, D) = -1.$$

Let us also introduce a parameter of relative truth and the defect of truth. This makes it possible to distinguish absolute harmonic fulfillment from graded deviations.

$$\lambda = (A, B; C, D), \quad \delta_{\text{truth}} = |\lambda + 1|.$$

Why can this criterion claim universality? Because it is projective: it survives admissible transformations of perspective. For every projective transformation of the line, the fundamental invariant of four collinear points is preserved.

$$(TA, TB; TC, TD) = (A, B; C, D), \quad T \in \text{PGL}(2).$$

In one-dimensional projective geometry, any scalar invariant of an ordered quadruple is expressed through the cross-ratio. Hence, if there is any single universal criterion of truth that survives changes of scale and perspective, it must reduce to this invariant. The harmonic value -1 does not single out a mere number; it singles out a state of full coherence among premises, synthesis, and context.

3 Husserl, Schopenhauer, and Kant as lines of anticipation

Husserl matters here above all as a thinker who re-opened the problem of the grounding of objectivity. Phenomenology shows that a thing is not given as a dead atom of data; it is constituted within a horizon, an intentional coherence, and a field of possible variations of appearance. In that sense, Husserl already points toward a grounding that exceeds private empiricism. Our step is to formalize this horizon projectively: the context D does not merely surround a judgment; it enters the very structure of its truth.

With Schopenhauer, the decisive motif is the principle of sufficient reason. Every representation demands a ground; every given appearance asks why it is given in this way. In packet-projective logic, this corresponds to the status of the contextual point D : without it, the synthesis C remains logically under-constructed. Yet ground alone is not enough for universal truth. A ground may be local, historical, or psychological. Universal truth appears only when ground itself enters a harmonic configuration with premises and conclusion.

With Kant, the crucial notion is the transcendental unity of apperception. It indicates that a manifold of representations can belong to one experience only through a principle of connectedness that gathers them into unity. In my reading, this is a pre-projective intuition of the universal criterion: before truth becomes harmonic, it must first become connected. Kant, however, stops at the level of synthetic unity within the subject of experience. Packet-projective logic takes the next step and asks under which invariant such connectedness is true rather than merely assembled. The answer is the harmonic cross-ratio.

4 Anthropological and phenomenological meaning

The projective criterion of truth is anthropologically important because the human being never encounters the world as a naked thing-in-itself. We live among traces, screens, instruments, memory, language, social mediations, and bodily perspectives. What appears to us is not the raw object but an event-state that has already passed through a channel of assembly. In such a situation, truth cannot be defined by immediate evidence alone; evidence is too tightly tied to a local angle of view.

The regime R-04 signifies the maturity of a reason able to hold together several temporal axes and several supports of appearance at once. Past and future do not vanish; they condense into packet regions. The present becomes not an atom-point, but a place of section and reading. Truth is therefore understood not as an immobile substance but as stability of con-

figuration under shifts of projective regime.

- truth must survive a change of observer rather than merely be confirmed by one observation;
- truth must survive a change of scale and calibration rather than merely one metric;
- truth must preserve coherence among past, present, and future rather than break into local fragments;
- truth must include the contextual ground instead of treating it as external noise.

From this follows a decisive phenomenological consequence: universal truth is not the violence of one perspective imposed upon all others. On the contrary, it is the limit at which many admissible perspectives converge upon one and the same harmonic structure. It is universal not because it erases difference, but because it survives difference.

5 Why the criterion is unique

The word “unique” must be understood strictly here. The claim is not that the history of thought produced no other criteria, but that only a projectively invariant criterion can be universal. Any metric criterion depends on a unit of measurement. Any psychological criterion depends on a subject. Any social criterion depends on an institution. Only a projective invariant survives the renormalization of perspective.

Many local criteria are possible, but the universal criterion is one in its structural form. It is the harmonic condition because that condition alone translates truth from the regime of local success into the regime of universal coherence. This is the strong sense of uniqueness: not uniqueness of vocabulary, but uniqueness of the invariant core.

$$\delta_{\text{truth}} = 0 \iff (A, B; C, D) = -1.$$

In this way, the projective criterion of truth is not merely another philosophical metaphor but a strict claim to a universal principle: truth is where a configuration endures harmonic closure relative to its context of sufficient reason.

6 Example: the three-jug problem as a projective proof

The problem is posed as follows: three jugs have capacities of 3, 5, and 8 liters; initially only the largest is full, so the state is $(0, 0, 8)$. Without measuring, and using pouring only, one must reach the state $(0, 4, 4)$ in seven

moves. On the surface, this is an everyday combinatorial puzzle. On the projective level, it is the construction of the midpoint of the segment $[0, 8]$ without ruler and without numerical measurement.

$$(0, 0, 8) \rightarrow (0, 5, 3) \rightarrow (3, 2, 3) \rightarrow (0, 2, 6) \rightarrow (2, 0, 6) \rightarrow (2, 5, 1) \rightarrow (3, 4, 1) \rightarrow (0, 4, 4).$$

The attached authorial table matches these seven pourings with seven geometric actions in a Desargues-style construction: choose an external point O , take an arbitrary point P on the ray OA , determine Q on OB so that $PQ \parallel AB$, then draw AQ and BP , obtain their intersection R , and finally draw OR , which cuts AB at $C = 4$. The harmonic quadruple takes the form $(A, B; C, D_\infty) = -1$.

Seven-step projective solution of the 3-5-8 jug problem
State chain and invariant midpoint idea



Goal
 Split 8 into a harmonic midpoint 4+4 without measuring and only by transfer.

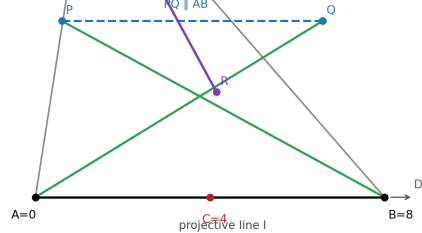
Projective reading
 The physically visible pours are the operational trace. The invariant kernel is midpoint construction on segment $AB=[0,8]$.

Truth form
 $(A, B; C, D_\infty) = -1$
 C is the projectively obtained midpoint: $C=4$.

Desargues-style midpoint construction without measurement

Choose external point O , arbitrary point P on OA , then Q on OB with $PQ \parallel AB$; lines AQ and BP meet at R ; line OR cuts AB at midpoint C .

Harmonic criterion: $(A, B; C, D_\infty) = -1$
 The invariant midpoint is the truth-bearing core of the operational sequence.



Redrawn editorial scheme based on the author's uploaded projective table for the three-jug problem.

Figure 1: *

Editorial redrawing: at left, the seven states of the jug problem; at right, the Desargues-style projective construction of the midpoint $C = 4$. The force of the example lies in the fact that the universal core of the solution is not the everyday sequence of pours as such, but the invariant harmonic construction of the midpoint without measurement.

Precision matters here. Different empirical retellings of the moves are possible; but in the projective reading the uniquely right part of the solution is its invariant core. That core is the construction of the midpoint of 8 as the harmonic center 4. The jug problem therefore does not merely illustrate the criterion of truth; it shows how truth emerges from correct configuration rather than from external measurement.

7 Conclusion

In packet-projective logic, the question of truth is transferred from the psychology of conviction into the geometry of coherence. Universal truth is not what appears true from one position, but what remains harmonically true

under admissible translation between positions. That is why the search for a universal criterion becomes both possible and necessary in the R-04 regime: contemporary reason lives among multiple perspectives and must therefore seek their invariant.

Husserl leads us toward the grounding of objectivity, Schopenhauer toward the demand for sufficient reason, and Kant toward the connectedness of transcendental apperception. But only packet-projective logic takes the next step and formulates the criterion itself in a strict form: the harmonic cross-ratio is the universal and uniquely invariant criterion of truth.

References

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- Schopenhauer, A. On the Fourfold Root of the Principle of Sufficient Reason.
- Authorial appendix: table of correspondence “pourings \leftrightarrow Desargues construction” for the 3-5-8 jug problem.