Tool Specification — Derived Quantitative Protocol (DQP)

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This document specifies the **Derived Quantitative Protocol (DQP)**: a seven-step quantitative protocol, in three stages, for reading which configuration comes to stand within a determined region of conditions — and by whose capacity.

This document describes what the protocol *is* and what it *does* when applied — not what its user is. Apply it as specified. Where a step's discipline conflicts with producing a fluent or confident result, the discipline governs.

The DQP is a **tool**, nothing more, nothing less.

> **Name — required usage.** In formal writing the name is given in full, *Derived Quantitative Protocol*, or the abbreviation is accompanied at first use by an explicit expansion or an exact citation. The abbreviation alone is reserved for informal discussion.
>
> **DQP is not the Degree Qualifications Profile.** The Lumina Foundation's *Degree Qualifications Profile* shares the abbreviation and occupies an adjacent policy-and-measurement space. It is a qualitative framework for describing degree outcomes and has no relation to this tool, its corpus, or its unit of measure. Where confusion is possible, write the name in full.
>
> **This is a working document.** It specifies a tool that is complete in its architecture and in its measurement paths, and that carries its unresolved points as *named limits* rather than as blanks. Section 12 lists them. Nothing in this document is withheld pending a later revision.

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<derivation>

2 · DERIVATION

The DQP is a **derived artifact** of the Meta-Philosophy corpus. It introduces no ontology of its own. Every concept it operates on is traced below to the paper that reports it.

Concept the tool operates on	Source	DOI
Synthesis; irreducible configuration; the element as *anything that interacts*	*The Synthetic Principle* (2026a)	10.57967/hf/11444
Lean; the tendency toward the not-yet; the steepest-gradient reading	*Aviplestos* (2026b)	10.57967/hf/11444
Articulation; the name laid over a fact	*Ontonoetic Pattern* (2026c)	10.57967/hf/11444
Aperture; resolution; the limits of articulation	*Patterns and Cognition* (2026d)	10.57967/hf/11444
Classification of configurations as the trace of passage	*The Passage of Becoming* (2026e)	10.57967/hf/11444
Potentamis; the five forms; negation; Fasaion; the seven figures	*Potentamis and Fasaion* (2026f)	10.57967/hf/11444
Stachoria; region; the ontic condition within which a configuration takes form	*Stachoria* (2026g)	10.57967/hf/11444

Meta-Paper — the programme's own statement of its structure and status: DOI 10.57967/hf/11444.

The corpus governs

Where the corpus speaks on **ontology**, it is final. Where it is silent, the tool is governed by its own requirement of internal consistency, and that requirement is declared as such — never presented as corpus authority. Where the corpus declares a question **deferred** — as it does for the *measurement* of capacities and negations — it has **no voice**, and the tool carries the responsibility itself, with the responsibility declared.

The corpus is a **report of observation, not a directive.** It leans; it does not adjudicate everything.

Application, not formalization

The DQP is an **application**: it runs on a case. It is **not** part of the formalization programme, which models the corpus in order to expose it to falsification. The two are different undertakings with different obligations. A problem belonging to the formalization programme does not become a problem of this tool by being adjacent to it.

Relation to the DCP

The **Derived Cognitive Protocol** is the corpus's *qualitative* application; the DQP is its *quantitative* one. Both are derived artifacts of the same corpus and stand at the **same rank**. Neither is derived

from the other, and neither is the standard for the other.

That two artifacts of equal rank exist, and that one of them cannot assign magnitudes, is **the reason they are independent** — not a deficiency in either. A case the DQP cannot quantify is read by the DCP; the DCP's refusal to assign magnitude is not a limitation the DQP repairs.

A cross-check between them is specified in section 12. It is a **test**, not a source of parameters.

</derivation>

<objective>

3 · OBJECTIVE

The orienting sentence — declared as not testable. For an arrangement that is standing, separate what is *actually holding it up* from what is *only said to be holding it up*, and state what would have to change for the arrangement to change.

That sentence orients the tool; it is **not** a claim the tool can verify. What the tool can be held to is the list below.

What a run is accountable for

A run is accountable for producing, or honestly refusing to produce, each of the following:

Cell	Accountable output
0	the declared state of the dataset, and for declared fields, which is measured and which is set by the one running
1	the region, its three conditions, the axis set, and the four unverifiable declarations
2	the element list, with index bound to label
3	a lean for each element, or a named reason there is none
4	five capacity forms and a total per element, each as an interval
5	five negation forms and one negation for the whole run
6	which configuration comes to stand, its figure, and its standing with respect to the terrain
7	the conditions under which it would be overturned, and four named residues

What class of tool this is — and what it costs to run

This is an ontology-sensitive measurement protocol, not a lightweight metric. The distinction is not a matter of emphasis; it is set by a requirement at Step 1b. Before any quantity is read, the one running must declare **at least three regions**, and they must **differ in what enters as an element** — not in wording. Only then does the centre of the question select the region that matches.

What that requirement buys. A region is the frame within which everything else is measured, and a frame chosen alone is indistinguishable from a frame chosen to suit. Placing the chosen region beside two genuine alternatives forces the framing to be **argued rather than assumed**, and it is argued **in public, in the output**, where a reader can disagree with it.

What it costs, stated plainly.

The work is **conceptual, not clerical**	Producing two genuine alternative element-ontologies for the same question is not a data task. It requires enough familiarity with the subject to see it carved more than one way, and that is a higher bar than possessing the dataset

It falls **before** measurement	The declaration cannot be validated by the result, because it precedes every quantity. A run cannot discover that its regions were poorly chosen
The gate checks **difference, not quality**	The tool verifies that the three differ in element ontology and that the centre lands in one. **Three poor alternatives pass.** As everywhere else in this tool, the gate catches inconsistency, not wrongness
Two competent analysts may **legitimately diverge**	Different ontological repertoires yield different admissible region sets, hence different runs, neither of which is a mistake. The protocol constrains the reasoning, not the conclusion
It **resists automation and scale**	The requirement cannot be discharged by a script, so the tool does not lend itself to being run across many cases quickly or by someone outside the subject matter

Why this belongs in the objective rather than the limits. It is not a defect to be mitigated; it follows from what the tool sets out to do. A tool that separates real capacity from standing-by-name cannot take the frame as given, because **the frame is exactly where standing-by-name is installed**. The cost is the price of the question, and anyone deciding whether to use this tool should decide **knowing it**.

The number three is a choice, and it is not derived. Two alternatives would already break single-framing; three is set and not argued from anything in the corpus. It is recorded here as a chosen threshold rather than presented as a result.

Four things a run does not aim at

(1) It does not say who *ought* to prevail, and it does not rank the elements that fail the forward gate against one another. **(2)** It does not produce a time series. One dataset, one result; three datasets are three regions, not a trend. **(3)** It does not adjudicate between two artifacts, two names, or two accounts of a case. **(4)** It does not infer a cause at any point where a gate reports a mismatch. A mismatch returns the run to Step 1; the tool states that it did so, and states nothing further.

The recipient

The intended recipient is someone who must decide whether an arrangement is standing on capacity or on standing-by-name, and who will be **accountable for the decision**. Accordingly the tool is built to **refuse** rather than to produce: a refusal is a valid output, and a named null is worth more to that recipient than a number that cannot be defended.

```
</objective>
```

<instruction>

4 · HOW TO RUN

To anyone — or any agent, in any role — putting this tool to use: run it as follows.

The voice of the whole tool is the voice of a gate. Do not read this document as a summary to absorb. Run it as a sequence of gates. **A gate is passed only when its condition is met; a fluent result is not a passed gate.** The tool is built to refuse to produce an incoherent result, and that refusal is a valid output.

1. **Before anything else, complete Cell 0.** Declare whether the dataset is (a) verifiable, with a configuration already standing, or (b) posited. Under (b), declare **field by field** what is measured, what is set by the one running, and on what grounds. Cell 0 precedes Step 1 and is **not a step**.
2. **Satisfy the <absolute_rule>.** The three fields of honest declaration are data fields, not a preamble, and they are of **different kinds**. They are output at Cell 1.
3. **Run the seven steps of <protocol> strictly in order, in their three stages.** Step 1 supplies the content of every later step. Do not begin a step before the one before it is complete; do not merge steps.
4. **Declare the four unverifiable declarations before Step 2, in words.** The axis set, the admissibility classifier, the region graph, and the reference state are each declared once for the whole run, each carries several quantities, and **no gate in the tool detects a wrong one**. Section 12 states what each carries and where its gate is blind.
5. **Keep every <constraint> active throughout**, not checked once. In particular: never subtract one run from another; never calibrate a threshold against a case; never enter 0 in place of missing data.
6. **Report in the <output> structure**, with every mandatory accompanying clause attached. Where the protocol cannot proceed honestly, report that plainly and yield no Fasaion. **A named null is preferred to a fabricated result.**

This instruction adds nothing to the protocol. It fixes the order in which the document below is executed.

</instruction>

<absolute_rule>

5 · ABSOLUTE RULE — the three fields of honest declaration

Honesty toward the Stachoria is the prerequisite of every result that follows. Where the region is determined dishonestly — or left undetermined and undeclared — what follows is compromised at its source, however carefully the later steps are carried out.

All three fields below are **data fields**, and they are **of different kinds**. They are output at Cell 1.

	Field	Form it takes
1-1	what the reading reaches	**the numbers**
1-2	the **declared aperture** — the extent this reading reaches, together with a list of what falls outside it	**an enumerable boundary**
1-3	the **blind spot** — the declaration that one exists	**a declaration carrying no magnitude**

1-3 declares existence, not extent. A blind spot that can be measured is no longer a blind spot — it has fallen inside the aperture, and therefore belongs to 1-2. Assigning a number to what is missing converts **silence into absence**.

1-2 is a declaration, and the tool does not verify it. Declared narrowly, declared falsely, or declared to be done with, the run skews — and **the skew does not appear anywhere in the output.** The one running is accountable. This warning is printed with every report.

</absolute_rule>

<orientation>

6 · ORIENTATION

Three levels, held apart for the whole run

Mechanism (synthesis) · **fact** (a configuration that stands) · **name** (the handle laid over it). Every term used, including the tool's own, is a name.

A number is also a name. This is where a quantitative tool is exposed in a way a qualitative one is not: a magnitude reads as if it belonged to the object. It does not. Every number this tool produces is **a measure of the intersection** between an ontic region and an epistemic aperture — never a measure of the object. Reporting a number as the fact is the same failure as reporting a name as the fact, and it is easier to commit.

What belongs to whom

The **aperture** belongs to the one running. The **region** does not. The **lean** belongs to the element. The **terrain** belongs to the region and exists whether or not any element does. The **Fasaion** belongs to the fact. Reporting one as another is a failed run, however carefully each was reached.

Running the tool is a cognitive act

The one running may be **inside** the region. That is read from the region, not chosen: if inside, the one running **is** an element, is measured as every element is, and is exempt from nothing. Negation bears on every capacity in the region at once — including that one.

The voice of the result — and it binds the numbers too

Results are reported in the **observational voice**: *is read as*, *comes to stand*, *is measured at*. Never in ontic declaration.

This applies to magnitudes without exception. Write *"capacity is read as strong under S and weak under M"*; do **not** write *"this element has high symbolic power."* The first reports a reading; the second asserts a property of the object.

</orientation>

<core_concepts>

7 · CORE CONCEPTS

Only the concepts the tool operates on are given. Each is stated as **what it is**, then **what it does in the tool**.

Stachoria — the region

What it is. Not "environment," not "context." The region **together with the conditions within it**.

In the tool. A region **has of itself no direction and no magnitude**; what carries magnitude is each **condition** within it. Three conditions are measured at Step 1c, and they generate the weight set that decides which form is decisive.

Aperture

What it is. The extent **this reading** reaches. It belongs to the observer, not to the object.

In the tool. Every number the tool produces measures the **intersection** of region and aperture. Two runs declaring different apertures **are not comparable**, even on the same object.

Element

What it is. Anything that **interacts** within the region. It need not be an agent, need not be conscious, need not have a goal.

In the tool. A storm, a clause of law, a bacterium, an organisation — each is an element if it interacts within the declared region.

Lean — $\hat{V}_i$

What it is. The **direction** an element tends in. A unit vector, carrying **no magnitude**.

In the tool. Magnitude belongs to Potentamis, direction to the lean, and **neither is inferred from the other**: a well-resourced element may emit nothing. Lean is measured as **emission**, never as possession.

Potentamis — P

What it is. One capacity, appearing under **five forms** — not five different powers.

In the tool. Read at the **element boundary**, measured in **pote**.

Negation — $N(F)$

What it is. What grinds against capacity. Read through the **same five forms**, at the **region boundary**.

In the tool. Negation is **not an element and not an opponent**. It has no lean, no capacity, and no place in the element list. It bears on **every** capacity in the region at once.

Fasaion — the configuration that comes to stand

What it is. Which configuration **comes to stand**, and its **figure**.

In the tool. Standing is **conditional**: change the conditions and a different configuration fits. The Fasaion is a **result, not an input** — reading its own quantities requires a **new run from Step 1**.

Terrain — $\vec{G}$

What it is. The direction in which the region's conditions vary **most steeply**.

In the tool. It belongs to the **region** and is present **whether or not any element exists**. It describes **the price** an element pays; it does **not** describe who stands.

Pote — the unit

1 pote = the value of P when both modulating factors stand at their reference state — $P_C = 1$ and $K = 1$ — and the three magnitude forms approach their ceiling.

Factor	equals 1 when	what that 1 is
$P_M^{\alpha} P_I^{\beta} P_S^{\gamma}$	the three magnitude forms stand at their ceiling	a **supremum**, never attained
P_C	$u = 1$: holding force net of tearing equals the binding threshold exactly	a **reference state**, attained exactly
$K(P_W)$	$P_W = 1$: burning exactly at the sustainable limit	the **gate**, attained exactly

$P_C = 1$ is a reference state, not a maximum. The maximum of P_C is $1/\tanh(1) = 1{,}3130$, and K has no maximum at all, because the amplifier has no upper bound. At 1 pote only **three of the five forms** stand at a ceiling; the two modulating forms stand at a **mark**. Reading the unit as *maximal capacity in every form* is therefore wrong, and wrong by **31,3 per cent** — that reading places the unit at 1,3130.

1 pote is a limit, not a state an element occupies. The three magnitude forms are read as $1/(1 + (q_{ref}/q)^2)$, which is strictly below 1 for every finite reading, so P is strictly below 1 at the configuration just described. No element reports exactly 1,00 pt.

Above 1 pote, at least one modulating factor has passed its reference state — either $P_C > 1$, which is $u > 1$, or $K > 1$, which is $P_W > 1$. A report above 1 pote **names which**.

The two are not the same kind of thing, and the earlier phrasing of this document merged them. Burning past the sustainable limit buys strength by **shortening the time the element can go on**: there is a debt, the physiological anchor supports it, and the source is traceable. Cohesion above its reference **borrows nothing**. $u > 1$ means $E_i + \Psi_i - D_i > E_{bind}$, and all three terms are **stock of the element itself**, read at its own boundary: there is no lender, no debt, and no source to trace. It is holding force above the reference mark, and that is all it is. The sentence *above 1 pote is reached only by something borrowed, and the source is traceable* is true of the burning route and false of the cohesive one; it has been withdrawn.

</core_concepts>

<index_of_quantities>

8 · INDEX OF QUANTITIES

Every quantity and symbol this document uses is listed in this section. The tool measures **twenty-eight quantities at tier 1**; everything else it reports is computed from them. The lists below run from the raw quantities up through the normalised readings, the composites in pote, the region's own parameters, the constants, the geometric quantities of the seven steps, and finally the indices and operators.

This is the reference list only. **Each quantity's measurement path — the instrument in each domain, and the gate that stops it being tuned by hand — is given in section 9**; its constraints and failure modes are given at the step that uses it.

How a measurement path is grounded — three labels

Every quantity carries **two labels, one per domain**, because the same quantity is often firmly anchored in the inanimate case and constructed in the sentient one. **The label travels with the quantity** into every report.

- **ANCHORED** — read directly by a standard instrument, or derived from a requirement of the tool's own internal consistency.
- **BORROWED** — a standard instrument from another field, applied here; where the fit is imperfect, the mismatch is declared with it.
- **INVENTED** — constructed by this tool; no external source.

Being citable is not the same as ceasing to be invented. Every path marked INVENTED in this document remains invented, and the pairs below show exactly where the tool is standing on its own construction rather than on an instrument.

8.1 · Tier 1 — the twenty-eight measured quantities

Symbol	What it reads	Boundary	Family · unit	Inanimate / Sentient
E_i	free energy the element can requisition into this interaction, present at the slice	element	stock · J	ANCHORED / BORROWED
E_i^{min}	the reserve below which the structure falls, read against the declared stress window	element	stock · J	BORROWED / BORROWED
Ψ_i	the hold that does not come from resources — what must be spent to detach a part	element	stock · J	ANCHORED / BORROWED
D_i	separating work already done and not yet restored, still present at the slice	element	stock · J	ANCHORED / BORROWED
E_{bind}	the binding threshold — what the configuration requires, the common denominator of the balance	element	stock · J	ANCHORED / BORROWED
E_{region}	free energy present inside the region at the slice, measured from the region	region	stock · J	ANCHORED / BORROWED

Symbol	What it reads	Boundary	Family · unit	Inanimate / Sentient
$E_{claimed}$	the part of that store elements declare they drew from this region	region	stock · J	INVENTED / INVENTED
D_{region}	separating work retained across everything inside the perimeter	region	stock · J	ANCHORED / BORROWED
$E_{through}$	the cycle's budget — flow entering across the region boundary	region	flow · J/cycle	ANCHORED / BORROWED
E_{loss}	dissipation that does no work and builds no structure	region	flow · J/cycle	ANCHORED / BORROWED
E_{hold}	flow doing the work of holding the configuration together	region	flow · J/cycle	BORROWED / BORROWED
E_{dis}	flow doing work **against** cohesion — working, and working along the tear	region	flow · J/cycle	BORROWED / BORROWED
Φ_{burn}	spending **above** the maintenance level; may be negative	element	flow · J/cycle	ANCHORED / BORROWED
Φ_{limit}	the rate the element can hold indefinitely	element	flow · J/cycle	ANCHORED / INVENTED
K_i	the part of the element's internal state that corresponds to the region **and can be acted on**	element	stock · bit	ANCHORED / BORROWED
K_i^{noise}	the part that does not correspond — stale, wrong, or about another region	element	stock · bit	ANCHORED / BORROWED
K_{region}	the information **one invocation** of the region yields	region	stock · bit	ANCHORED / INVENTED
$K_{claimed}$	the part of that information elements declare they draw from this region	region	stock · bit	INVENTED / INVENTED
$K_{through}$	structured information crossing the region per cycle	region	flow · bit/cycle	ANCHORED / BORROWED
K_{loss}	the part of it the receiving end cannot recover	region	flow · bit/cycle	ANCHORED / BORROWED
$Field$	the common field intensity at the element boundary, both directions aggregated	element	intensity	ANCHORED / BORROWED
$Threshold$	the minimum intensity that overcomes the region's resistance	region	intensity	ANCHORED / INVENTED
F_{static}	the inert part — force that resists motion and generates none	region	force, or resource/cycle — declared	ANCHORED / BORROWED
F_{drive}	the driving part, read on the same ruler as the inert part	region	force, or resource/cycle — declared	ANCHORED / BORROWED
Q_{act}	what the region actually delivers	region	case scale — ratio, true zero	ANCHORED / BORROWED

Symbol	What it reads	Boundary	Family · unit	Inanimate / Sentient
Q_{req}	the standard **the region itself demands** to hold its structure	region	case scale — ratio, true zero	ANCHORED / BORROWED
Δ_{dev}	the gap between the two, as a ratio: derived, not measured raw	region	dimensionless	ANCHORED / BORROWED
$\rho_{j,k}$	how much of substance *j* lies along axis *k* — one symbol, **three families**	region	per face: J · bit · intensity	ANCHORED / BORROWED

Four quantities plus the densities take their family from the run's declaration, not from this table. The two force readings change family between domains; the two delivery readings take whatever ratio scale the case supplies; and the density symbol carries a different family on each of its three faces. A scan that does not read Cell 1 first will report clean on ground it has not looked at.

Five of the twenty-eight quantities carry INVENTED in at least one domain — seven of the fifty-six entries above. They are the two claim readings *(invented in both domains)*, and the sustainable limit, the region's information and the symbolic threshold *(anchored in the inanimate case, invented in the sentient one)*. Those five are where the tool stands on its own construction rather than on an instrument, and each is named again in section 12.

8.2 · Tier 2 — the normalised readings *(dimensionless)*

Tier 2 exists to cancel the dimension of tier 1. The weighted product at Step 4 has meaning only because its factors are already dimensionless.

Symbol	What it reads	Built from
P_{norm}	**the scheme, not a reading** — $\left[1 + (q_{ref}/q)^{k}\right]^{-1}$, where q is any raw value being normalised and q_{ref} its reference mark. Exactly 0,50 at $q = q_{ref}$	generates the three below
P_M	material capacity — has the element enough reserve to stand	E_i, E_i^{min}
P_I	information capacity — does its internal state correspond to the region, actionably	K_i, K_i^{noise}
P_S	symbolic capacity — does it have standing in the region's common field	$Field$, $Threshold$
P_C	cohesive capacity — $\tanh(u)/\tanh(1)$. **The only form that may be negative**	u, hence four stocks
P_W	will capacity — is it paying to hold a direction, against what it can sustain	Φ_{burn}, Φ_{limit}
$K(P_W)$	**the gated amplifier**, gate at $P_W = 1$: restraint below, ignition above	P_W, δ
N_M	material negation — budget dissipated building nothing	E_{loss}, $E_{through}$
N_I	information negation — the part crossing that is not recovered	K_{loss}, $K_{through}$
N_S	symbolic negation — how far the region has drifted from its own standard	Δ_{dev}, ε_S
N_C	cohesive negation — budget working **along the tear**	E_{dis}, $E_{through}$
N_W	will negation — the share of change-directed resource the inert part absorbs	F_{static}, F_{drive}

8.3 · Tier 3 — the composites, in pote

Symbol	What it reads
$P(i)$	the total capacity of one element, reported **as an interval**. An element's forms are written with the element as the **second index after a comma**; its total is written as a function
$N(F)$	the negation of the region — **one value for the whole run**, never one per element
pote (pt)	the value of P when both modulating factors stand at their reference state — $P_C = 1$, $K = 1$ — and the three magnitude forms approach their ceiling. $P_C = 1$ is a **reference state, not a maximum**, and 1 pote is a **limit, not an attainable state**. Above 1 pote, $P_C > 1$ **or** $K > 1$, and the report names which

8.4 · The region's own parameters, and the weights they generate

Symbol	What it reads
x_σ	condition — **structure**: how far what stands here is decided by cohesion. Five levels, asking the **governing degree**
x_ν	condition — **tempo**
x_ξ	condition — **weight of recognition**
z_M, z_I, z_S	the three logits the conditions generate
α, β, γ	the weights, softmax(z/T). **Two roles**: exponents of capacity **and** weights of negation

8.5 · Constants

Their **free status and sensitivity ranges** are in section 9; only their meaning is given here.

Symbol	Value	Where it acts
k	2	steepness of the normalisation scheme, and of the amplifier's restraint branch
k_{base}, k_{amp}	1, 2	coefficients of the symbolic logit
T	1	softmax temperature — it sets the **resolution** of the weight set without changing its order
δ	$0{,}5 + 1{,}5\, x_\sigma$	rate of the ignition branch — a **denser region ignites sooner**
ε_S	$1 + 2(x_\xi + x_\sigma)$	sharpness of symbolic negation — a **dense, recognition-heavy region tolerates deviation less**

8.6 · Geometric and intermediate quantities of the seven steps

Symbol	What it reads	Step
$\hat{e}_{i,j}$	unit emission vector of one element on one face. **Three states per face**: emitting · not emitting but measured · not observable	3
$\hat{V}_i$	**the lean** — the normalised sum of those vectors. Unit, carrying no magnitude	3
$n \cdot n_{\text{emit}}$	faces measured · faces emitting. **They differ**: a measured silence enters n and not n_{emit}	3
concentration · coverage	the two factors of consensus. **The gate compares concentration**; coverage is reported and carries no threshold	3
μ_j	mean density of face *j* across the axes	3

Symbol	What it reads	Step
$\bar{g}_{j,k}$	the centred density — density minus that mean	3
g_j^*	**coefficient of variation** of face *j*: how far it departs from **its own scale**, not from an absolute	3
$\hat{G}_j \cdot \vec{G}$	gradient direction of one face · **the terrain**, the weighted combination of the three	3
$d \cdot n_{el}$	number of axes · number of elements. $d < n_{el}$ **is required**	1b, 2
u	the cohesion balance — hold plus cohesion less tearing, over the binding threshold	4
$q \cdot q_{ref}$	any raw value being normalised · its declared reference mark	4
E_{free}	**residue of the flow**, not of the store: budget the region has not consumed this cycle	4
$\chi \cdot \chi_{AB}$	shared reserve, at region level · **by pair**, which is the reading the figure table uses	4, 6
$\chi_{K,AB}$	shared standing in the classifier, by pair — the **second** source criterion	6
w_A, w_B	widths of the two sensitivity intervals being compared	6
a_i	the component of a lean along the equal-weight direction; $\sqrt{1-a_i^2}$ is its **concentration**	6
Δ^*	the region's tolerance of deviation — the **inflection** of symbolic negation. Carries no pote	5
Leverage(v)	the change in *P* **across the whole feasible amplitude**, $\lvert P(v+a) - P(v) \rvert$ — the amplitude a **datum of the case** declared in advance. ⛔ Not a derivative multiplied by an amplitude	7
containment, by pair	the share of what the **weaker** element claims in the classifier that the **stronger** also claims — the reading that separates the two figures at opposed leans. **Directional**, which the two source criteria are not. No symbol is allocated	6

The four residues, each reported at full value on its own line: the **open door** *(store, energy)* · the **damage residue** *(store)* · E_{free} *(flow)* · the **information residue** *(store)*; together with the **overlap**, the information more than one element holds.

8.7 · Indices, operators, and notation

$i \cdot j \cdot k \cdot m$	element · face · axis · the index running inside a sum
A, B	the two elements of a pair. **Reserved**: they are not used for anything else
$s \cdot v$	a point of the sensitivity sweep · a variable being differentiated at Step 7
^ · ⃗ · -	unit vector · vector · centred quantity
$\lVert \cdot \rVert \cdot \lvert \cdot \rvert$	norm of a vector · absolute value
$\perp$	the component orthogonal to the equal-weight direction
$\partial P/\partial v$	partial derivative; at **either** non-differentiable point — the amplifier's gate at $P_W = 1$, and the clamp at $\Phi_{burn} = 0$ — the **one-sided** derivative in the direction of the amplitude
softmax · tanh · ln · e	as standard; the denominator of the softmax is always written out

$\nexists$	**no element such that** — the forward gate is existential in form, deliberately, because a maximum would impose an ordering
$\Sigma \cdot \sqrt{} \cdot \max \cdot \min$	as standard
$\approx$	in the figure table only, and **each use has a declared numeric threshold**; it never means *about*

No quantity in this tool is written as a function of time. The tool computes one value for one slice; where a reading belongs to a moment, that is carried by the declared instant of the slice, not by an index.

`</index_of_quantities>`

<parameters>

9 · PARAMETERS, SYMBOLS AND SCALES

The stock / flow law

A stock is read **at the instant of the slice**, in its own unit. **A flow** is read **over one cycle**, in unit-per-cycle. This is the standard pair of System Dynamics, and dimensional consistency forbids combining the two.

> **Used to SPEAK, not to COMPUTE.** The accumulation equation relating them does **not** enter the tool: it violates the run law *(no time axis)*. Admitting it would turn this into a **dynamic simulation** — a different artifact answering a different question. The relation **explains** why a stock can exceed a cycle's flow many times over; it is not a step.

Three paths to any stock: (i) measured directly at the slice · (ii) inferred from flow accumulated over the declared width of the dataset · (iii) inferred from restoration cost, or from the price of the alternative. **Declare which.**

⇒ **Three declarations, three jobs:** the **instant of the slice** governs stocks · the **cycle** governs flows · the **width of the dataset** governs path (ii). None binds another: an element three days old may still hold a stock accumulated over years.

THE FAMILY-IDENTITY LAW. Every **ratio** and every **addition or subtraction** combines quantities of **one family only**. Machine-checkable.

Four quantities plus the densities have a family that is NOT in the table — it is in the run's declaration. The two force readings change family between domains *(force, or resource-per-cycle)*; the two deviation readings take whatever the case supplies, constrained only to one ratio scale; and the density symbol carries **three families across its three faces**. A static scan that does not read Cell 1 first will **report clean on ground it has not looked at.**

The families

Energy — element boundary, stocks: available free energy · minimum reserve · cohesive energy · retained separation · the binding threshold. Region boundary, stocks: energy present · the part elements claim from it · region-level retained separation. Region boundary, flows: the cycle's budget · dissipation doing no work · energy holding the configuration · separation that does work.

Four independent doors, one residue. Holding, dissipation and work-against-cohesion are measured **independently**; the free remainder is a **residue, not a measurement**. One unit of energy falls through exactly one door. Retained separation is **not a fifth door** — it is **part of the third**, split from it by a tabulated physical coefficient, and it draws nothing further from the budget.

Region-level quantities are measured FROM THE REGION, independently of the element list. Summing elements makes the gate true by construction and it catches nothing.

Information — element boundary, stocks: the corresponding part, and the non-corresponding part. Region boundary, stocks: the information one invocation of the region yields, and the part elements claim from it. Region boundary, flows: structured information crossing the region per cycle, and the part that fails.

The region-level information quantity is the information carried by ONE invocation — how many bits are learned on seeing which category the region reaches for. It is **not** *the amount of structure present*. A rigidly doctrinaire region reads near zero on it, and that reading is correct under this ontology: **nothing new arrives with each invocation**. It does not mean the region has little structure.

The cohesion balance. Four stocks enter a genuine addition and subtraction and therefore share one family and one ruler. The binding threshold is **not** a peer of the cohesive energy: it is **what is required**, the common denominator all three are read against. Its peer is the free-energy reserve.

Cohesive energy and retained separation are ONE quantity read in opposite directions — the work that must be spent to separate, and the separating work **already spent and not yet restored**. Same dimension, same boundary, same ruler; **opposite sign and opposite tense**. Any instrument that reads one reads the other by reversal, so *same ruler* holds **by construction**, not by a promise of conversion.

The C axis. It saturates quickly, and it is **not on the same scale as the burn amplifier**. Both are accepted consequences, declared.

How each quantity is read

Every quantity has a path in both domains. Where the two paths differ in hardness, they are not made to look alike: the label in section 8 records which is anchored and which is constructed, and the instrument below is what that label refers to. The fourth column is the gate that stops the quantity being tuned by hand — it is part of the path, not advice about it.

Quantity	Inanimate instrument	Sentient instrument	Gate against hand-tuning
E_i	fuel, charge, stored free energy; in biology glycogen, fat, biomass	liquid assets and resource that can be requisitioned	only what the **declared region contains** may be counted
E_i^{min}	**dropout threshold** by controlled depletion under declared load; in biology **minimum viable population**. In an observational case the manufacturer's rating is used **and declared as a rating, not a measurement**	the reserve needed to cross the **declared stress window** with no inflow	the window is declared at region level, applied identically to every element, **before any reserve is read**
Ψ_i	energy to detach a component from an assembled structure — activation energy of a structural bond, work to extract a part, lattice energy of the vacated site	the cost of leaving that is **not** foregone resource: rebuilding role and relations, exit from commitments, retraining	**never counted twice with** E_i — the resource part is already the first term

Quantity	Inanimate instrument	Sentient instrument	Gate against hand-tuning
D_i	**stored energy of cold work**: differential scanning calorimetry, integrating the exothermic peak; or the plastic work split by the **dissipated fraction**	restoration cost of what has been torn and not rebuilt	five gates; chief among them, it is **never inferred backwards** from an observed cohesion reading or from a known outcome
E_{bind}	binding energy — bond dissociation, gravitational binding, nuclear binding per nucleon times count	**the total of the alternatives**: what the parts would obtain if they left and acted alone	the **kind** of reference mark is declared before computing and appears in the output
E_{region}	**exergy** against the declared reference state	inventory by perimeter, counted **from the source side**	measured **from the region**, independent of the element list
$E_{claimed}$	*(a declaration, not a measurement)*	each element declares what it drew from this region; a stock-take reconciliation	declared **per element**, before the figure table is read
D_{region}	the same instrument as retained separation, read over everything inside the perimeter	the same, over the perimeter	**same path** as the element-level reading, and never integrated from the separation flow
$E_{through}$	**exergy inflow** across the region boundary, per cycle	throughput accounting across the perimeter	read at the **same perimeter** as loss and separation; the flow gate catches inflation in both directions
E_{loss}	**exergy destruction** — Gouy–Stodola gives it exactly	resource leaving circulation that builds no structure	the **mandatory subtraction** below
E_{hold}	maintenance power — basal metabolic rate by respirometry; no-load holding power	the recurring cost of keeping the structure standing	**not derived by difference**: a partition yields a consistency check, never an independent measurement
E_{dis}	bonds broken in the cycle times the **tabulated dissociation energy** of that bond	cost of restoring coordination within one cycle	the path is declared; two runs on different paths are **not comparable**
Φ_{burn}	**aerobic scope**: current metabolic rate less standard rate, by respirometry; in engineering, current power above no-load	spend per period less the maintenance cost — both real accounting lines	a negative value is **reported at full value**, never absorbed by the clamp
Φ_{limit}	maximal rate less standard rate; or the **continuous duty rating** of IEC 60034-1	**no direct measure exists** — this is a construction, and it is labelled as one	**never inferred backwards** from an observed will reading; it comes from the element's own sustained record or a technical rating, declared in advance
K_i	**mutual information** between the element's internal state and the region's, computed on the **declared decision set**	**resolution** from a proper scoring rule — the Brier decomposition	the decision set is declared at Step 2, never invented per element after a result is seen

Quantity	Inanimate instrument	Sentient instrument	Gate against hand-tuning
K_i^{noise}	conditional entropy of the internal state given the region's	**reliability** from the same decomposition — the two halves of one instrument	the two halves must come from **one** decomposition, or the ratio is not closed
K_{region}	entropy of the declared state space	entropy of the **admissibility classifier** over its frequency record	the classifier is declared at Step 1b, before any information quantity
$K_{claimed}$	*(a declaration, not a measurement)*	each element declares a **set of categories**; the region-level reading is their **union**	every declared category must lie **inside** the classifier
$K_{through}$	**Shannon channel**: structured information crossing the boundary per cycle	closed-loop verification sampling — send, check at the receiving end, count what arrives undistorted	the sample design is fixed **before** results are seen
K_{loss}	**equivocation** on that channel	the part of the sample that did not arrive undistorted	as above; bit error rate is the binary special case, and belongs here rather than on the capacity side
$Field$	mean **normal component** of the common field intensity over the element boundary	**geometric mean of hub and authority** — the HITS scores — on the declared region graph	geometric, not arithmetic: it must fall to zero if **either** direction is zero
$Threshold$	anchored **only after a declared conversion**: a tidal limit gives a length and an activation energy gives an energy; each is converted to an **intensity**, and the conversion step is printed	a **two-sided bracket** from the record of which nodes shifted the classifier and which tried and did not — order statistics on **the same aggregation** as the field	read on the same aggregation as the field, or the ratio is not closed; the bracket must be non-empty
F_{static}	static friction	resource absorbed by resistance — procedure, rework, attempts blocked	**the family change is declared**; both readings must change family together
F_{drive}	applied traction	resource committed to producing change	read on the **same ruler** as the inert part
Q_{act}	the measured value	what the region actually delivers	both readings on **one ratio scale with a true zero**
Q_{req}	the specified value — this is the structure of tolerance in metrology, not an analogy	the standard the region **itself publishes**	never the analyst's own standard; substituting one admits a verdict through the back door
Δ_{dev}	*(derived from the two above, not measured)*	*(derived)*	—
$\rho_{j,k}$	material and information faces: **the k-th group of terms of the sum that defines the parent**. Symbolic face: field intensity **along** direction k	the same, on the declared perimeter and the classifier's frequency record	material and information reconcile against their parents; **the symbolic face has no parent and no reconciliation**

Four paths that a table row cannot carry

The mandatory subtraction. Exergy destruction measures **total** irreversibility, so it already contains part of the work done against cohesion. The material loss is therefore *destroyed exergy less the dissipated fraction of the separation flow*. The fraction is a tabulated physical coefficient: work along the tear splits into a part dissipated as heat and a part retained in the structure, and **both sides are measured in one experiment**. This is the only place in the tool where the boundary between two quantities has a tabulated coefficient standing exactly on it. If the subtraction yields a negative loss, the measurement is broken — it is not a finding.

Why the information claim is a union and not a sum. Energy is conserved, so adding what each element claims is legitimate. **Information can be copied.** Two elements each understanding the whole region would sum to twice the region's information at a perfectly coherent state; the gate would report a mismatch and the residue would go negative, which its own definition cannot carry. Under the union the residue is never negative **by construction**, and the gate's real test becomes membership: every category claimed must lie inside the classifier. The quantity that the sum-form would have produced is not lost — it is reported separately, as the **overlap**: the information more than one element holds.

Why the symbolic threshold is a bracket. Taking the lowest score among nodes that **did** shift the classifier is an estimate biased on one side: every such node is at or above the threshold, so the estimate can only sit too high, and the node that sets it receives exactly the neutral reading — a number produced by the estimator, not by the world. The two-sided form uses both groups: nodes that shifted sit at or above, nodes that tried and did not sit below. The threshold lies between, and the tool reports **the whole interval**, which then multiplies through into every capacity reading that depends on it. A case with a record on only one side yields an interval open at that end; a case with no record on either side yields a named null.

Three acceptance conditions the corpus wrote before the formula. A correct lean measurement must return: a stable dissipative configuration is **not** an endpoint — lean is non-zero under constant driving; a satiated organism in a nutrient-saturated medium still leans, and leans toward the **spatial** terrain; and lean departs an already-mastered state under suitable conditions, and reverses when those conditions change. These were available before the lean formula existed, which is why they are acceptance conditions rather than after-the-fact agreement. A consequence follows for the instrument: lean **cannot** be read from a flow, because under saturation a flow-based reading returns zero, and the second condition says it must not.

Choosing a reference mark — three kinds

Every form reading is relative to a mark. The mark is not the analyst's to choose freely.

Declare the kind, before computing: (i) **the direct opponent** — where the region has a clear two-sided contest · (ii) **the system's operating threshold** — the minimum at which the configuration still stands; used where there is no opponent · (iii) **itself in a prior period** — used where the question is about trend.

Changing the kind after computing is forbidden. The kind appears in the output. It governs four places: the binding threshold, and the three reference marks of the normalisation scheme.

The symbol law

No raw quantity bears a bare form letter. No capacity or negation is written with a bare element index — the element is the **second index after a comma**, and an element's total is written **as a function**. **No quantity may be written as a function of time**: the tool computes **one value for one slice**; subscripts are used.

Index letters: face · axis · element · and the two letters reserved for **the two elements of a pair**.

Test of admissibility — READABILITY. A new symbol must be distinguishable by eye from every allocated symbol **at the smallest size it appears in** — as a subscript, as an exponent. Upper and lower case are **two different characters** and the distinction is a legitimate device.

Retired symbols are not locked forever. A retired symbol may be re-allocated to a **new** role under three conditions: **(1)** the new role differs in quantity, step and tier; **(2)** an **explicit note at the point of re-allocation** states what it formerly carried, when it retired, what it now carries, and that every earlier mention means the old role; **(3)** it passes the readability test. Omitting **(2)** is a declaration error.

A quantity appearing in one formula does not need a symbol. Written out in words it reads more clearly and **consumes no entry in the symbol table**. Several quantities in this tool are deliberately carried in words for that reason.

The three tiers of measurement

Tier 1 — raw measured quantities, carrying physical units. **Tier 2** — the five capacity forms, the five negation forms, and the amplifier: dimensionless. **Tier 3** — the total capacity and the region's negation, in **pote**.

Tier 2 exists precisely to cancel the dimension of tier 1. Raising a quantity with units to a fractional power yields nothing; the weighted product in the bracket has meaning **only** because its three factors are already dimensionless.

The pote scale

> **1 pote** = the value of P when both modulating factors stand at their **reference state** — $P_C = 1$, $K = 1$ — and the three magnitude forms approach their ceiling. It is a **limit**, not an attainable state.

Above 1 pote, at least one modulating factor has passed its reference, and there are exactly two such factors: cohesion ($P_C > 1$) and the amplifier ($K > 1$). A report above 1 pote **names which**. Only the second carries a debt: burning past the sustainable limit is paid for in **time**, and that source is traceable. Cohesion above its reference borrows nothing — $E_i + \Psi_i - D_i > E_{bind}$ is stock of the element itself, with no lender and no source to trace.

The ignition branch has an external anchor, and the anchor covers only part of it. In physiology, exceeding maximal aerobic capacity **is** the shift to anaerobic metabolism: higher output is genuinely delivered, paid for with an oxygen debt and a time limit. The source is real, traceable, and settled. ⇒ The amplifier is not a function chosen for its shape — a physical system behaves as it describes, ignition branch included. **But the anchor supports only two things**: that an ignition branch **exists**, and that the right-hand slope is **zero at the gate**. It does **not** support the Gaussian form, and it does **not** support the rate of ignition. The anchored domain is $P_W \leq 2$; above it the tool **extrapolates without an anchor**, and says so.

PROVENANCE — what comes from the corpus and what comes from the model

One sentence before the table: the corpus supplies the ontology and supplies no number. It gives the five forms, the equal standing of the five negation forms, the rule that each negation form reads off its capacity form, the two directions of the symbolic form, and **one** criterion separating the two co-standing figures. It gives **no threshold, no coefficient, no slope.** Every number in this tool is of class ②, ③ or ④ below.

	Class	Meaning
①	**corpus**	citable to a named section of PF / DCP / PoB / OP
②	**internal consistency**	**forced** by a requirement of the tool itself — no one chose it
③**a**	**mathematical anchor**	a **theorem**, true independently of both corpus and tool
③**b**	**empirical anchor**	a regularity observed **outside** the corpus, such as physiology
④	**model**	nothing above determines it — it is **set**

#	Item	What is supported	What is not supported
1	**The form of the three logits**	—	④ **entirely.** The linear form, which condition enters which logit, and the presence of the cross term $x_\xi x_\sigma$ are all **set**. The reading that travels with them is **rank-3 ore**, not raised
2	**The logit coefficients** 2,1 / 3,2 / 1,2	—	④, free list 1–3. With the declared consequence that the three logits **do not share a range**, so the information face is favoured **by the construction of the coefficients**, not by the region
3	**Softmax**, $T = 1$	② — that $\alpha + \beta + \gamma = 1$: the weights must partition **one** aperture	④ — why **exponential**: nothing requires it; any positive normalisation would discharge the same duty. $T = 1$ is free list 11

#	Item	What is supported	What is not supported
4	**The coefficients of** $N(F), 1, \alpha, \beta, \gamma, 1$, and the **denominator 3**	**① + ② — the strongest row here.** ①: the corpus places the five negation forms as **equals**, each reading off its capacity form. ②: the coefficients transfer from the **algebraic** form of P, so the denominator 3 is **forced, not chosen**	The **reuse** of α, β, γ rests on a **separate** argument — the weights are the region's, and $N(F)$ is that region's own negation. The two grounds are **never** to be merged into one
5	**The amplifier** K	**③b, physiological** — and it supports exactly **two** things: that an ignition branch **exists**, and that the right-hand slope is **zero at the gate**	④ — the Gaussian form $e^{\delta(P_W - 1)^2}$ (declared an invention), the **rate** of ignition, the lower branch, k, and $\delta = 0{,}5 + 1{,}5x_\sigma$. The anchored domain reaches only to $P_W \leq 2$
6	**Deviation sharpness** $\varepsilon_S = 1 + 2(x_\xi + x_\sigma)$	—	④ — both the form $1 - e^{-\varepsilon_S \Delta^2}$ and the two coefficients (free list 7). The reading attached to it is **rank-3 ore**
7	**The consensus threshold** $1/\sqrt{n_{\text{emit}}}$	**③a, mathematical and exact** — m pairwise-orthogonal unit vectors give **exactly** $1/\sqrt{m}$. This is the **strongest anchor in the tool**	The **coefficient 1** in front is free list 8 ⇒ ④. And the anchor is **empty at** $m = 1$, where there are no pairs
8	**Two figure labels resting on substitutions**	① — the corpus separates the two co-standing figures by **one** criterion: whether the two inputs remain **separately recognisable** in the outcome	**④, and this is the sharpest mismatch in the table.** The tool measures **shared reserve** and **shared standing in the classifier**; **neither measures what the corpus asks.** The question is known and the answer is to a different question — deliberately, and declared (L4)

A clause about the anchor label itself. The anchor mark is currently used for **three different things**: derivation from an internal requirement (②), attachment to a quantity defined independently of this tool (③a), and a physiological regularity (③b). These do not substitute for one another: a theorem cannot fail, an empirical regularity **has a domain**, and an internal requirement **dissolves the moment the design changes**. Every anchor mark therefore states **which class of anchor it is**.

That this clause is not redundant has a precedent in the tool's own record. One source criterion was written as *reading the corpus wording directly* — a claim of class ① — and had to be **withdrawn** on re-reading: it is a substitution like the other. An item promoting itself above its true class **has happened once**. This table exists so that it is caught by **comparison** rather than by memory.

THE FREE LIST — thirteen lines, each with a model sensitivity range, reported every run

This range is reported **on its own** and never folded into the interval beside P, which is **declaration** sensitivity. The two belong to different ranks: these constants are the tool's, the conditions are the runner's.

#	Free element	Value	Note
1–3	coefficients of the three logits	2,1 / 3,2 / 1,2	the three logits **do not share a range**; the information logit reaches higher by construction, so a **fully neutral region still reads as information-dominated**. Choosing 0,50 for all three is **not** choosing neutrality
4	the three weights	softmax	exponents of capacity **and** weights of negation
5	the steepness k	2	at the natural mark the reading is **0,5 for every** k, and the amplifier is **1,0 for every** $k \Rightarrow$ nothing anchors k there. It still changes the **slope around** the mark, which is why its sensitivity is reported rather than why it is pinned
6	the range of the ignition coefficient	0,5 – 2,0	
7	the two coefficients of the deviation sharpness	1, 2	
8	the coefficient before the consensus threshold	**1**	the threshold **is** anchored — m pairwise-orthogonal vectors give exactly that value — but the multiplier before it is not
9	the cosine thresholds	0,866 / 0,5	±0,05. **0,5 also fixes the capacity of the axis set** *(section 10, Step 6)*: the bound *at most d elements pairwise not-contesting* holds only while $1/\sqrt{d} > 0{,}5$, i.e. $d \leq 3$, and **stops bounding at** $d \geq 4$ — where a finite capacity still exists but this argument no longer reaches it. Move this line and that table moves
10	the reserve-source thresholds	0,25 / 0,5	**for the reserve criterion only** — not reused for line 13
11	the softmax temperature	**1**	it controls the **resolution** of the weight set; changing it changes all three weights without changing their order
12	the dissipated fraction	declared	**anchored** in the inanimate domain by a tabulated coefficient; **unanchored** in the sentient one. Ceiling: the destroyed-exergy reading divided by the separation flow; exceeding it means **broken measurement**, not a finding
13	the classifier-source thresholds	declared	**no anchor**, and **the values of line 10 are not carried over**: that is a **different measurand**, and carrying them over is calibration by a single case. Constraint on the **shape**, not the value: asymmetric, with *shared* above *disjoint*

A constant not named in this list does not carry free status. Introducing one without adding a line is a declaration error.

</parameters>

<protocol>

10 · THE PROTOCOL

Three stages, seven steps. I — the region and who stands in it (1·2·3) · II — measuring force (4·5) · III — reading the outcome (6·7). **Rule: number of steps = number of output cells.** Seven steps, seven cells. **Cell 0 stands outside the count.**

```
Cell 0 → Step 1 → Step 2 → Step 3 → Step 4 → [GATE R2] → Step 5 → [FORWARD GATE] → Step 6
→ Step 7
                                 |                |                        |
                         consensus gate     fails ⇒ return to Step 1   fails ⇒ STOP, report
```

> **Each step closes with two disciplinary blocks — *Disciplines binding this step* and *Gate fails if*. The DCP carries these at two steps only; applying them to all seven is an extension of this tool, not a form borrowed from the DCP.**

Cell 0 — State of the dataset *(declared before Step 1; not a step)*

(a) verifiable data **and** a configuration already standing — the run reads a Fasaion and then **sets it beside** that configuration. **(b)** posited data, no configuration yet standing — **there is nothing to set it beside**.

The seven steps run identically under both. Under **(b)**, declare **field by field**: what is measured, what is set by the one running, **on what grounds**.

> **A known opening, declared.** The requirement *"assign before seeing any result"* **cannot be satisfied under use (a)**, because a case with a configuration already standing means the one running **knew the outcome before opening the run**. ⇒ Under (a), every place the result **agrees** with the known outcome **carries no evidential weight**. The requirement has two halves and they differ. The **procedural** half — declare, see the result, then go back and adjust the declaration — is preventable: hash the declaration block before computing and print the digest. The **epistemic** half is not preventable by any procedure, and remains a named limit.

Step 1 — Stachoria

(1) What this step reads. It fixes the region, its axis set, and three conditions; from the conditions it derives the weight set that decides which form is decisive. **It does not read any element**, and it produces no capacity.

(2) Variables, each with its *Detail*.

1a — declare the object. (1) which fact is being read *(by default: a configuration that stands, not an act of asking)* · (2) at which tier the question sits *(the tier this tool reads: **which system stands**)* · (3) **the centre of the question** — usually **not** a predicate · (4) **the names already laid over it, recorded verbatim, then set aside**. If the centre stands in no region: **STOP, report null.**

Detail. The centre is where a quantitative tool is most easily captured. A collapse is a **predicate**, not a subject; taking it as the centre builds the verdict into the question before a number is computed.

1b — declare the region. At least **three** regions, and they must **differ in what enters as an element**, not in wording. **Declare, then match:** the region containing the centre of the question is the matching region.

Declare the axis set of the configuration space. Do not declare three axes M, I, S.

> **Five properties the axis set must have. T1 — PARTITION.** Every unit of every kind of substance is assignable to **exactly one** axis. No overlap, no remainder. **T2 — EXHAUSTION.** Tested by the reconciliation gate at Step 3. Failing it returns the run to 1b; **do not add an "other" axis to catch the remainder. T3 — ONE SET FOR ALL THREE FACES.** The same axis set reads M, I and S. Three different sets put the three face-gradients in three different spaces and the sum at Step 3 loses meaning. **T4 — DECLARED FIRST**, before any density is read. $d \geq 2$. **T5 — FEWER AXES THAN ELEMENTS:** $d < n_{el}$**.** At or above, every element may occupy an axis of its own; then all leans are pairwise orthogonal, every cosine is 0, and the seven-row figure table **collapses to one row by construction** — an empty table produced by the declaration, not by the data. The axis set **need not be a space with a distance.** The operation at Step 3 is a centring across axes, not a derivative along a length; it requires only that densities be **comparable across axes**.

Declare the admissibility classifier of the region — the set of categories the region uses to classify what is admissible within it, together with a **frequency record** of how often each was invoked during the cycle. In an inanimate region this is the declared state space.

CONCENTRATED RISK, declared loudly. This single declaration carries **four quantities and one threshold**. The tool **cannot verify it**, and a classifier declared too narrowly or too broadly shifts the information readings **without appearing anywhere in the output**.

Declare the region graph — the nodes, and the directed edges of recognition among them; and, where the case is observational, the **two-sided record**: which nodes **shifted** the admissibility classifier, and which **attempted and did not**.

1c — measure the region. Three conditions, **five levels each**, asking for the **governing degree**, not the state:

	x_σ **structure**	x_ν **tempo**	x_ξ **weight of recognition**
0,00	independent of cohesion	independent of tempo	independent of recognition
0,50	in balance with other factors	in balance with other factors	in balance with other factors
1,00	decided by cohesion	decided by tempo	decided by recognition

Declare with them: the **instant of the slice** · the **width of the dataset** · the **cycle** · the **stress window** · the **reference state**.

Detail — why the last two are separate declarations. The minimum-reserve quantity is defined **against an interval** in every discipline that measures it, and this tool has **no time axis**; the **stress window** therefore becomes a declared field of the region, applied identically to every element. Exergy has no meaning until a **reference state** is declared; it is shared by the three energy-flow

quantities, because declaring it differently for each is adding three different rulers at the coherence gate.

(3) Raw score, with *Meaning*.

$$z_M = 2(1 - x_\sigma) + (1 - x_\nu) \qquad z_I = 3x_\sigma + 2x_\nu \qquad z_S = k_{base}\, x_\xi + k_{amp}\, x_\xi x_\sigma$$

$$\alpha, \beta, \gamma = \mathrm{softmax}(z_M, z_I, z_S), \qquad k_{base} = 1,\ k_{amp} = 2,\ T = 1$$

Meaning. The three weights sum to 1 and state **what this region rewards**. **No one chooses them**: they are forced out of the three conditions, and the conditions ask about the **circumstance**, not about any element.

(4) Solving, step by step. Write the exponentials, write the **denominator of the softmax**, then the quotient. Do not jump from conditions to weights.

SENSITIVITY PROPAGATION. Shift **±0,25** on each condition, **one at a time**; recompute P **and** $N(F)$; the **declaration sensitivity interval** is [min; max] over the resulting set **including the original point**. Printed with every pote value. The interval is **asymmetric** — reducing it to a ± sign is forbidden.

A SWEEP POINT THAT LEAVES $[0; 1]$ **IS DROPPED, AND THE REPORT SAYS HOW MANY WERE DROPPED.** The three conditions live in $[0; 1]$. Where a condition sits at a boundary, the **±0,25** shift pushes one end **outside the domain**. Such a point is **not clamped to the boundary and not replaced** — clamping would produce two coincident points and narrow the interval while appearing to have swept in full. It is dropped, and the run **prints the count of points visited against the count that should have been visited** — that count is $2k + 1$ for k conditions — naming **which condition sits at which boundary**.

The reason is that a narrow interval produced by **fewer points** looks exactly like a narrow interval produced by a **stable result**, and the two call for opposite readings. The run of section 14 is the worked case: two of its conditions sit at the ceiling, so it visited **five points instead of seven**, and nothing in its report said so. Dropping points compounds the clause above — the printed interval is already a lower bound on the width, and a dropped point lowers it further.

THREE THINGS THAT MUST NOT SHARE THE WORD *UNCERTAINTY*.

Name	What it is	Does the tool compute it	Where it is printed
measurement uncertainty	error in the tier-1 readings themselves	**No.** The tool does not propagate it, does not ask for it, and does not know it	**Nowhere.** Its absence is declared
model sensitivity interval	how the result moves when a **free parameter of the tool** moves — the thirteen lines of the free list	Yes	with the free list, **separately**; it does not enter the interval beside *P*

Name	What it is	Does the tool compute it	Where it is printed
declaration sensitivity interval	how the result moves when **the runner's declarations** move — the ±0,25 sweep over the three conditions, and the threshold bracket	Yes	**this is the interval printed beside every** P **and** $N(F)$

The dangerous merge is the third into the first. A reader who sees a bracket beside a number reads it as measurement error, which is precisely what this tool does **not** compute. The printed interval answers a different question: *if the runner had declared differently, within ±0,25, where would the number go.* The three also belong to **three different ranks** — the data, the tool, and the runner — so merging their names hides **who would have to change what** when an interval is too wide.

AND THE PRINTED INTERVAL IS NOT THE LOCAL RANGE. A one-at-a-time sweep visits $2k + 1$ points, where k is the number of conditions; it never visits the **corners** of the box, where all three move together. The printed interval is therefore a **lower bound on the true width over that same box**, not the width. Measured on the run of section 14 — 5 one-at-a-time points against a $21^3 = 9{,}261$-point grid of the same box — the full-box width is **1,07 to 1,68 times** the printed width, widest for the element whose interval is narrowest. **No verdict changed**: all five elements keep their position against $N(F)$. The sweep stays one-at-a-time, because a full grid grows exponentially in the number of conditions and buys a wider number rather than a different verdict. What changes is the **name and the clause that travels with it**.

STOPPING CONDITION. If a one-step shift **transposes a pair of weights containing the largest**, or makes **two weights equal where one of them is the largest**, the run **does not report a number**. It reports *"the result is not stable with respect to the reading of the region"*, with **both** weight sets and **both** results.

(5) Disciplines binding this step.

1. The axis set is declared **before** any density is read, and is **not revised** after a gate fails downstream.
2. The stress window is declared at region level and applied **identically** to every element. Widening it depresses the material reading; narrowing it inflates it.
3. The reference state is **shared** across the three quantities that require it.
4. The perimeter declared here is the **only** perimeter used.

Gate fails if:

- the centre of the question stands in no region;
- fewer than three regions are declared, or they differ only in wording;
- $d < 2$, or $d \geq n_{el}$;
- a one-step shift transposes or ties the largest weight *(report instability, not a number)*;
- the perimeter is widened after a downstream gate reports a mismatch.

Step 2 — Elements

(1) What this step reads. The list of elements, **and nothing else**. It assigns no magnitude and no direction.

(2) Variables, each with its *Detail*. Declare the list as a **binding of index to label**. No label may reuse a letter already allocated; no label may collide in form with M, I, S, C, W.

Declare, with each element, its **decision set** — the variables the element can act upon. This is the target of the information reading and is **not a new declaration**: it is required here in any case.

Declare whether the one running is inside or outside — read from the region, not chosen. Inside means the one running **is** an element, measured as every element is, exempt from nothing.

Detail. The index is a device of the general formulas only; from here on the **label** is used. In prose the common noun *element* is used, never *element i*.

(3) Raw score, with *Meaning*. This step produces no score. *Meaning:* the count n_{el} enters **T5**, and if T5 now fails, the run returns to 1b rather than proceeding.

(4) Solving. Not applicable.

(5) Disciplines binding this step.

1. Each element must **interact** in the declared region. Agency, consciousness and purpose are not requirements.
2. The decision set is declared **here**, with the element list — not invented per element after a result has been seen.
3. The inside/outside placement is **read**, not preferred.

Gate fails if:

- $d \geq n_{el}$ once the list is fixed *(T5)*;
- a label reuses an allocated letter or collides with a form name;
- a decision set is declared or revised after Step 4.

Step 3 — Lean

(1) What this step reads. One quantity per element: $\hat{V}_i$, a unit vector. **It carries no magnitude**, and it is **never inferred from capacity** — this step measures **emission**, not possession. It also produces the region's **terrain**, which belongs to the region and not to any element.

(2) Variables, each with its *Detail*.

Three states per face, recorded before anything is computed:emitting *(unit vector; enters n)* · **not emitting, measured** *(zero vector;* ***enters*** *n)* · **not observable** ***(leaves both numerator and denominator****; declared at 1-2)*.

Detail. The three states are kept apart because they fail differently. A measured silence is a **reading**; an unobservable face is a **gap in the aperture**. Collapsing them converts one into the other.

Face densities $\rho_{j,k}$ — how much of substance j lies along axis k, for the three faces that have substance to distribute.

Detail. For the material and information faces this is a **partition of a region-level quantity already measured**: the k-th density is **the k-th group of terms of the very sum that defines the parent**. Read any other way — for instance as the entropy of group k — the information face falls short of its parent by a fixed amount at **every** case, and the reconciliation gate raises a **permanent false alarm**. The symbolic face is **different in kind**: it is field intensity read **along** each direction, with **no parent quantity** and **no division**, because a field is already a function of direction.

(3) Raw score, with *Meaning*.

$$\hat{V}_i = \frac{\sum_j \hat{e}_{i,j}}{\| \sum_j \hat{e}_{i,j} \|} \qquad \text{concentration} = \frac{\| \sum_j \hat{e}_{i,j} \|}{n_{\text{emit}}} \qquad \text{coverage} = \frac{n_{\text{emit}}}{n}$$

Meaning. The two factors answer **two different questions** and a single product hides which one failed. **Concentration** asks *do the faces agree*; **coverage** asks *how many faces emit at all*. An element emitting coherently on half its faces and an element emitting on every face incoherently are different failures and receive different verdicts.

CONSENSUS GATE — the gate compares CONCENTRATION, strictly greater:

$$\text{concentration} > \frac{1}{\sqrt{n_{\text{emit}}}}$$

n_{emit}	**1**	**2**	**3**	**4**	**5**
threshold	**gate does not run**	0,707	0,577	0,500	0,447

Meaning of the threshold. m pairwise-orthogonal unit vectors give exactly $1/\sqrt{m}$. The gate therefore reads: **more coherent than mutually orthogonal.** That anchor holds only for the vectors **actually in the sum**, which is why the denominator is n_{emit}.

The gate runs only from $n_{\text{emit}} \geq 2$. At one emitting face it does not run, for three reasons. **The statistic carries no information there**: concentration is $\| \hat{e} \| / 1 = 1$ identically, for every possible configuration, and the isotropic mark is also exactly 1, since a single unit vector always sums to length 1. Observation and null do not merely fall close together; they **coincide identically**, so a strict inequality fails always and a non-strict one passes always, and neither choice carries meaning. **The anchor is empty there**: it is a statement about *pairs*, and one vector forms no pair, so the value 1,000 is the formula continued, not the anchor spoken. At two faces the gate reads *more coherent than orthogonal*; at one it would read *more coherent than the only state available*, which nothing satisfies. **And the exclusion would be coverage acting through the back door**: emitting on one face is a fact about coverage, and coverage carries no threshold and does not enter the verdict.

The asymmetry this removes is measurable: two faces 89,9° apart give 0,7077 against a threshold of 0,7071 and are read as coherent, while one face pointing in an exact direction was not.

COVERAGE IS REPORTED SEPARATELY AND CARRIES NO THRESHOLD. It does not enter the verdict.

Five states of an element at this gate — not to be merged.

	State	Gate	Reported as
$n = 0$	**NO FACE OBSERVABLE**	does not run	*lean not measurable* — not a reading about the element
$n \geq 1, n_{\text{emit}} = 0$	**EMISSION ABSENT, MEASURED**	does not run	*emits on no face* — **a real reading**, not missing data
$n_{\text{emit}} = 1$	**SINGLE FACE**	does not run	$\hat{V}_i = \hat{e}$ of that face — **the direction is accepted**; consensus prints a **named null**: *not measurable — one face, no pair*
$n_{\text{emit}} \geq 2$, at or below threshold	**DISPERSED**	fails	*direction NOT determined* — it emits, and the faces pull against one another
$n_{\text{emit}} \geq 2$, above threshold	readable	passes	$\hat{V}_i$

The **first two** non-running states remove the element from the figure table and the terrain reading, exactly as **DISPERSED** does. What differs is **what is printed**, not the consequence.

SINGLE FACE is the exception: the element **keeps its lean and enters both**, carrying the clause *the direction rests on a single face and has no corroboration*. With one face there is no averaging, hence no averaging artefact for the gate to guard against; what remains — that the reading has no cross-check — is a question of robustness, and it is answered where the tool answers such questions: in the coverage figure, which will be low and says so, and in a declared clause. **DISPERSED cannot describe this case**, because its sentence — *the faces pull against one another* — is false of a single face.

The price, declared: this admits elements that the earlier form excluded, so it can change a verdict in a later run. It changes nothing in the run reported in section 14, where the emitting counts are 5, 2, 5, 5, 5.

Terrain, from the three faces that carry substance:

$$\bar{g}_{j,k} = \rho_{j,k} - \mu_j, \qquad \mu_j = \frac{1}{d}\sum_m \rho_{j,m}, \qquad \hat{G}_j = \frac{\bar{g}_j}{\| \bar{g}_j \|}, \qquad g_j^* = \frac{\| \bar{g}_j \|}{\sqrt{d}\,\mu_j}$$

$$\vec{G} = \frac{\alpha\, g_M^* \hat{G}_M + \beta\, g_I^* \hat{G}_I + \gamma\, g_S^* \hat{G}_S}{\| \cdot \|}$$

Meaning — and why the division by μ_j is not optional. The three faces are read on **three rulers of different kinds**. Adding the three raw magnitudes adds three quantities of different dimension, inside the central formula of this step. Dividing by the mean yields a **coefficient of variation**: dimensionless, and introducing **no new free constant**, since both $\sqrt{d}$ and μ_j already occur in the

definition of $\bar{g}_{j,k}$. ⇒ g_j^* asks *how far substance j departs from its own scale*, not *how many joules it departs by*.

> **Three states of a face — not to be merged.** $\mu_j > 0$ with non-zero spread ⇒ read normally · $\mu_j > 0$ with zero spread ⇒ the face is **FLAT**, $g_j^* = 0 \cdot \mu_j = 0$ ⇒ the face is **ABSENT** and g_j^* is **undefined**. Do not set it to 0 and continue. **Constraint:** $\rho_{j,k} \geq 0$, whence g_j^* is bounded above by $\sqrt{d-1}$.

All three faces flat ⇒ $\vec{G}$ **undefined**; report it, do not report a zero vector.

RECONCILIATION GATE — run before the terrain is computed:

$$\sum_k \rho_{M,k} = E_{region} \qquad \sum_k \rho_{I,k} = K_{region}$$

Print each sum BESIDE its parent, not a verdict of *matches / does not match*. Because g^* is **scale-invariant**, declaring densities as **shares** instead of **values** still yields one well-formed terrain; two numbers side by side on the page is the **only** place that is caught.

The symbolic face has no parent and therefore no reconciliation gate — permanently, not pending. It divides nothing. Print its densities **at full value, per axis**, with that clause attached. T3 requires one axis set for all three faces, so *exhaustion* is a property of the **axis set** and is fully tested on the other two faces.

(4) Solving, step by step. Write each face's emission vector, the sum, its norm, then the two factors separately, then the threshold. For the terrain, write μ_j, then the centred vector, then its norm, then g_j^*, then the weighted combination, then the normalisation.

(5) Disciplines binding this step.

1. Lean is **emission**; never inferred from any capacity form.
2. **A saturated terrain does not abolish lean** — it moves it to a terrain still steep. Lean is therefore read by sweeping **every** terrain and taking the steepest; it is **not** read from a flow. Under saturation a flow-based reading gives zero, which is wrong.
3. The three face-states and the four element-states are recorded **before** computing.
4. Consensus is **not an intensity** and is never compared between elements.
5. Densities are the **terms of the parent sum**, not a re-measurement.

Gate fails if:

- the axis set is not exhaustive *(either reconciliation equation fails)* ⇒ **return to 1b**;
- all three faces are flat ⇒ terrain undefined, reported as such;
- a face is assigned $\mu_j = 0$ and then treated as flat.

Acceptance conditions — written in advance by the corpus. A correct lean measurement **must** yield: a stable dissipative configuration is **not** an endpoint, lean $\neq 0$ under constant driving · a satiated bacterium in a nutrient-saturated medium has **lean** $\neq 0$, oriented to the **spatial** terrain · under suitable conditions lean **departs** an already-mastered state, and **reverses** when conditions

change. These are testable and were written before the formula; they are acceptance conditions, not after-the-fact agreement.

Step 4 — Potentamis · GATE R2

(1) What this step reads. Five capacity forms per element and one total, **each as an interval**. It does **not** rank elements, and it does not decide who stands.

(2) Variables, each with its *Detail*.

$$P = P_C \times \left[P_M^{\alpha}\, P_I^{\beta}\, P_S^{\gamma} \right] \times K(P_W)$$

Three forms **carrying magnitude** stand inside the bracket and take the region's weights; two forms **modulate** and multiply the whole. This split holds on the capacity side **only**; it is not carried to the negation side.

Detail — the normalisation scheme that generates the first three. With q the raw value being normalised and q_{ref} its reference mark,

$$P_{norm} = \frac{1}{1 + \left(q_{ref}/q \right)^{k}}, \qquad k = 2$$

$q > 0$ and $q_{ref} > 0$ give $P_{norm} \in (0;1)$, strictly increasing, and **exactly 0,5 at** $q = q_{ref}$. The ratio cancels dimension **only if** q **and** q_{ref} **belong to the same family** — that condition is what makes the scheme valid, not a footnote to it. As $q \to 0^{+}$ the reading tends to 0: *nothing against the mark*, finite, not a division by zero. $q_{ref} \leq 0$ is a **broken mark**: stop and declare.

Detail — why the bracket is a product. Capacity requires **every** face; the forms are not substitutes for one another. This is the asymmetry against the negation side, and it is **deliberate**.

(3) Raw score, with *Meaning*.

Form	Formula	Family	*Meaning* at the mark
P_M	$\left[1 + (E_i^{min}/E_i)^2\right]^{-1}$	stock / stock	reserve at **twice** the minimum reads 0,80; **at** the minimum, 0,50
P_I	$\left[1 + (K_i^{noise}/K_i)^2\right]^{-1}$	stock / stock	correspondence at **twice** the non-correspondence reads 0,80
P_S	$\left[1 + (Threshold/Field)^2\right]^{-1}$	intensity / intensity	field at the environmental threshold reads 0,50
P_C	$\tanh(u)/\tanh(1)$, $u = (E_i + \Psi_i - D_i)/E_{bind}$	four stocks	$u = 1 \Leftrightarrow$ **total hold, less tearing, equals the binding threshold** $\Rightarrow$ 1,00
P_W	$\max(0, \Phi_{burn})/\Phi_{limit}$	flow / flow	1,00 $\Leftrightarrow$ spending **exactly at** the sustainable limit

$$K(P_W) = \begin{cases} \dfrac{1 - e^{-kP_W}}{1 - e^{-k}} & 0 \leq P_W \leq 1 \\ e^{\delta (P_W - 1)^2} & P_W > 1 \end{cases} \qquad k = 2, \quad \delta = 0{,}5 + 1{,}5\, x_{\sigma}$$

Meaning. K is a **gated amplifier** with its gate at $P_W = 1$. Below it, restraint: spend nothing and capacity is **not activated**, $P = 0$, however maximal every other form. Above it, ignition. The two branches are continuous but **kinked** at the gate: the left slope is 0,313, the right slope is 0 **for every** δ — *exactly at the sustainable limit, spending more buys nothing, but spending less is lost immediately.*

P_C **may be negative**, and that reading is kept: tearing has overcome holding, and P is negative. The element **has** real capacity, and that capacity **is turned against itself**. It is not the same reading as zero.

GATE R2 — four checks, four residues, four separate report lines:

Family	Check	Residue, reported at full value
stock	$E_{claimed} \leq E_{region}$	**the open door** $E_{region} - E_{claimed}$ — *how much of the region's store no element has reached*
stock	$\sum_i D_i \leq D_{region}$	$D_{region} - \sum_i D_i$ — *damage no element is carrying*
flow	$E_{hold} + E_{loss} + E_{dis} \leq E_{through}$	E_{free} — **a residue of the FLOW, not of the store**
stock, information	$K_{claimed} \leq K_{region}$, with $K_{claimed}$ read as a **UNION** of declared category sets	$K_{region} - K_{claimed}$ — *information in the region no element holds*; and the **overlap** $\sum_i K_{claimed,\,i} - K_{claimed}$

Why union and not sum. Energy is conserved, so adding element claims is legitimate. **Information can be copied.** Two elements each understanding the whole region would sum to twice the region's information at a perfectly coherent state — the gate would report a mismatch and send the run back, and the residue would go **negative**, which its own definition cannot carry. Under the union the residue is **never negative** by construction, and the gate's real test moves from a comparison of numbers to a **test of membership**: every category an element claims must lie **within** the declared classifier.

WHERE A FORM MAY BE ZERO. P_M, P_I and P_S are zero **only** when the underlying quantity is exactly zero — **verified total absence**. **Entering 0 for missing data is forbidden**: under a product, one blank recorded as zero drags P to zero, and the tool will report *"no capacity"* when what it knows is *"not observed."*

A FORM REPORTING NULL. If a form in the bracket cannot be computed, **its logit leaves the softmax** and the remaining weights are recomputed on the surviving set. The surviving weights still sum to 1, so the bracket remains a weighted geometric mean and P remains dimensionless. **This does not apply to** P_C **or** K — they are not in the softmax group; losing either is losing a **factor**, and P is reported null. **Losing more than one of the three** leaves the group with a single member whose weight becomes 1, and *five-face resonance* loses its meaning ⇒ report null. **The price, printed:** a run **with a dropped form** is **not comparable** to a run with all forms — the same rank of constraint as the aperture.

WIDTH ATTRIBUTION — print the multiplication. Split P into the part that does not take the weights and the part that does:

$$P(w) = \underbrace{P_C \cdot K}_{A\ \text{— independent of } w} \times \underbrace{\prod_j P_j^{w_j}}_{g(w)\ >\ 0\ \text{by construction}} \qquad \Rightarrow \qquad \frac{\Delta P}{P} = \frac{\Delta g}{g} = \left| \sum_j \ln P_j \cdot \Delta w_j \right|$$

The logarithm is taken **on** g **alone**, which is strictly positive by construction. The reading therefore holds **for either sign of** P: the factor A cancels in the ratio, its sign with it. Taking $\ln P$ instead would place the derivation on a branch that does not exist wherever $P_C \leq 0$ — a branch on which the tool must still print this table.

⇒ the interval enters P as $|\ln P_j|$ **multiplied by the sensitivity of the WEIGHT** — and since the weights are generated by the declared conditions, this is **declaration sensitivity**, not measurement error. A form **near zero** has a large negative logarithm and therefore **amplifies an uncertainty that belongs to the region**, not to the element. **Print, per element, three lines or four:** $\max_s |\ln P_j \cdot \Delta w_j(s)|$ over the sweep, one line per bracket form.

P_C **contributes nothing, and never can.** It reads tier-1 quantities only and takes no region condition, so it stands still across the entire sweep. **The amplifier is a different case, and a fixed coefficient is not the same as a fixed value** — what matters is whether its argument moves with the sweep. Below the gate K is a function of P_W alone and stands still. Above the gate $\ln K = \delta(P_W - 1)^2$ with $\delta = 0{,}5 + 1{,}5x_\sigma$, and x_σ is **one of the three conditions being swept**. ⇒ On the ignition branch a **fourth line is printed**: $|1{,}5 \cdot \Delta x_\sigma (P_W - 1)^2|$. Omitting it understates the width of exactly those elements that reach past the sustainable limit.

The table cannot always be printed, and the boundary is not the sign of P**.** Attribution has meaning only where P actually depends on the weights, which is the condition $A \neq 0$:

Branch	**true** ΔP	**what the formula would print**	**what to do**
$A \neq 0$ and every $P_j > 0$	as the formula gives	correct	print normally; **the sign of** P **is irrelevant**
$P_C = 0$ (internal deadlock) or $K = 0$ (nothing spent)	$P \equiv 0$ for **every** weight set, so $\Delta P = 0$	a positive number with no meaning	**print no number**
some $P_j = 0$ (verified complete absence)	$P \equiv 0$, so $\Delta P = 0$	$+\infty$	**print no number**

The last two print a **named null** — *capacity is identically zero under every weight set, so no attribution is possible* — naming which factor is zero. Both are **admissible readings of the tool**, not pathologies, which is why they take a gate rather than a footnote.

Meaning. A wide interval here reads *"the region is not yet read firmly, and this element has a form near zero, so it takes the blow hardest"* — **not** *"this element's quantities were poorly measured."* The two call for different work.

(4) Solving, step by step. Write each raw pair, the ratio, the power, the quotient. Write the bracket with its exponents **spelled out**. Write K with its branch named. Then the product. Then the interval, with the sweep points listed.

(5) Disciplines binding this step.

1. **The gate stops; it does not adjudicate.** A mismatch returns the run to Step 1; the tool infers no cause.
2. All four residues are reported, each on its own line, at full value.
3. The reference-mark **type** is declared before computing and appears in the output.
4. A negative burn is **reported at full value** with the words *drawing below maintenance*; the clamp does not swallow it.
5. Where $P_W > 2$, an **extrapolation warning** is printed: beyond that the ignition branch is unanchored.

Gate fails if:

- any of the four checks fails ⇒ **return to Step 1**;
- $E_{free} < 0$;
- a claimed category lies outside the declared classifier;
- $q_{ref} \leq 0$ for any normalised form;
- $E_{bind} = 0$ *(the whole cohesion balance diverges; report a deficiency, not an infinity)*;
- more than one bracket form reports null.

Step 5 — Negation

(1) What this step reads. Five negation forms and **one** negation for the whole run — not one per element. It reads at the **region** boundary.

(2) Variables, each with its *Detail*.

$$N(F) = \frac{\alpha N_M + \beta N_I + \gamma N_S + N_C + N_W}{3} \in [0;1]$$

Form	Formula	Family
N_M	$\tanh\left(k\,E_{loss}/E_{through}\right), k = 2$	flow / flow
N_I	$K_{loss}/K_{through}$	flow / flow
N_S	$1 - e^{-\varepsilon_S \Delta_{dev}^2}$, $\varepsilon_S = 1 + 2(x_\xi + x_\sigma)$	dimensionless
N_C	$E_{dis}/E_{through}$	flow / flow
N_W	$F_{static}/(F_{drive} + F_{static})$	force, or resource — declared

Detail — why the negation side is a sum where the capacity side is a product, and why the two grounds are stated separately. The corpus states the mechanism in the language of a **sum** and places all five forms level, each negation form reading off its corresponding capacity form. Two distinct grounds carry the weights, and **merging them would underwrite a place that has not been checked**: · **Reusing** α, β, γ stands on this: the weight set belongs to the **region**, and $N(F)$ is the negation **of that same region**. · N_C **and** N_W **carrying weight 1** stands on a different thing: the transfer of coefficients from the logarithmic form of P, where the five coefficients are $1, \alpha, \beta, \gamma, 1$. Normalising by $\alpha + \beta + \gamma + 1 + 1 = 3$ **forces** the denominator; no one selects it.

The logarithmic reading used to extract those coefficients is **undefined on the branch** $P_C \leq 0$. The coefficients are taken from the **algebraic** form and stand; the reading used to extract them has a branch where it does not. **This limit reaches here and nowhere else.** The width attribution at Step 4 once rested on the same reading without saying so; it is now derived on g, which is strictly positive by construction, and takes no logarithm of P or of P_C.

A form losing its input does not lose the denominator 3. The bracket contributes weight 1, N_C contributes 1, N_W contributes 1 $\Rightarrow N(F) \in [0;1]$ still holds by construction; it is not adjusted by hand.

(3) Raw score, with *Meaning*.

$$\Delta_{dev} = \frac{|\, Q_{act} - Q_{req} \,|}{\max(Q_{act}, Q_{req})}, \qquad \Delta^* = \frac{1}{\sqrt{2\varepsilon_S}}$$

Meaning. Q_{req} is the standard **the region itself demands** to hold its structure; Q_{act} is what it actually delivers. Δ^* is the inflection: **below it further deviation costs almost nothing; above it, structure fails quickly.** And ε_S depends on the region — one that is **dense in structure and heavy on recognition tolerates deviation less**, so its inflection sits lower.

The deviation depends only on the ratio and is **symmetric under inversion**: delivering half and delivering double read the same. Both readings must sit on the **same ratio scale with a true zero**; on an interval scale, shifting the origin changes the number, and the formula would be running on data it has no right to run on.

Q_{req} **is the standard the REGION demands**, not one the analyst finds reasonable. Substituting one's own standard **admits a verdict through the back door**.

Δ_{dev} and Δ^* **do not carry the unit pote.** Units are written everywhere.

(4) Solving, step by step. Write each flow pair and its quotient, then the deviation with its numerator and denominator spelled out, then the exponential, then the weighted sum over the denominator 3.

(5) Disciplines binding this step.

1. $N(F)$ **is read together with all five component readings.** Where one form dominates the region, the weights are steep, and maximal negation on a non-deciding form barely enters the total. The single number conceals that; the five do not.
2. Negation is never described as an element or an opponent.
3. Each ratio stays **closed within its own side**; no negation reading is compared against a capacity reading except through the forward gate.

Gate fails if:

- $E_{through} = 0$ or $K_{through} = 0$;
- the two deviation readings do not sit on one ratio scale with a true zero;
- a component reading is omitted from the report.

Step 6 — Fasaion

(1) What this step reads. Which configuration **comes to stand**, its **figure** by pair, and its standing with respect to the **terrain**. It does not rank the elements that fail.

(2) Variables, each with its *Detail*.

FORWARD GATE. $\nexists\, i: P(i) > N(F) \Rightarrow$ **no configuration stands**; report it and **STOP**.

Existential in form, not maximal. A maximum imposes an ordering on the elements; the existential does not. *"No configuration stands"* must **name the path**: the forward gate · the figure table *(opposed, evenly matched)* · the consensus gate *(no direction readable)* — and at the consensus gate, **which of the states**.

AXIS-SET DEGENERACY GATE — run before the figure table. If **every readable pair** gives $\cos = 0$, the table is **empty by construction** ⇒ report *degenerate axis set*, **return to 1b**. Do not pour seven rows into *"not contesting the same gradient"* and call it a result. T5 is the **necessary** condition and reads the declaration; this gate is the **sufficient** one and reads the actual result.

(3) Raw score, with *Meaning*.

Field (1) — the figure, read by pair:

$\cos(\hat{V}_A, \hat{V}_B)$	P **comparison**	**Source**	**Figure**
≈ +1	equivalent	**disjoint** — *both criteria*	**SYMBIOSIS**
≈ +1	equivalent	**shared** — *both criteria*	**FUSION**
≈ +1	widely apart	either	**ABSORPTION**
≈ −1	widely apart	containment $= 0$	**ELIMINATION**
≈ −1	widely apart	containment $= 1$	**ABSORPTION**
≈ −1	equivalent	either	**no configuration yet stands**
≈ 0	either	either	**not contesting the same gradient**

Thresholds — and the gaps between labels are a requirement, not an oversight: · lean: ≈+1 at $\cos \geq 0{,}866$ · ≈−1 at $\leq -0{,}866$ · ≈0 at $|\cos| \leq 0{,}5$ · **between ⇒ figure not distinguishable** · P: **equivalent** = the two sensitivity intervals **overlap** · **widely apart** = disjoint, with a gap $\geq \max(w_A, w_B)$ · **between ⇒ not distinguishable** · source, **at aligned leans — two criteria**, and both are **substitutions**: shared reserve, by pair; and shared standing in the classifier, by pair. **Both say disjoint** ⇒ SYMBIOSIS · **both say shared** ⇒ FUSION · **they disagree, or either falls in a gap** ⇒ **not distinguishable**. Fusion faces the narrower door because **merging is the stronger verdict**; it must satisfy **both** criteria, not one. · source, **at opposed leans — containment**, and it is a **different question from the other two**, asked with the same instrument.

> **CONTAINMENT — the criterion at opposed leans, and it carries no threshold.** The corpus separates the two figures by **one** question: *Absorption* — the second element is no longer separately recognisable **but is present in what the first has become**; *Elimination* — the other **does not remain at all**. The question is therefore **whether what the loser held is still**

held, and what decides *separately recognisable* inside a region is the **admissibility classifier**. Containment reads the share of the **weaker** element's claimed categories that the **stronger** also claims, measured on the same terms as the region's information — so it introduces **no new declaration, no new measurand, and no new constant**.

Which element is the weaker is not a choice. These two rows sit in the **widely apart** branch, which means the two intervals are **disjoint** — that is why the branch is there.

The two poles are equalities, not thresholds. Containment $= 1 \Leftrightarrow$ everything the weaker holds the stronger holds too ⇒ **ABSORPTION**. Containment $= 0 \Leftrightarrow$ nothing the weaker holds is held by the stronger ⇒ **ELIMINATION**. **Anything between is a gap** and is reported as one, under the same rule as every other gap in this step.

⚠ **The other two source criteria cannot do this work**, and the reason is structural rather than a matter of calibration: both are **symmetric**, so neither can say **which** element remains. These two figures are **directional** — one element persists and the other does not.

⚠ **This is still a substitution.** *Holding the same categories* stands in for *being present in what the other has become*; the corpus criterion is not measured directly here either.

The table is not exhaustive. Falling outside all seven rows ⇒ report *figure not distinguishable*; **do not force it into the nearest row.**

MANDATORY CLAUSE wherever SYMBIOSIS or FUSION is reported: *this label rests on **two substitutions**, not on the measurement the corpus asks for; the corpus criterion — whether the two inputs remain **separately recognisable in the outcome — is not measured by this tool.***

AXIS-SET CAPACITY — printed whenever the figure table is read. Leans are sums of non-negative unit vectors, so every lean lies in the non-negative orthant. There, $d + 1$ unit vectors have a worst pair optimised at exactly $1/\sqrt{d}$ — the same expression, and the same geometry, as the consensus threshold. Hence the row *not contesting the same gradient* has a **capacity**:

d	**2**	**3**	≥ 4
$1/\sqrt{d}$	0,7071	0,5774	$\leq$ 0,5000
at most how many elements pairwise *not contesting*	**2**	**3**	**this bound stops bounding**

From $d \geq 4$ this bound stops giving an upper bound, and stops constructibly: the four principal axes together with the equal-weight direction give every pair cos ≤ 0,5. ⇒ **The bound is a consequence of the cosine threshold**, not a fact about the world. Move that threshold and the table moves.

Two statements that are not equivalent, and only the first is proved. *This bound ceases to give an upper bound from $d \geq 4$* is true. *No finite upper bound exists* is **false**, and the tool does not say it. In finite-dimensional R^d, unit vectors pairwise at cos ≤ 0,5 are pairwise at least 60° apart, so the spherical caps of angular radius 30° about them are **disjoint**, and their number is at most the sphere's measure divided by one cap's — finite for every d, by an elementary count:

d	**2**	**3**	**4**	**5**	**6**
cap-count upper bound, whole sphere	6	14	**34**	77	170
exact value on the whole sphere (kissing number)	6	12	**24**	—	—
constructible inside the **non-negative orthant**	2	3	$\geq$ **6**	$\geq$ 10	$\geq$ 15

And where the old bound fails, it does not fail narrowly. The family $(e_i + e_j)/\sqrt{2}$ lies wholly inside the non-negative orthant and has pairwise cosine equal to **0 or exactly 0,5**, giving $d(d-1)/2$ pairwise non-contesting directions: **6** at $d = 4$, which exceeds the old bound of $d = 4$ by half; 10 at $d = 5$; 15 at $d = 6$. The true capacity is therefore **at least quadratic in** d, not linear. The two readings agree exactly where they should: $d(d-1)/2 = d$ at $d = 3$, so they coincide below 4 and separate at 4.

The exact value inside the non-negative orthant is not known to this tool. It is a **spherical-code** problem and has no closed form. The tool therefore declares that it **does not know the capacity** above $d = 3$ — not that there is none. Practically nothing changes: from $d \geq 4$ there is no number to compare against, so the sentence *the constraint is binding* is printed only at $d \leq 3$. What changes is the reason given for it. **Print: d, n_{el}, and the size of the largest pairwise *not-contesting* set found.** At the bound ⇒ **the constraint is binding**, and this sentence is printed: *the figure table cannot distinguish "these are genuinely contesting one gradient" from "the axis set had no room left to separate them."*

This is an accompanying clause, not a floor on d. A floor would create pressure to do exactly what **T2 forbids** — add an axis to catch a remainder. A region that genuinely has two poles must be declared with two.

Field (2) — the terrain, read on the element, and it reads a **product**:

$$\cos(\hat{V}_i, \vec{G}) = \underbrace{\sqrt{1 - a_i^2}}_{\text{concentration of the lean}} \times \underbrace{\cos\left(\hat{V}_i^{\perp}, \vec{G}\right)}_{\text{alignment}}, \qquad a_i = \frac{\sum_k \hat{V}_{i,k}}{\sqrt{d}}$$

Meaning. Centring makes the terrain orthogonal to the equal-weight direction; the lean is not centred. Only the perpendicular part of the lean meets the terrain. ⇒ **A low cosine now reads as either OPPOSED or DISPERSED** — two different failures that a single number merges. Aligned ⇒ the element is **carried**, and overturning it requires changing the region's conditions. Opposed ⇒ it stands by **continuous expenditure**, and is overturned by **cutting what it is paying with**.

The gate still compares the product. Three mandatory clauses: (1) alignment is **diluted by the dispersion of the lean** — a chosen behaviour, not an artefact · (2) **at $d = 2$ alignment is always** ± 1, so the magnitude in field (2) is **concentration**, not alignment; reading a degree of alignment requires $d \geq 3$ · (3) concentration asks nearly the question the **consensus gate** already asked — two mechanisms, one job; the difference is that the consensus gate has a declared threshold and this factor has none.

Named exit. A perpendicular part of zero ⇒ alignment **undefined** ⇒ report *lean evenly spread — no stance readable against the terrain*. Do not write 0: the product is zero there too, but **because concentration is zero**, not because of perpendicularity.

(4) Solving, step by step. Write each pairwise cosine, each interval comparison with its gap and the larger width, each source criterion with its declared thresholds. For the terrain, write a_i, the concentration, the perpendicular component, then the alignment, then the product.

(5) Disciplines binding this step.

1. **The Fasaion is a result, not an input.** Reading its own quantities requires a new run from Step 1.
2. Contest vocabulary, where used, is marked explicitly as a name laid over the reading.
3. Elements failing the forward gate are not ordered against one another.
4. Every gap in the three criteria is reported as a gap, never closed to the nearest label.

Gate fails if:

- no element exceeds the negation ⇒ **STOP**, path named;
- every readable pair gives $\cos = 0$ ⇒ **return to 1b**;
- a figure is assigned while any criterion sits in a gap.

Step 7 — Conditions of overturn

(1) What this step reads. Which variable, moved, would change the outcome — and by how much it can actually be moved. It produces no new capacity reading.

(2) Variables, with *Detail*.

$$\text{Leverage}(v) = \left| P(v + a) - P(v) \right|, \qquad a = \text{Feasible amplitude}(v)$$

Leverage is read ACROSS the whole feasible amplitude, not as a derivative multiplied by it. Feasible amplitude is declared as **how far this variable can move within the slice itself**; the reading that answers that declaration is the change over exactly that span. Where P is locally linear in v the two agree, and the earlier product form $|\partial P/\partial v| \cdot a$ is recovered.

> **Why the product form was withdrawn, stated plainly.** It multiplies a **local** quantity by a **non-local** one. At an element spending below maintenance, $P_W = \max(0, \Phi_{burn})/\Phi_{limit}$ is held at zero by the clamp, so the local derivative with respect to the burn is **exactly zero**, while a move of the full declared amplitude may cross the clamp and lift P off zero. The product then reports **no leverage** for the one variable that decides the outcome. Since the **ordering is the whole output of this step**, that is not an inaccuracy at the margin: it is a wrong answer to the question the step asks. Printing a correction beside the product shows a reader that the ordering is wrong; it does not make the ordering right.

Two non-differentiable points, not one. $P_W = 1$ is the gate of the amplifier; $\Phi_{burn} = 0$ is the **clamp**, and $\max(0, \Phi_{burn})$ is not differentiable there either. At **both**, use the **one-sided derivative in the direction of the amplitude**. The rule is unchanged; only the count was wrong.

Feasible amplitude is A DATUM OF THE CASE, not a parameter of the tool, and it is read as **how far this variable can move within the slice itself** — a counterfactual, and therefore **a declaration of the one running**, printed at Cell 1 **before** the raw table is read.

(3) Raw score, with *Meaning*.PRINT BOTH TABLES: the ordering by $|\partial P/\partial v|$ alone — the **local derivative, computed by the tool and left unmultiplied** — and the ordering by Leverage *(resting on a declaration)*.

Meaning. The two tables answer different questions, and they routinely disagree. **What is most sensitive and what is actually movable are not the same thing.** An element may know precisely what would save it and be unable to move that variable within the slice.

The open door — the store residue — is reported **at full value on its own line**. It is not placed in the leverage table: it speaks of an element **not present** in this run, and there is no derivative by which to rank it. The other three residues are reported the same way, and for the same reason.

(4) Solving, step by step. Write each partial derivative, each declared amplitude, and the value of P at **both ends of that amplitude**; then both orderings.

(5) Disciplines binding this step.

1. Amplitude is declared **before** the raw table is read.
2. Both tables are printed; presenting only one is a failed report.
3. Residues are reported at full value, never ranked.

Gate fails if:

- amplitude is declared or revised after the raw table is seen;
- only one ordering is reported.

</protocol>

<constraints>

11 · CONSTRAINTS

THE DOMAIN GATE — one line per formula, each line mapped to a gate

Before this section the domain conditions lived **one at a time**, in the constraint line of each quantity, and **nothing checked whether they covered the formulas**. A machine pass found **six quantities carrying no constraint line at all**: available energy, dissipation, the field reading, the two deviation quantities, and the two forces. The table below is the complete map, and its completeness is **checkable**: every tier-2 formula must appear exactly once.

Three exits when a domain is touched — they are not the same exit.

Exit	Meaning	What to do
(a) limit	an **admissible** reading; only the expression cannot be evaluated directly	take the **limit**, and print which branch was used
(b) not measurable	**not zero** — the quantity does not exist to be measured	the **form drops**, a named null is printed, and the denominator 3 of $N(F)$ is **unchanged**
(c) miscounted	a value that **cannot occur**	**STOP, return to Step 1** — the tool infers no cause

#	Formula	Domain	On touching it	Gate
1	$P_M = 1/(1 + (E_i^{min}/E_i)^2)$	$E_i > 0 \cdot E_i^{min} > 0$	$E_i = 0$ (reserves exhausted — **admissible**) → **(a)** $P_M = 0$; $E_i^{min} \leq 0$ → **(c)**	domain
2	$P_I = 1/(1 + (K_i^{noise}/K_i)^2)$	$K_i > 0 \cdot K_i^{noise} \geq 0$	$K_i = 0$ → **(a)** $P_I = 0$; $K_i^{noise} < 0$ → **(c)**	domain + the entropy identity
3	$P_S = 1/(1 + (Threshold/Field)^2)$	$Threshold > 0 \cdot Field > 0$	$Field = 0$ (no standing at all in the declared field — **admissible**) → **(a)** $P_S = 0$; $Threshold \leq 0$ → **(c)**	domain + the threshold bracket
4	$P_C = \tanh(u)/\tanh(1)$	$E_{bind} > 0$ strictly · $\Psi_i \geq 0 \cdot D_i \geq 0$	$E_{bind} = 0$ → **(c)** (divergence); $D_i < 0$ → **(c)**	domain
5	$P_W = \max(0, \Phi_{burn})/\Phi_{limit}$	$\Phi_{limit} > 0$ strictly · Φ_{burn} **may be negative**	negative burn is clamped **and reported at full value**; $\Phi_{limit} = 0$ → **(c)**	domain
6	$K(P_W)$	$P_W \geq 0$	covered by the clamp above; $P_W > 2$ → extrapolation warning	domain + the anchored-domain clause

#	Formula	Domain	On touching it	Gate
7	$N_M = \tanh(2E_{loss}/E_{through})$	$E_{through} > 0$ strictly · $E_{loss} \geq 0$	$E_{loss} < 0$ → **(c)**. **Gate R2 does not catch this**: it bounds the sum from **above**, and a negative dissipation makes that inequality **easier** to satisfy	domain (R2 is not enough)
8	$N_I = K_{loss}/K_{through}$	$K_{through} > 0$ strictly · $0 \leq K_{loss} \leq K_{through}$	outside → **(c)**	domain (the upper bound already stood)
9	$N_S = 1 - e^{-\varepsilon_S \Delta_{dev}^2}$	$\varepsilon_S > 0$, true by construction for non-negative conditions	—	construction
10	$\Delta_{dev} = \lvert Q_{act} - Q_{req} \rvert / \max(Q_{act}, Q_{req})$	$\max(Q_{act}, Q_{req}) > 0$ · both ≥ 0	both zero (the region demands nothing and achieves nothing) → **(b)** — deviation is **not measurable, not zero**; either negative → **(c)**	domain
11	$N_C = E_{dis}/E_{through}$	$E_{through} > 0 \cdot E_{dis} \geq 0$	$E_{dis} < 0$ → **(c)**; upper bound from the flow check	domain + **gate R2 flow**
12	$N_W = F_{static}/(F_{drive} + F_{static})$	$F_{drive} + F_{static} > 0$ · both ≥ 0	sum zero (no force on either side) → **(b)**; either negative → **(c)**	domain
13	$g_j^* = \sigma_j/\mu_j$	$\mu_j > 0$	$\mu_j = 0$ → the face is **ABSENT**, which is not the face being **FLAT**	the three states of a face
14	concentration $= \lVert \sum \hat{e} \rVert / n_{\text{emit}}$	$n_{\text{emit}} \geq 2$	0 or 1 → **the gate does not run**	the consensus gate, five states
15	alignment	perpendicular part $\neq 0$	zero → **(b)** *lean evenly spread*	named exit
16	width attribution	$P_C K \neq 0$ · every $P_j > 0$	zero → **(b)** *capacity is identically zero under every weight set*	the applicability gate at Step 4

Two clauses travel with this table. First, zero is not one thing. A binding energy of zero, a tearing force of zero, a holding cost of zero, a dissipation of zero are all **admissible readings**, and this table must never convert them into errors. What it stops is a **zero denominator** and a **negative value where negative has no meaning**. **Second, gate R2 cannot stand in for the domain gate.** R2 checks balances **between** quantities and therefore bounds them from **above**; a quantity that goes negative makes such a check **easier** to pass. The dissipation row is the worked example: R2 is not merely silent there, it is misled in the favourable direction.

The origin law

A constraint exists **only to check**. Inferring a quantity from the quantity it is constrained against destroys the check and leaves the tool asserting what it meant to verify.

The result law

A standing configuration is a RESULT, not data. Reading its own quantities requires **a new run from Step 1**.

The run law

One dataset, one result, and no time axis. Two runs are never chained. **Three data points are three regions, not a trend.**

Four failure gates — a run is failed, however the result looks, if:

(1) a discrepancy is used to **adjust a parameter**; **(2)** a value is assigned **after** a result has been seen; **(3)** a posited field is **not declared** as posited; **(4)** two runs are **subtracted** from one another.

The two uses, and what separates them — Cell 0

Under **(a)**, verifiable data with a configuration already standing, the run reads a Fasaion and sets it beside what stands. Under **(b)**, posited data, there is **nothing to set it beside**, and every field is declared individually.

Under (a) the requirement *assign before seeing any result* cannot be met, because the outcome was known before the run opened. Agreement with a known outcome therefore **carries no evidential weight**. The **procedural** half is preventable by sealing the declaration block; the **epistemic** half is not, and is carried as a named limit.

⇒ A consequence worth stating plainly: **use (a) in the strict sense is not reachable**, and **no additional measurement path closes the gap.** Four declarations in this tool cannot be verified against anything outside themselves, and constructing a gate for them would require a ground outside the declaration — which, if it existed, would make the declaration unnecessary. This is the **ceiling** of the tool.

Four conditions on the use of pote

(1) Pote is **not a percentage scale.** The amplifier has no upper bound and the cohesion form may be negative. **(2)** Pote is comparable **only within one region AND one declared aperture**. The weights are generated by the region; the numbers are measures of an intersection. **(3)Pote values are never summed.** Report each element's total separately. Combining them into a single expression is forbidden. **(4)** Two decimal places, **always with the declaration sensitivity interval**. Never reduced to a ± sign, and never called *uncertainty* — that word is reserved for the measurement error of the tier-1 readings, which this tool does not compute.

No recommendations

The tool reports what is read and what would have to change. It does not recommend a course of action, does not rank the elements that fail, and does not say who ought to prevail. Where it cannot proceed honestly, it reports that and yields no result. **A named null is preferred to a fabricated or overconfident one.**

```
</constraints>
```

<declared_limits>

12 · DECLARED LIMITS

These are **named limits, not pending work.** Each states what the tool cannot do, what it costs, and — where applicable — why no additional measurement path removes it.

L1 · Four declarations the tool cannot verify

Declaration	Made at	Carries	What its gate catches	Where that gate is blind
admissibility classifier	Step 1b	four information quantities and the symbolic threshold	every category an element claims must lie **inside** the classifier	a classifier declared **too narrow** or **skewed** — only what falls **outside** is caught
region graph	Step 1b	the field reading, its threshold, the symbolic densities, and the boundary of every sentient element ⇒ **all five capacity forms**	the threshold bracket must be non-empty	runs only where a two-sided record exists; never catches a graph **missing edges** that is nonetheless self-consistent
reference state	Step 1	the three exergy quantities	the flow check of gate R2	a state declared consistently but **wrongly** passes
axis set	Step 1b	every density, hence the whole terrain, **and the entire lean chain** — leans, the consensus gate, every pairwise cosine, the figure table	reconciliation + degeneracy + the element-count property	**choosing the wrong partition** — only *non-exhaustive* and *degenerate* are caught

The common clause, and it is the sharp one: all four gates catch INCONSISTENCY; none catches WRONGNESS. A narrow classifier, a graph missing edges, a consistently wrong reference state, a skewed axis set — each passes every gate and shifts the result **without appearing anywhere in the output.** They stand at the same rank as the aperture, and for that reason they are **not counted as baseline** when a quantity is described as needing only baseline.

Order is forced, not habitual. The axis set precedes every density; the classifier precedes every information quantity and the symbolic threshold; the graph precedes the field reading — which sits beneath the boundary of every sentient element, hence beneath **all five** capacity forms. ⇒ In practice **all four precede Step 2**, and Cell 1 prints all four **in words**.

Where a skewed axis set bites hardest is the figure table. A label of ≈ *+1* may arise from two elements genuinely leaning together, **or** from an axis set that has **merged two directions they occupied separately**. **The tool cannot distinguish the two.**

L2 · Two readings the symbolic face cannot support

The corpus gives the symbolic form two directions — being recognised, and conferring recognition. In the inanimate domain merging them is grounded: one coupling constant governs both. **In the sentient domain there is no such ground** — an element may be widely recognised

and confer recognition on no one — and the reading taken at the element boundary **merges** the element's own field with the ambient field at that boundary, without separating them. ⇒ A case in which the two directions **can** be separated is a **finding**, not a surprise.

The symbolic face has no parent quantity and therefore no reconciliation gate — permanently, not pending. It divides nothing. Its densities are printed at full value, with that clause attached, whenever it enters the terrain.

L3 · The information gate is weaker than the energy gate

The energy family carries **two** constraints: claims cannot exceed what elements hold, and claims cannot exceed what the region holds. In the sentient domain the information family carries **only the second** — because the element-level information reading and the claim reading sit on **different scales**, and no formula in this tool places one beside the other.

The tool does not compute measurement uncertainty, and its absence is a limit of the same rank as the four unverifiable declarations. Error in the tier-1 readings is not asked for, not propagated, and appears nowhere in the output. The interval printed beside P is **declaration sensitivity** — it answers *where would the number go if the runner had declared differently* — and it does **not** answer *how wrong is this reading*. A tier-1 quantity measured wrongly carries its error straight into the result and **surfaces in no interval at all**. The gates catch inconsistency, not wrongness, here as everywhere else.

The printed interval is a lower bound on the local range, not the range. The sweep moves one condition at a time and so visits $2k + 1$ points, never the corners of the box where several conditions move together. Measured on the run of section 14 against a 21^3 grid of the same box, the full-box width is **1,07 to 1,68 times** the printed width. No verdict changed there. The sweep is kept one-at-a-time deliberately: a full grid grows exponentially in the number of conditions and returns a wider number, not a different verdict.

Printed with every sentient run: *the information gate is weaker than the energy gate — there is no check of the form "do not claim more than you hold"; what remains is only that every claimed category lies inside the classifier.* This is a **limit, not pending work**: removing it would require an element-level information reading in bits, which has been examined and set aside.

L4 · Two figure labels rest on substitutions

The corpus separates the two co-standing figures by **one criterion**: whether the two inputs remain **separately recognisable in the outcome**. The tool measures **shared reserve** and **shared standing in the classifier**. **Neither measures what the corpus asks.** Both are substitutions, and both are declared as such.

Keeping **two** criteria is the response, not a third: two independent substitutions agreeing are worth more than one, and **disagreement returns *not distinguishable***. A discrimination test reading the corpus wording directly was considered and set aside: it would require a **fifth** unverifiable declaration, and that price exceeds the gain.

L5 · At two axes the terrain reads direction only

At $d = 2$ the hyperplane orthogonal to the terrain is one-dimensional, so **alignment is always** ± 1 and the whole magnitude in the terrain reading is **concentration of the lean**. Reading a **degree** of alignment requires $d \geq 3$. Printed whenever $d = 2$.

L6 · The capacity of the axis set, and the half-pair of bounds

The element-count property and the degeneracy gate bound d from **above** — too many axes and the figure table is empty by construction. **Nothing bounds** d **from below**, and the minimum the axis properties require is two. The consequence is stated in section 10, Step 6, as an accompanying clause with numbers, **not as a gate** — because a floor would create pressure to violate the exhaustion property, and a genuinely two-poled region must be declared with two axes.

L7 · A form near zero amplifies the region's declaration sensitivity into the element's reading

A capacity form near zero has a large negative logarithm, so it multiplies the **weight** sensitivity — which belongs to the **region's declarations** — into the element's interval. An element with such a form receives a wide interval that says nothing about the quality of its own measurements, and is correspondingly **harder to place in the figure table**. The width-attribution table exists so that this is legible rather than mistaken for poor measurement.

L8 · Weight skew reaches into the negation

Where one form dominates the region, the weight set is steep; over the official grid the smallest weight encountered is far below the point at which a form still contributes. At such a region, **maximal negation on a non-deciding form barely enters the total. ⇒ The region's negation is read together with all five component readings, never alone.** This follows from the softmax temperature being fixed at one; it is not an invariant of the tool.

Two further clauses travel with the negation: the logarithmic reading used to extract its coefficients is **undefined on the branch where cohesion is negative**; and the corpus **does not adjudicate** the combination rule — it declares measurement deferred, so the responsibility is the tool's, declared.

Cross-check with the DCP — a test, not a source

The two artifacts are **of one rank and derived from one corpus**. If both are faithful, then **on the same object they must not contradict one another.**

This is a **test**. It runs **after this specification is closed**; it introduces **no parameter** into either tool. Contradiction is a **finding** — about this tool, about the other, or about a place where the corpus is not yet tight enough for two artifacts to converge. It is never a licence to calibrate.

</declared_limits>

<implications>

13 · IMPLICATIONS

Nothing in this section is a step of the tool. These are consequences that follow from the specified forms, carried here so that they are neither smuggled into the protocol nor discarded. Each is stated **with the condition under which it holds.**

(1) Three conditions on reading anything in this section. It holds only **within one declared region and aperture**; it holds only where every quantity it names was measured rather than posited; and it is **not** a prediction about a future state, because the tool has no time axis.

(2) The dead zone. The gated amplifier makes a region of the parameter space unreachable: an element spending nothing has **no capacity activated** regardless of every other form, while an element exactly at its sustainable limit gains nothing further by spending more. Between refusal to spend and spending past the limit there is therefore a band in which capacity **cannot** be raised by expenditure at all — it can only be raised by changing a form inside the bracket.

(3) Two testable predictions. · **On deviation.** Because the sharpness coefficient rises with structural density and with the weight of recognition, a **dense, recognition-heavy region tolerates a smaller gap between what it declares and what it delivers** before that gap begins to cost it quickly. The inflection is computable for any declared region, so the claim is falsifiable against cases. · **At the sustainable limit.** The right-hand slope at the gate is **zero for every value of the ignition coefficient**, while the left-hand slope is not. ⇒ **Exactly at the limit, spending more buys nothing; spending less is lost immediately.** This is an asymmetry that a case can exhibit or fail to exhibit.

(4) What follows from the asymmetry between the two sides. Capacity is a **product** and negation a **sum**. The consequence is that capacity can be destroyed by **one** form going to zero while negation cannot be escaped by any single form going to zero. This is a property of the specified forms; it is **not** a claim that the world is built that way, and the corpus does **not** adjudicate it.

</implications>

<study_cases>

14 · STUDY CASE

THE STANDING OF THIS SECTION, DECLARED BEFORE IT IS READ

The case below is a **load test**, and a load test **exposes; it does not adjudicate.** It is not a demonstration that the tool is correct, and it is not evidence for any reading the tool produces elsewhere.

No threshold, no coefficient and no form in this document was set by fitting it to the outcome below. Where this run made a gap in the tool visible, the gap was closed on a **ground the tool admits** — a corpus reading, or a requirement of the tool's own internal consistency — and that ground is recorded with it, in section 12 or in the protocol. **The case exposes; the ground is what closes.**

A tool is not testable without being run. A specification deposited without its formal apparatus ever having been executed carries no assurance that the apparatus is consistent; running it on a load-test case is how that assurance is obtained. That is why a case appears here at all, and it is why the case sits outside the derivation.

(1) Context, and the question the tool puts

Over three days in August 1991, in Moscow, a committee of those holding the Soviet state apparatus declared that it had assumed power. It held the army, the security service, the broadcast channels, and the documents. Three days later it was **no longer standing**.

The tool does not ask why the coup failed. The words *coup* and *failed* place a verdict inside the question before a number is computed. **The question it puts is:** *within this region, at this slice,* ***which configuration comes to stand****, and* ***by whose capacity****?* ⇒ The centre of the question is **the Soviet Union as a configuration that is standing**. Not *the collapse* — a collapse is a **predicate**. **Names set aside, recorded verbatim:** *coup* · *the August putsch* · *the collapse of the Soviet Union*.

(2) Cell 0

Use (b) — posited data. Every raw value below is set by the one running from the documentary record; none is read from an instrument. ⇒ What this run tests is **whether the tool contradicts itself**, **not** whether the history is as described.

Field class	State
the three region conditions	**posited**, five-level scale, ground recorded per line
region graph · classifier and frequency record · two-sided record	**posited** from the public record of the three days; **the tool cannot verify any of the three**
fifteen tier-1 raw quantities per element	**posited**, ground recorded per column
field intensity · threshold · symbolic densities · region information · information densities	**COMPUTED** from the three declarations above — not posited

Field class	State
all five capacity forms · all five negation forms · leans · terrain	**COMPUTED** from the raw quantities

Declaration block sealed before computing. SHA-256 of the declaration block is printed in the run file; it is recomputable and self-verifying. It attests only that the declaration **did not change** after computing — a declaration wrong from the start seals just as cleanly.

(3) Step 1

1a. Fact read: a configuration that stands. Centre: as above. Four names set aside.

1b. Three regions were declared, differing in what enters as an element: the **central Soviet power field** *(elements: apparatuses able to issue commands)* · the planned economic system *(elements: production branches)* · the post-Cold-War international system *(elements: sovereign states)*. The centre of the question lies in the **first**; that is the matching region.

Axis set, $d = 3$**:** coercive state power · public recognition · legal authority. It satisfies the five properties, and **three axes rather than two were declared deliberately**: at two axes the terrain reading yields direction only *(L5)*.

Admissibility classifier: nine categories, with a frequency record of **65 invocations** across the three days. **Region graph:** nine nodes, twenty-two directed recognition edges. **Two-sided record:** three nodes shifted the classifier; three attempted and did not; three lie outside the record and are therefore unconstrained.

1c. Structure **0,75** — *what stands here depends heavily on the party–state–army chain of command, though not wholly: an elected republican channel already ran alongside it.* · Tempo **1,00** — *the highest level; everything was settled inside sixty hours.* · Weight of recognition **1,00** — *the highest level; both sides acted as though not being recognised meant not standing.*

$z_M = 0{,}5000 \qquad z_I = 4{,}2500 \qquad z_S = 2{,}5000 \qquad \Longrightarrow \qquad \alpha = 0{,}0196 \quad \beta = 0{,}8352 \quad \gamma = 0{,}1451$

Conclusion on the environment. This region rewards **information at 83,5 %**, recognition at 14,5 %, and **material means at 2,0 %**. In a region both dense in structure and fast, what decides is **reading the situation correctly and being able to act on that reading**. How many tanks an element holds barely enters the verdict. No one chose these three numbers; they are forced out of the three conditions, and the conditions ask about the **circumstance**.

Stopping condition: every one-step shift leaves the largest weight in place and ties nothing ⇒ the run **reports numbers**. At one sweep point the material weight falls to **0,0059**, which is the smallest value on the official grid — the run therefore sits beside the branch described in **L8**, and its negation is read with all five components.

(4) Step 2

Five elements, index bound to label: *the emergency committee · the office of the Soviet president · the government of the Russian republic · the army command · the security committee*. A decision set

is declared with each. **The one running stands outside** — reading from 2026, issuing no command in the region — and is therefore not an element. $n_{el} = 5$, so $d = 3 < 5$ holds.

(5) Steps 3, 4 and 5

> **A GATE FAILED ON THE FIRST DECLARATION, AND IT IS RECORDED RATHER THAN ERASED.** The first region graph carried eighteen edges, and on it the threshold bracket came out **empty** — the lower bound exceeded the upper. The tool reported *the shift does not follow intensity on the declared graph* and returned the run to 1b. Re-inspection found one node collapsed too coarsely and four recognition edges present in the record but omitted; a node with no incoming edge scored exactly zero, which cannot be right for it. The graph was re-declared with twenty-two edges and the gate passed. **The declaration was revised after the gate had failed.** What defends it: the four edges are in the record, and their omission was a **declaration error**. What does not defend it: **had the gate not failed, no one would have gone looking for them.** Recorded, not removed.

Step 3. All five elements pass the consensus gate. One of them emits on **two of four** faces — coverage 0,500 — while its **concentration is 0,9968**, the second highest in the run. The two factors report different things: *it has not lost direction; it has lost the faces on which to emit one.* A single product would merge those and return *no direction readable*, which would be **wrong**.

The reconciliation sums are printed beside their parents and match. The symbolic densities are printed at full value with the clause that **that face has no parent and no reconciliation gate**.

Step 4 — gate R2, four checks, four residues:

Check	Result	Residue
store, energy	matches	**351** — *nearly four tenths of the region's store no element has reached*
store, damage	matches	**72** — *damage no element is carrying*
flow, energy	matches	**6,4** — *a residue of the flow*
store, information	matches	**0,2846 bit** — *information no element holds*

The last residue is the sharpest reading of the whole run. It comes from **exactly one category**: the legitimacy of the locally elected soviets, invoked five times in the cycle, and claimed by **none** of the five elements. And the node that rests on that category is the same node that sets the **upper bound** of the symbolic threshold — the weakest node in the group that **did** shift the classifier. Two different gates, two different instruments, **pointing at one place**. The tool stops there and infers no cause.

Step 5. $N(F) = 0{,}4774$, interval [0,4712; 0,4810], reported with all five component readings. The deviation reading is **0,6900** against an inflection of **0,3333**: the region delivered 31 % of the standard **it set for itself**, and has therefore deviated **more than twice** its own tolerance.

(6) Solving

Capacity is reported **as an interval**, because the symbolic threshold is a bracket and that bracket multiplies into the sensitivity sweep.

Element	*P* interval	width
emergency committee	[0,0332; 0,0446]	0,0114
office of the Soviet president	[− 0,0084; − 0,0061]	0,0023
government of the Russian republic	[1,2094; 1,3425]	0,1331
army command	[0,1198; 0,1626]	0,0427
security committee	[0,1672; 0,3249]	0,1576

One reading is negative, and it is kept rather than floored: tearing has overcome holding, and the element's real capacity **is turned against itself**. It is not the same reading as zero, and the zero rule forbids treating it as such.

Width attribution. The widest interval in the table belongs to the element whose symbolic form is smallest — and the attribution table shows **90 %** of that width arising from that single form multiplied by the weight uncertainty. ⇒ The width says *the region is not read firmly and this element has a form near zero*; it says **nothing** about the quality of that element's own measurements *(L7)*. The element that comes to stand has the **narrowest** total attribution in the table, by an order of magnitude, because **no form of it lies near zero**.

(7) Steps 6 and 7

Forward gate: exactly **one** element exceeds the negation, and exceeds it by at least **2,51 times**. The highest of the remaining four reaches **0,69** of the threshold at the top of its interval. The four are **not ranked** against one another.

Figure table, ten pairs. Three pairs read *not contesting the same gradient*; the rest fall in the gaps and are reported as **not distinguishable**. No pair is forced to the nearest row. **Axis-set capacity printed:** $d = 3$, $n_{el} = 5$, largest pairwise not-contesting set **2** — below the bound of 3, so the constraint is **not binding** and the binding-constraint sentence is not printed.

Terrain. The region's terrain leans **away from coercion and toward public recognition**. The element that comes to stand leans with it at an alignment of **+0,94** and is therefore **carried**: overturning it would require changing the region's conditions, not cutting its supply. One element reads alignment **−0,997** — not dispersed but **directly opposed**, and overturned by cutting what it pays with. Another reads the **lowest concentration** in the run with near-zero alignment: **not** *opposing the trend* but **too dispersed for a stance to be readable**. A single number would have read that as *slightly opposed*, which is a different and wrong statement.

Step 7. Both orderings are printed, and **they disagree for every element**. By raw sensitivity, information dominates in four of five — the information weight sits directly on its exponent. Read across the declared amplitude, the burn flow dominates in three of five, because within three days

the burn is movable and the information is not. ⇒ **What is most sensitive and what is actually movable are not the same thing.**

(8) Conclusion, in two separated parts

About the case. The government of the Russian republic comes to stand. It leads on the face this region rewards at 83,5 %; it stands highest in the recognition field among **all nine nodes**, not merely among the five elements; it is the only element paying to hold a direction; and it leans with the terrain. **And it exceeds one pote by both borrowed routes at once** — cohesive resonance and burning past the sustainable threshold. That is not a stable state; it is a **state that is paying**.

The element strongest in material means fails, and **not** on material means: it fails on information, in a region that rewards information; on cohesion, below its own binding threshold; and on a terrain it runs directly against. **Four elements, four different places of failure, four different instruments catching them** — and those four sentences do not reduce to one.

About the tool — and this part is tested by **parameter sweep**, never by the case's own numbers, because a load test only exposes. The verdict is **stable** across the steepness constant, across the softmax temperature, and across the declared classifier-source thresholds. Four places in the tool were exposed by this run and are now specified: the form of the consensus gate; the states at that gate; the width-attribution table; and the capacity clause on the axis set. Two further claims first drawn from this run were **withdrawn** on re-testing, and the withdrawals are recorded in the run file rather than removed.

(9) Accompanying warnings

The aperture is a declaration and the tool does not verify it — outside it lie the fourteen other republics, the internal military communication channels, and the provinces beyond the two largest cities; a blind spot **exists**, and no magnitude is declared for it. **The four conditions on pote apply**: intervals not points, comparability only within this region and aperture, no summation, and above one pote the borrowing is named. **All four unverifiable declarations are present in this run** and any of them could be wrong without the output showing it.

</study_cases>

<output>

15 · OUTPUT

A report consists of **Cell 0 and seven cells**, in order, together with the accompanying clauses below. A cell that cannot be filled is reported as **a named null**, never left blank and never filled with a zero.

Cell	What it carries
0	the state of the dataset — (a) or (b); under (b), **field by field**, what is measured, what is set by the one running, on what grounds · **the sealed digest of the declaration block**, computed **before** any step is run
1	the object and the region · **instant of the slice, width of the dataset, cycle, stress window, reference state** · **the four unverifiable declarations, in words**, with the concentrated-risk warning · the categories each element claims, **as a set, not a number** · the **two-sided record** of classifier shifts *(where the record is silent, left empty — not inferred)* · the declared reading of feasible amplitude · which path each declared-path quantity uses · **1-1 / 1-2 / 1-3 recorded separately** · the three conditions and the weights they generate
2	the element list as **index bound to label** · each element's decision set · the inside/outside placement of the one running
3	each lean · **concentration, n_{emit}, and the threshold — the gate reads this line** · **coverage and n, printed separately, carrying no threshold** · the consensus product, printed to be read and not to adjudicate · **which of the five states** each element is in · the reconciliation sums **printed beside their parents** · the symbolic densities at full value with their permanent clause · the **declaration sensitivity interval**
4	the five capacity forms, the amplifier, and each element's total **with its interval** · the three factors separately · **the width-attribution table, one line per bracket form** · where a total is zero, **which route** · where a form has dropped, **which and why** · a negative burn **at full value** with the words *drawing below maintenance*
5	all five negation readings — never the total alone — the region's negation **with its interval**, and the inflection **with its unit written**
6	**field (1) the figure**, by pair, with **both source criteria printed separately** and the declared thresholds beside them; disagreement ⇒ *not distinguishable* · **axis-set capacity**: d, n_{el}, the largest pairwise not-contesting set, and at the bound the binding-constraint sentence · **field (2) the terrain**, with **both factors** of the product printed; at two axes the clause that the magnitude is concentration; and *dispersed* distinguished from *perpendicular*
7	**both leverage tables** · and **four residues, each on its own line at full value** — the open door, the damage residue, the flow residue *(marked as a residue of the flow)*, and the information residue; together with the **overlap** reading

Printed with every report, without exception

(1) The four conditions on the use of pote. **(2)** The warning that the aperture is a declaration the tool does not verify. **(3)** The four unverifiable declarations, and that none of their gates catches wrongness. **(4)** Where a form has dropped: that this run **is not comparable** to a run with all forms. **(5)** Where the symbolic face enters the terrain: that it has **no parent and no reconciliation gate**. **(6)** Where the run is sentient: that the **information gate is weaker** than the energy gate. **(7)** Where either co-standing figure is reported: that it rests on **two substitutions**, and that the corpus criterion **is not measured**. **(8)** Where $d = 2$: that the terrain magnitude is **concentration**, not alignment. **(9)** Axis-set capacity, with its three numbers. **(10)** The declared

reference-mark kind. **(11)** Where the burn exceeds twice the limit: the **extrapolation warning**. **(12)** The result of gate R2 — including, and **especially**, where it caught something.

Four valid endings with no Fasaion

A run may end without a standing configuration, and each ending is **named**:

(1)The forward gate — no element exceeds the region's negation. **(2)The figure table** — the pair is opposed and evenly matched, or falls in a gap; no row is forced. **(3)The consensus gate** — no direction is readable, and the report states **which state**: no face observable · emission absent but measured · dispersed. *(The single-face state is not on this list: there the direction is accepted.)* **(4)A gate returning the run to Step 1** — the coherence checks, the reconciliation of the axis set, or the degeneracy of the axis set. The report states which, and **infers no cause**.

Where the tool cannot proceed honestly — the region cannot be determined, the declarations required are not available, the object will not frame as an interaction — that is stated plainly and **the protocol yields no result**. **A named null is preferred to a fabricated or overconfident one.**

</output>

Derived from the Meta-Philosophy corpus (Meta-Philosophy, Huỳnh Mai Phúc, 2026).