

The Continuous-Function Cost Multiplier

Paragraph [0490] of U.S. Provisional Application No. 64/117,812, in Section 10.11, replaces a fixed cost multiplier applied upon a threshold designation with a continuous one. Under the baseline structure of Section 2.5, an origin-equivalence class either carries the untested-class designation, in which case a multiplier declared in the signed policy object reduces its contribution to the refusal counter, or it does not, in which case its contribution is applied as an increment of one. The continuous form makes that multiplier a continuous function of a count of recorded severance events across the class's constituent edges, the function being declared in the signed policy object and monotone in the severance count, whereby the contribution of a class rises with its accumulated severance history rather than upon satisfaction of a threshold.

1. The Gap

A meter that declines to judge merits has to price sources some other way. In U.S. Provisional Application No. 64/117,812, the refusal counter (304) increments upon the refusal by the semantic agent (100) of a conduct evaluation artifact (116) without the agent, the principal, the asserting party (118), or any further party determining whether the refusal was well founded. Section 3.4 adds that the procedure does not weight the increment by any measure of the strength of the contradiction found between the

artifact and the retrieved entries of the append-only lineage field (104). Whatever distinction the structure draws between sources rests on the weight attached to a class's contribution.

Section 2.5 supplies that weight. Where every constituent edge of an origin-equivalence class (200) resolves not-typeable under the severance-survival test, the class is designated an untested class, and where the recorded introduction paths of its asserting parties (118) converge upon a common ancestor entry of the lineage field (104), a cost multiplier declared in the signed policy object (112) applies to its contribution. That multiplier is greater than zero and less than unity, so the class contributes below a single class whose edges resolve want-sustained, and a newly encountered party retains capacity to correct the agent.

The designation itself is all or nothing. Paragraph [0074] imposes no condition beyond failure of an edge to resolve to a type other than not-typeable, and one constituent edge resolving otherwise ends the designation for the whole class. Above that boundary the multiplier does not apply and the contribution is an increment of one. Below it the declared multiplier applies at one value however many severance events the class has recorded, since an edge carrying a severance not survived within the declared continuation interval, or whose outcome is not yet recorded, still resolves not-typeable.

Paragraph [0490] removes the boundary. The multiplier stops being a fixed value applied upon a threshold designation and becomes a continuous function of the count of recorded severance events across the class's constituent edges, declared in the signed policy object (112) and monotone in that count.

2. Mechanism

What gets scaled is neither the artifact, nor the determination, nor the asserting party (118). It is the contribution of an origin-equivalence class (200) to the refusal counter (304). Section 2 charges that counter per source of assertion rather than per assertion,

a source being a set of asserting parties (118) between which the semantic agent (100) demonstrates a relation from its own records. A per-class increment register records whether a class has contributed within the current window, and the increment procedure consults it first, terminating without incrementing where the class has. One contribution per class per window is what the multiplier prices.

The argument of the function is a count of recorded severance events across the class's constituent edges. Section 11 defines a severance event as an entry of the append-only lineage field recording a structural change terminating the capacity of the agent and a counterparty to interact, comprising at least a severance class and a recorded time. Section 10.1 supplies the classes: a payment class evidenced by cessation of a recorded settlement obligation, or an obligation class evidenced by lapse or revocation of a contract or enforcement record. Survival state over each is computed structurally and never inferred from message content or from a party's declaration.

Where the function lives is stated; little else is. It is declared in the signed policy object (112), and paragraph [0490] recites two properties and no third: continuity, and monotonicity in the severance count. Direction comes from the paragraph's closing clause, under which a class's contribution rises with its accumulated severance history, so a class holding no recorded severance event sits at the low-contribution end of whatever function is declared.

Arithmetic able to receive a multiplied contribution already exists in the filed structure. The rate counter (306) carries a rate accumulator holding an integer count of increments applied at full weight in the current window, and a weighted contribution register holding a rational quantity that accumulates multiplied contributions. Where the multiplier applies, the contribution bypasses the accumulator and is added to the register, which is neither rounded nor truncated. At comparison against the rate threshold, the window rate is the integer count plus the register value rounded down. Rounding happens at comparison alone, nothing rounded is written back, and a residue below one carries across contributions and is discarded upon reset.

None of this reaches adjudication. Normalization suppresses no determination; it governs the metering alone. Section 2.5 adds that the multiplier neither excludes the class, nor suppresses determinations produced for its artifacts, nor prevents full-weight contribution once the class accumulates recorded severance events. The gate write withholds the faculty of execution alone.

Recomputation is bounded to three triggers: receipt of an artifact from a party assigned to the class, before the increment procedure consults the register; append of a severance event against a constituent edge, or of an entry carrying such an edge to a survived value; and a merge under Section 2.3, the merged class being untested where and only where every edge of it resolves not-typeable. A merge decrements neither accumulator nor register, and a recomputation that changes the result governs contributions applied after the append rather than one already applied.

3. Operating Parameters

The filing declares the following and no functional form beyond it.

- The declared function is continuous and monotone in the count of recorded severance events across the class's constituent edges. Paragraph [0490] states no exponent, coefficient, base, floor, or cap.
- The baseline cost multiplier of Section 2.5 is greater than zero and less than unity, whereby the class contributes below a class whose edges resolve want-sustained.
- The rate threshold is an integer greater than one; the run threshold is an integer greater than one and not greater than the rate threshold. Both are retrieved from the signed policy object (112) in force, or from one resolved by canonical alias under the anti-rollback monotonicity constraint.
- The window over which the rate counter (306) accumulates is expressed as an interval of wall-clock time, a count of conduct evaluation artifacts (116) received, or a count of successor epochs of the agent's dynamic hash chain, the last advanced by no other party and by no clock available to the hosting node.

- An edge survives a severance where, within a declared continuation interval following the recorded severance event, a subsequent event of that class is recorded against that edge and re-establishes it.
- Advance of the window resets the rate accumulator, the weighted contribution register, and the per-class increment register (312), but not the run accumulator.

Section 2.6 exercises the register arithmetic in the baseline form. A policy object declares a rate threshold of five, a cost multiplier of one fifth, and an introduction-path depth of two. Forty artifacts arrive from forty asserting parties (118) sharing no declared relation type, each newly encountered and none having a recorded severance event, and forty classes are formed, all designated untested. The introduction paths of thirty-five converge at depth two, each adding one fifth to the weighted contribution register, which reaches seven; the other five do not converge, contribute at full weight, and carry the rate accumulator to five. The window rate is twelve and the threshold is satisfied. Every party there stands at a severance count of zero, the count paragraph [0490] makes the argument of the declared function.

4. Composition

Two operations sit in series. Origin-equivalence normalization collapses identities into one class, using relation types declared in the signed policy object (112) and evidenced from entries the agent already holds; pricing then applies to the class so formed. Paragraph [0490] changes the second operation and leaves the first as filed.

Section 3.4 bars the increment procedure from weighting an increment by any measure of the strength of the contradiction found, from consulting the merits of the rejected determination (124), and from comparing retrieved lineage entries against a record held by another party. No field of the refusal counter (304) holds a merits outcome. What paragraph [0490] grades by is a count of entries of the agent's own lineage field (104), resolved by the structural test of Section 10.1.

Only the rate leg is affected. The run accumulator holds an integer count of consecutive increments applied without an intervening accepted determination (122) for the same action class, and is reset by such a determination alone. Section 3.2 compares both accumulators against their thresholds, and the gate write of Section 3.5 follows where both comparisons are satisfied.

The alternative accumulator of Section 3.6 takes the same term. Where the rate accumulator is replaced by an exponentially weighted accumulator, the decayed value is multiplied by a declared decay factor upon advance of the successor epoch and raised, upon an increment, by the contribution of that increment: unity at full weight, and the declared cost multiplier where the multiplier of Section 2 applies.

Restoration reads the same count. Under Section 10.1, the amount by which a renewal raises the authorization quantity, and the amount by which it replenishes the authorization budget (404), are each a monotonically non-decreasing function of the count of recorded severance events across the renewing class's edges, a class each of whose edges resolves not-typeable renewing at a declared least amount and not restoring full authorization. Paragraph [0488] carries the same severance-survival test onto the issuance side, conditioning the issuance decrement on the reason-type of the edge to the receiving party.

5. Prior-Art Distinction

Reputation and trust systems compute a score for an entity from ratings supplied by other entities and expose it to parties deciding whether to transact, the score sitting at a registry, a scoring authority, or a shared ledger, where the scored entity neither holds it nor participates in its computation. Defenses against unfair ratings there, exemplified by the TRAVOS trust model, beta-reputation filtering, and the immunization mechanisms surveyed by Dellarocas, filter incoming ratings before aggregation to protect the stored score. Two structural differences hold: the filtering party is a disinterested aggregator rather than the rated entity, and filtering costs it nothing,

whereas a refusal here increments a counter that can withhold the refuser's own faculty of execution. Role-weighted extensions such as the FIRE trust model add role-derived weightings, but those roles are exogenous designations asserted by other parties, not quantities drawn from the evaluated entity's own record of how its relationships terminate.

Behavioral integrity systems compute a conformity measure against a baseline of expected behavior, compare it against a threshold, and reduce capability upon a deficient comparison. Probation structures apply decay and penalty values to a reputation value, place the entity in probationary status, and lift that status after an interval of operation without incident. Each gates a capability change on a threshold comparison, and each reads uneventful operation as positive evidence. Neither axis appears here: no threshold sits inside the multiplier, no capability of the asserting party changes, and the withheld state (310) persists irrespective of elapsed time.

Sybil-resistance schemes resolve identity against a shared registry or a coordinating authority. The filed disclosure computes the origin-equivalence class (200) from the agent's own records, without a centralized registry and without coordination with a further execution node, and the graded multiplier excludes no identity.

A graded weight is also not a throttle. Section 3.5 states that the structure does not silence, rate limit, or disable the refusing party, the faculty of refusal being neither withheld, reduced, nor conditioned by the gate write. Assertions are still received and determinations still appended; the graded quantity applies to the meter, not the input channel. None of the foregoing describes any party's products or conduct; the comparison is to published structures and the categories they occupy.

6. Disclosure Scope

The continuous-function cost multiplier is disclosed in U.S. Provisional Application No. 64/117,812, Section 10.11, at paragraph [0490], composing with the untested-class cost multiplier of Section 2.5, the refusal counter of Sections 3.1 and 3.2, the merit-independence rule of Section 3.4, and the severance-conditioned renewal of Section 10.1.

Disclosed: applying, to the contribution of an origin-equivalence class to a refusal counter, a cost multiplier that is a continuous function of a count of recorded severance events across that class's constituent edges rather than a fixed value applied upon a threshold designation; declaration of that function in a signed policy object; its monotonicity in the severance count; and the property that a class's contribution rises with its accumulated severance history rather than upon satisfaction of a threshold. Also disclosed is the accumulation path receiving such a contribution, a weighted contribution register of rational quantity summed with an integer rate accumulator and rounded down at comparison alone.

Disclaimed: any particular functional form, coefficient, exponent, or numeric value for the declared function, none being stated in the filed disclosure; any claim to the detection or recording of severance events as such; and any claim to reputation scoring, rate limiting, or Sybil resistance in general. This publication is a defensive technical disclosure. It grants no license under any patent or application and makes no representation regarding any third party's system or product.

Merit-Independent Metering ([/merit-indep](#) [All 49 steps → /inventive-steps](#))
[endent-metering](#))

A refusal costs the refuser — in a different faculty, without judging who was right.

Provisional application

PRIMARY TECHNICAL DISCLOSURE

- [Merit-Independent Metering: Pricing an Agent's Refusals Without Adjudicating Merit \(/articles/merit-independent-metering/pricing-refusal-without-adjudicating-merit\)](/articles/merit-independent-metering/pricing-refusal-without-adjudicating-merit)

SECONDARY TECHNICAL

- [The Prospective Narrowing Bar and Deflection Scoring \(/articles/merit-independent-metering/prospective-narrowing-bar-deflection-scoring\)](/articles/merit-independent-metering/prospective-narrowing-bar-deflection-scoring)
- [**The Continuous-Function Cost Multiplier \(/articles/merit-independent-metering/continuous-function-cost-multiplier\)**](/articles/merit-independent-metering/continuous-function-cost-multiplier)
- [The Renunciation Record: Relinquishing an Adopted Value on the Record \(/articles/merit-independent-metering/renunciation-record\)](/articles/merit-independent-metering/renunciation-record)
- [Lapse Scoring During Pendency \(/articles/merit-independent-metering/lapse-scoring-during-pendency\)](/articles/merit-independent-metering/lapse-scoring-during-pendency)
- [Multi-Descriptor Aggregation and Determination-Class Ordering \(/articles/merit-independent-metering/multi-descriptor-aggregation-ordering\)](/articles/merit-independent-metering/multi-descriptor-aggregation-ordering)

TERMINOLOGY

- [merit-independent metering \(/glossary#merit-independent-metering\)](/glossary#merit-independent-metering)
- [non-executing cognitive mode \(/glossary#non-executing-cognitive-mode\)](/glossary#non-executing-cognitive-mode)
- [refusal counter \(/glossary#refusal-counter\)](/glossary#refusal-counter)

[Merit-Independent Metering overview → \(/merit-independent-metering\)](/merit-independent-metering)