

Distinguishing Interpretive Uptake from Dynamical Influence in Generative Relational Models of Social Meaning

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Abstract

A signal can change an interpreter’s trajectory through heat, salience, coercion or understood content. A general relational dynamics accommodates these possibilities while leaving their semantic differences open. This paper develops a proposed bridge between labelled consequence profiles and claims about interpretive uptake. It distinguishes reference, inferential use, practical significance and institutional force, together with episode uptake, correctness and action. Matched contrasts expose content–nuisance confounding. Conditional identification results characterize the semantic roles compatible with a declared model family and show how additional tests refine that set. A finite-test construction establishes a precise limit on unrestricted extrapolation. An interactive extension separates evidence about an earlier interpretation from formation of a present interpretation, and an exact state-elimination derivation exhibits retained organization and local memory. Shared request and institutional-token examples compare the warrants required by different semantic targets. Verified communication, communicative-intention and grounding accounts supply antecedents and disagreements. The philosophical argument treats semantic bridges themselves as revisable objects of public criticism, especially where correctness standards and opportunities to respond are unequally controlled. A prospective study specifies contrasts, rival explanations and counterconditions. The resulting position supports scoped semantic attribution while preserving the distinction between mathematical identification, conceptual warrant and empirical validation.

Keywords: interpretive uptake; semantic attribution; relational dynamics; consequence profiles; identification; interactive interpretation

Research Note

This paper develops a bounded argument through conceptual distinctions, stated assumptions, conditional derivations, worked examples, and objections. Its length follows the requirements of that argument. Formal statements concern the specified models; the application of those models to persons and institutions requires independent interpretation and evidence. Constructed examples are explicitly identified and carry illustrative status.

The manuscript follows the repository’s paper template for typography, numbered formal statements, section structure, citations, and navigable contents. The associated project files preserve research provenance, source verification, derivation records, unresolved objections, and validation results. Philosophical commitments about the ultimate nature of social facts remain suspended where the descriptive framework is sufficient for the argument.

Authorship and Research Assistance

Wanhong Huang directed the research questions and authorized this paper’s preparation. An AI research assistant helped organize the material, develop explicit formal constructions, check primary sources, and prepare the text. Agent-added arguments and formulations remain subject to the author’s review. Source positions, repository proposals, and model consequences are distinguished throughout the manuscript.

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1 Introduction

An account of social meaning built from relational histories must explain the passage from a description of interaction to an attribution of interpretation. This paper examines that passage within a generative relational metamodel. Its scope is the warrant for attributing a specified semantic role to an episode or organized practice. The argument first separates semantic targets, then constructs comparative tests, derives their identification limits, and examines retained organization, philosophical objections and a prospective study.

Consider a spoken request to close a window. The acoustic event can startle a listener, interrupt another activity, indicate a speaker's presence, refer to a particular window, communicate a request and acquire a particular significance within a relationship. A listener may identify the request and refuse it. Another listener may close the window because a supervisor gestures toward it while understanding little of the utterance. The same final action therefore admits several histories, while the same understood request admits several actions. A dynamics that includes speakers, air pressure, bodily movement and institutional relations accommodates these differences. Describing everything within that domain supplies a common field of analysis; it leaves the interpretive distinctions to be justified.

The source research proposes that patterns, interpreters and situations develop within a common history. That proposal helps resist a picture in which complete meanings arrive from outside interaction and merely await execution. It also creates a danger: if every change in an interpreter counts equally as meaning, semantic attribution becomes coextensive with influence. Warmth from a display would then qualify on the same grounds as a recipient's understanding of its warning. The difficulty concerns the explanatory work of the attribution, independently of any ultimate account of what meanings are.

The central position is that a labelled consequence profile supports semantic attribution through a separately articulated bridge. Such a bridge specifies a target, the relevant content distinctions, evidential comparisons, rival explanations and criteria for revising the attribution. The bridge is a proposed research construction. Its legitimacy remains open to philosophical and empirical challenge. A bridge for reference can differ from one for institutional force even when both address the same signal.

Three separations organize the contribution. First, influence, uptake, correctness, acceptance and compliance answer different questions. Second, formal identification means uniqueness within declared alternatives, whereas the adequacy of those alternatives requires further justification. Third, a test may reveal an earlier organization and also contribute to a new organization. Preserving the time and target of the claim prevents evidence of learning during a test from being silently converted into evidence of prior understanding.

The formal results are deliberately elementary enough for their assumptions to remain visible. A confounding example motivates matched contrasts. A factorization argument states when observed profiles determine a target. A finite-test construction limits universal extrapolation. Exact elimination of a retained variable then exhibits memory in a local dynamics. These mathematical consequences establish relations within specified models. Their semantic application depends on the bridges developed in the surrounding argument.

The paper's six descriptive categories, entities, attributes, relations, states, events and processes, remain analytical resources. The argument suspends ontological conclusions about their ultimate status. Its objective is a disciplined connection between relational description and particular claims of interpretation, sufficiently explicit to support disagreement and prospective research.

2 Antecedent Distinctions in Communication and Meaning

This section locates four verified antecedents and identifies the work each leaves for the present inquiry. Communication engineering, communicative intention, symbol grounding and conversational grounding supply different questions. Their similarities to the repository's formulation are treated separately from commitments that this paper adopts.

Shannon’s communication problem concerns the reproduction of a selected message across a channel. His opening account places semantic aspects outside that engineering problem [4]. This restriction is useful here because successful transmission already presupposes a choice of what counts as the message. A channel can preserve a string while its recipients disagree about reference, force or relevance. The present paper uses that distinction between preserving a selected representation and warranting an interpretation; it imports none of the coding theorems into a theory of social understanding.

Grice’s account of non-natural meaning addresses intentions concerning an audience and the audience’s recognition of those intentions. His discussion also challenges a simple causal treatment of meaning [2]. This supplies an antecedent for distinguishing an intended communicative effect from any effect of an utterance. The present bridge framework has a wider range of targets, including institutional force and unintended significance. Recognition of communicative intention is therefore one possible target with its own warrant. Its importance in communication leaves open the appropriate analysis of warning signs, habitual practices and signals whose authorship is distributed.

Harnad’s symbol-grounding problem concerns the relation between symbolic interpretation and capacities grounded beyond merely formal symbol manipulation. His proposed architecture connects categorical and symbolic capacities [3]. This helps articulate the demand that attribution have support beyond an observer’s convenient gloss. The present paper leaves the architecture of interpreters open. Sensorimotor discrimination may support one bridge while remaining insufficient for a target involving an institution’s rules. Conversely, a criterion confined to overt bodily responses may miss a recipient who understands a request while suppressing its public expression.

Clark and Brennan describe grounding in communication through evidence of mutual understanding sufficient for the participants’ current purposes. Presentation and acceptance are coordinated achievements within constraints of the medium and task [1]. Their purpose-relative criterion is a close antecedent for the present insistence on a declared target and practical conditions. The additional question here is what warrants moving from such evidence to a particular semantic attribution when rival dynamics, unequal opportunities and changing interpretations are explicitly considered.

These sources already establish substantial distinctions that an account of relational meaning must confront. The contribution proposed here lies in organizing their relevant challenges around one methodological interface: a consequence profile together with a declared semantic bridge. A claim of novelty for each individual distinction would exceed the present source review. The reviewed works support bounded points, while the comparative framework and constructed cases remain repository proposals.

The antecedents also expose a productive disagreement. A target defined by a communicator’s intention, a target defined by successful task coordination and a target defined by an institution’s valid procedure may come apart. Suppose an authorized warning is accidentally displayed, correctly understood and ignored. Intention, uptake, procedural force and compliance then have different evidential profiles. Collapsing them under a single success variable would conceal the disagreement that an interdisciplinary account should explain.

The next section accordingly defines the objects of attribution before constructing their tests. This order gives literature a critical role without making one antecedent the predetermined answer to every question about social meaning.

3 Semantic Targets within a Common Dynamics

The formal vocabulary in this section locates semantic questions within a shared descriptive domain. It distinguishes types of object and levels of attribution, then states what the common dynamics contributes. The definitions are working choices for this paper; they carry no conclusion about an exhaustive classification of social reality.

Let $\mathcal{H}$ be a declared set of possible histories and X a space of configurations described at the chosen scale. A projection $\pi_t : \mathcal{H} \rightarrow X$ extracts the configuration relevant at time t . Let $\mathcal{R}$ contain token occurrences and $\mathcal{I}$ contain interpreter descriptions. These are typed descriptions drawn from a common history. A token and an interpreter may overlap materially, and the interpreter’s organization may change

through encounters with tokens. The use of separate symbols records analytical roles.

Definition 3.1 (Scoped semantic target). A semantic target is a query $u : \mathcal{H} \rightarrow \mathcal{U}$ whose domain, time and criteria of application are stated. The value may be a category, a structured description or an explicitly unresolved set of interpretations. An episode target concerns a particular encounter; a capacity target concerns an organization across specified encounters.

Four target families will recur. A referential target concerns which object or situation a token is taken to concern. An inferential target concerns its place in warranted or actually employed transitions among claims. A practical-significance target concerns its relation to an interpreter's concerns and possibilities. An institutional-force target concerns the standing conferred by applicable procedures. These families can overlap without becoming interchangeable. A request can refer clearly, be understood correctly and have little practical importance; an official act can have recognized force while its factual premise is false.

For an encounter e , write $U(e)$ for attributed uptake and $C(e)$ for correctness relative to a declared standard. Introduce separate variables $B(e)$ for acceptance or belief, $A(e)$ for action and $V(e)$ for procedural validity where applicable. Their ranges must be specified in an application. The notation imposes no implication such as $U \Rightarrow A$ or $V \Rightarrow C$. A listener can understand a false assertion; a recipient can recognize a valid instruction while reasonably opposing it. Treating uptake as invariably correct would erase misunderstanding from the phenomenon being studied.

The six descriptive categories clarify different aspects of the same episode. An interpreter may be described as an entity; fluency as an attribute; addressing someone as a relation; current readiness as a state; hearing a request as an event; and learning a convention as a process. These categories supply no universal temporal chain. A single history can warrant several descriptions, while each description requires its own scale and individuation choices.

Assumption 3.2 (Declared descriptive closure). The histories considered by a model contain the variables required by its specified transitions and observations. Whether this domain adequately represents an actual encounter remains an application question.

Closure is especially demanding when the target concerns an institution. A local recording of sounds and movements may omit authorization, prior commitments or the rule that makes a token consequential. Enlarging the domain can correct that omission. It also changes the claim's scope and its evidential burden. The model should record the enlargement explicitly.

The resulting metamodel is permissive: patterns, interpreters and situations can co-develop within one dynamics. Permissiveness is useful for avoiding premature exclusions. Semantic discrimination requires additional structure, which the next sections place in labelled comparisons and their interpretive warrants.

4 Labelled Consequence Profiles and Matched Contrasts

This section constructs an observable profile while preserving the identity of each test. It then derives a simple confounding example to show why dynamical discrimination alone leaves the semantic explanation open. The proposed comparisons concern admissible interventions in a declared setting.

Let K index tests. For $k \in K$, let P_r prepare an encounter with token r , P_0 prepare its matched reference, T_k describe subsequent evolution and o_k select an observation. Where all maps are defined, set

$$\mathcal{C}_{x,K}(r)(k) = (o_k T_k P_r(x), o_k T_k P_0(x)). \quad (1)$$

The ordered pair avoids assuming that outcomes can be subtracted. A categorical answer, a refusal and a change of practical orientation require a declared comparison before receiving numerical distances. The label k preserves which preparation and observation produced each result.

Example 4.1 (Loss of test identity). For two tests, let the token outcomes be $(0, 1)$ for r_1 and $(1, 0)$ for r_2 , with the same reference outcomes. Their unlabelled outcome sets both equal $\{0, 1\}$, whereas their labelled profiles differ at each test. Set equality would discard the distinction the experiment was designed to observe.

Matching also requires substantive judgment. Removing an utterance may alter the listener’s expectations; replacing it with noise may introduce a new social act. Equation 1 records the chosen preparation without guaranteeing its adequacy. A defensible comparison explains what is held fixed, what varies and which changes belong to the target mechanism.

To expose the issue, consider binary variables $c, n, y \in \{0, 1\}$. The investigator labels c a content distinction and n a nuisance feature, such as a salient display border. Two proposed response laws are $m_C : y = c$ and $m_N : y = n$. If observations occur only where $c = n$, both laws yield the same answers. On the full factorial design they yield

(c, n)	$(0, 0)$	$(0, 1)$	$(1, 0)$	$(1, 1)$
m_C	0	0	1	1
m_N	0	1	0	1.

(2)

The off-diagonal conditions distinguish the two laws. This conclusion follows by direct substitution, without a probabilistic assumption. If only the diagonal conditions are feasible, the proposed distinction remains unidentified by this design.

Random assignment to those conditions can support an inference about the assigned manipulation under appropriate execution and observation assumptions. It leaves the content label itself open to interpretation. A border may become a learned sign, or a wording change may alter politeness together with reference. Describing a feature as nuisance expresses a target-relative decision. The investigator must be prepared to revise that decision when participants’ practices give the feature significance.

Two useful diagnostic families follow. A content-preserving transformation is expected to preserve a specified uptake while varying a carrier feature. A content-changing transformation is expected to alter uptake while limiting irrelevant changes. These expectations are local hypotheses. A translation can preserve reference while changing social force; a paraphrase can preserve a proposition while changing difficulty. The selected target determines which invariance would matter.

Profiles therefore organize evidence without containing their own semantic interpretation. Their virtue is to make disagreement inspectable: one can contest the matching, the output coding, the content partition or the rival response laws separately. A semantic bridge records those commitments explicitly.

5 A Proposed Bridge for Semantic Attribution

The bridge introduced here makes the passage from a profile to an attribution explicit. Its components identify where conceptual interpretation, empirical evidence and normative standards enter. The construction is a proposed method, with its adequacy assessed through the objections and cases that follow.

Definition 5.1 (Semantic bridge). A bridge is a tuple

$$\mathcal{B} = (u, \mathcal{H}, \gamma, \mathcal{N}, K, \mathcal{M}, W). \quad (3)$$

Here u is the target query, $\mathcal{H}$ its scoped domain, γ a declared content classification or compatibility relation, $\mathcal{N}$ the relevant correctness and response criteria, K the labelled tests, $\mathcal{M}$ a family of candidate accounts, and W the reasons supporting the preceding choices and their application.

Figure 1 locates the separate inputs to this part of the argument. The lower input supplies conditions whose justification remains distinct from the relation represented along the upper path.

The components serve different purposes. The content classification says which differences the inquiry treats as semantically relevant. The criteria distinguish attribution from evaluation: understanding

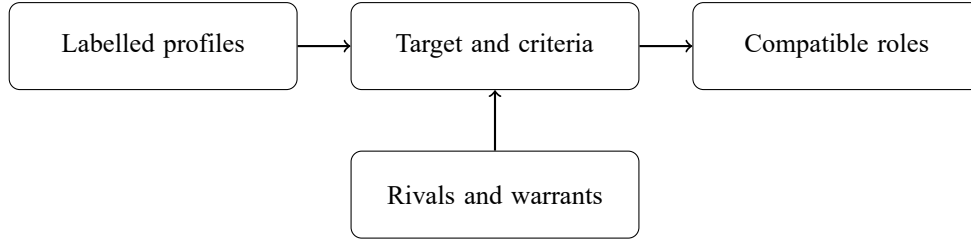


Figure 1: Semantic attribution through a declared bridge. Arrows show the declared organization of the argument; their empirical or institutional warrant requires the accompanying analysis.

an instruction and complying with it can receive separate codes. The candidate family represents substantive rivals, including mechanisms that reproduce the observations without the proposed uptake. The warrant W records why the criteria and rivals fit the case, what remains contested, and what evidence would require revision. It is an argument dossier, not a numerical variable that makes the other assumptions true.

This separation helps avoid circular validation. Suppose an investigator defines understanding as producing answer a , observes a , and then announces that understanding explains the answer. The classification is operationally clear but explanatory support remains thin. A stronger bridge predicts additional distinctions using independently justified features of the target. For reference, this might include transfer across changes in location while tracking the same object. For an inferential role, it might concern appropriately qualified use in a new argument. Independence is relative to the claim: the additional evidence should discriminate a live rival rather than merely repeat the defining response.

The requirements also protect errorful uptake. A listener who consistently takes “the north window” to identify the east window may exhibit an organized interpretation with a specific error. A coding scheme that records only correct closure collapses this case with indifference, refusal and motor failure. The bridge should permit a structured value, such as attributed referent together with confidence and correctness status, when the research question requires it. Greater detail increases the evidence needed; it is justified by the distinctions the inquiry actually pursues.

Claim 5.2 (Scope of bridge-supported attribution). When the target, candidate family and evidence relation are warranted, a consequence profile can support a scoped semantic attribution. The mathematical uniqueness of that attribution within the family leaves the warrant for the family and target separately answerable.

This is a methodological claim. Its defense rests on the mismatch between semantic targets and unqualified effects, together with the need to make rival explanations explicit. It remains compatible with different substantive theories of meaning. A theory may propose that certain dynamical organizations constitute meaning; it then owes a justification of those particular organizations and the intended target. Merely enlarging the description to include every causal condition postpones that work.

Bridge construction itself can become a social intervention. In an institution, the accepted definition of understanding may determine whose objection counts, whether a refusal is intelligible and which interpretation becomes official. Such consequences create reasons to include participant disagreement and opportunities for correction within W . Public agreement on a bridge supplies procedural support; whether its classifications are adequate or just remains open to further criticism.

6 Identification within a Declared Model Family

This section derives the exact relation between evidence and target uniqueness. It then identifies a limit on extending finite observations to unrestricted behavior. These results concern a fixed mathematical family; the preceding bridge supplies the separate argument for using that family.

Let $\mathcal{M}$ be nonempty. A candidate $m \in \mathcal{M}$ determines a labelled observation $R_K(m) \in \mathcal{D}_K$ and a target value $u(m) \in \mathcal{U}$. The same symbol u now denotes the induced query on candidate accounts. For compatible data d , define

$$\mathcal{I}_K(d) = \{u(m) : m \in \mathcal{M}, R_K(m) = d\}. \quad (4)$$

An empty set indicates a conflict between data and the family under the exact model. A singleton yields exact target identification within that family. Multiple values preserve substantive uncertainty.

Proposition 6.1 (Target factorization). *There exists a map $g : R_K(\mathcal{M}) \rightarrow \mathcal{U}$ such that $u = g \circ R_K$ if and only if u is constant on every observation fiber $\{m : R_K(m) = d\}$.*

Proof. If $u = g \circ R_K$, two candidates with equal observations have the same image under g and therefore the same target. Conversely, for every attainable d , choose a candidate m producing d and set $g(d) = u(m)$. Constancy on the fiber makes this value independent of the choice. Every candidate then satisfies $g(R_K(m)) = u(m)$. $\square$

This is the elementary factorization criterion already used by the repository’s record and horizon models. Its application here states exactly what a profile must preserve for a chosen semantic query. It establishes neither a general theory of meaning nor the observability of every interpretation.

Proposition 6.2 (Refinement by additional tests). *Suppose $K \subseteq K'$ and restriction of $R_{K'}(m)$ to K equals $R_K(m)$ for every candidate. With the same target and family, compatible extended data d' satisfy*

$$\mathcal{I}_{K'}(d') \subseteq \mathcal{I}_K(d'|_K). \quad (5)$$

Proof. Every candidate matching d' also matches its restriction. Thus the extended-data candidate set is a subset of the earlier set. Applying the same target query to these sets preserves inclusion. $\square$

Additional tests may leave the set unchanged. They may also reveal misspecification, requiring an enlarged family. If a dialogue changes the target from earlier to present interpretation, the fixed-target assumption fails. Apparent expansion of uncertainty after such revision is compatible with the proposition’s limited scope.

Proposition 6.3 (Finite-test extrapolation limit). *Let K be a finite proper subset of a test domain T , and let $\mathcal{M}$ contain every function from T to $\{0, 1\}$. For any observed restriction $f|_K$ and any $t_* \in T \setminus K$, both possible values at t_* remain compatible.*

Proof. Extend the observed function arbitrarily to T . Make two copies, setting the value at t_* to zero in one and one in the other while preserving every value on K . Both belong to the family and match all observed tests. $\square$

The result targets unrestricted extrapolation. Structural constraints, justified learning models or additional observations can reduce the family. Finite evidence can consequently support substantial, defeasible attributions. Calling every untested alternative equally plausible would introduce a further assumption absent from the proof.

An adaptive finite dialogue requires similar care. Fix the investigator’s policy and a realized transcript. A response rule can reproduce every answer along that path while differing at an unvisited history. Covering an entire bounded finite dialogue tree removes this particular unvisited-node construction for that tree. Extension to new settings still requires a transport argument. The semantic bridge should state which form of generalization is intended.

6.1 Bounded observation error and discrimination margins

This extension replaces exact profile equality with a declared error bound. It separates uniqueness in an ideal model from the robustness of an attribution to observational imprecision. The construction supplies a conditional diagnostic, leaving the choice and calibration of the error bound to an application.

Suppose profiles lie in a metric space $(\mathcal{D}, d)$ and observed y differs from the predicted profile by at most $\varepsilon \geq 0$. Define

$$\mathcal{I}_\varepsilon(y) = \{u(m) : m \in \mathcal{M}, d(R(m), y) \leq \varepsilon\}. \quad (6)$$

The distance must have a target-appropriate interpretation. A count of discrepant categorical responses and a Euclidean distance between response probabilities represent different observation models. Choosing a metric merely for convenience can obscure which errors are plausible.

Proposition 6.4 (Separated target classes). *Suppose profiles for different target values satisfy*

$$d(R(m), R(m')) > 2\varepsilon \quad \text{whenever } u(m) \neq u(m').$$

Then every nonempty compatible set $\mathcal{I}_\varepsilon(y)$ is a singleton.

Proof. If two target-distinct candidates were compatible with y , the triangle inequality would give $d(R(m), R(m')) \leq d(R(m), y) + d(y, R(m')) \leq 2\varepsilon$, contradicting the separation condition. $\square$

In a normed vector space, the threshold has a direct counterexample. When target-distinct predicted profiles are at distance at most 2ε , their midpoint lies within ε of both. That midpoint is therefore an admissible observation under an unrestricted bounded-error model and leaves the targets unresolved. If actual observations occupy a more restricted set, midpoint feasibility requires checking. The strict inequality in the sufficient condition cannot be casually replaced with a weak inequality.

This result exposes a weakness in relying on ideal discrimination alone. Two candidates with outputs zero and 0.001 are distinct under exact observation, yet an error tolerance of 0.01 can make both compatible with the same measured value. Adding a contrast may improve their separation, but only if the measurement and model for that contrast are justified. A larger data vector can also accumulate additional measurement uncertainties.

Model and bridge uncertainty require a further distinction. If several bridges use genuinely comparable target values, one may report the union of their compatible sets while retaining the bridge label. If their targets differ, such as reference and institutional force, an unlabelled union loses meaning. The appropriate object is a family indexed by bridge and target. This preserves disagreement over the question itself alongside uncertainty in the answer.

The bounded-error construction therefore supports a more cautious empirical use of the earlier propositions. Exact factorization addresses ideal information; margins address tolerance to a specified class of error; bridge evaluation addresses whether the target and candidate accounts deserve use. Each layer can fail independently.

7 Interaction, Correction and Changing Targets

The preceding refinement result holds a target fixed. This section considers encounters that change the interpreter and thereby change what the inquiry is about. It distinguishes historical inference, present interpretation and an organized capacity for future encounters.

Let z_t describe retained organization, r_t an encountered token and a_t a response or interaction. A proposed update has the form

$$z_{t+1} = U(z_t, r_t, a_t), \quad a_t = G(z_t, r_t, c_t), \quad (7)$$

where c_t records other relevant conditions. These equations are a construction schema. They acquire content only when the variables, admissible histories and observation relations are specified. An account of feedback should include how a_t alters later tokens or situations when that connection matters.

Three queries now differ: u_0 , the interpretation before clarification; u_t , the interpretation at a later encounter; and u_{cap} , a capacity across a declared family of future situations. A participant's later correct answer can support u_t while leaving several values of u_0 compatible. The dialogue may have supplied a missing distinction. Attributing that distinction backward would turn evidence of formation into a historical claim without justification.

Consider a constructed correction sequence. A speaker asks for the north window to be closed. The listener approaches the east window. The speaker then points north and contrasts the two windows. The listener closes the north window and later identifies it from another position. This sequence supports several descriptions: an initial referential error, a correction, a presently successful identification and some transfer. Whether the initial action resulted from misunderstanding, inattention or a contrary intention requires additional evidence. The full trajectory has greater discriminating value than its final outcome, but it still admits rivals.

A test can also change the response conditions without changing the interpretation. A listener who initially refuses to answer may respond after receiving reassurance about confidentiality. The new answer can reveal an earlier interpretation, alter that interpretation, or combine both effects. Introducing a latent update variable alone resolves none of these possibilities. A prospective design must supply contrasts and evidence that address them.

Definition 7.1 (Target-preserving evidence extension). An interactive evidence extension is target-preserving when its newly collected observations are evaluated against the same historical query and a model family that includes the interaction's effects on later states. A current-state query after the interaction is recorded separately.

This definition permits the identification framework to handle interaction without pretending that the interpreter remains unchanged. A candidate history contains both its earlier organization and its response to the test. The historical query can remain fixed while observations accumulate. The cost is a richer candidate family and a stronger burden of model justification.

Correction also has a normative aspect. An institution may classify a participant's disagreement as an error requiring repair, while the participant identifies an ambiguity or rejects the institution's premise. A bridge that treats all convergence toward the institution's answer as improved understanding would pre-judge the dispute. Recording who supplied the standard, which alternatives were excluded and whether refusal remained available makes that issue assessable.

The proposed approach therefore preserves dialogue as both a source of evidence and a process of formation. These roles can coexist in one encounter. Their analytical separation clarifies what has been learned about a past interpretation and what has been achieved through present interaction.

8 Retained Organization and Local Memory

This section derives a small dynamical example to clarify how historical dependence can appear when retained organization is omitted from a local description. The example repairs any inference from visible-state equality directly to equality of an interpreter's future trajectory. Its mathematical content is a conditional linear calculation, with semantic application left to an additional bridge.

Let $x_t, z_t \in \mathbb{R}$ and let $a, b, c, d \in \mathbb{R}$ be fixed coefficients. Suppose the full discrete dynamics is

$$x_{t+1} = ax_t + bz_t, \quad z_{t+1} = cx_t + dz_t, \quad (8)$$

with initial conditions (x_0, z_0) . Interpret x as a selected visible variable and z as an omitted retained variable. These roles are stipulated for the example; the equations alone carry no psychological interpretation.

Proposition 8.1 (Exact retained-state elimination). *For $t \geq 0$, with an empty sum equal to zero,*

$$z_t = d^t z_0 + c \sum_{j=0}^{t-1} d^{t-1-j} x_j, \quad (9)$$

$$x_{t+1} = ax_t + bd^t z_0 + bc \sum_{j=0}^{t-1} d^{t-1-j} x_j. \quad (10)$$

At $t = 0$, the initial term uses $d^0 = 1$, including $d = 0$.

Proof. Equation 9 holds initially. If it holds at t , substitute it into $z_{t+1} = cx_t + dz_t$. Multiplication by d raises each previous power by one, while the term cx_t supplies the new summand with power zero. This proves the formula at $t + 1$ by induction. Substitution into the first equation of 8 yields 10. Conversely, defining z_t by 9 for a sequence satisfying 10 recovers both full recurrences. $\square$

The local equation contains a retained initial condition and a weighted history of x . Omitting either term changes the model. In particular, two full states can have equal x_t and different z_t ; their next visible values differ by $b\Delta z_t$. When $b \neq 0$, unrestricted equality of present visible states therefore fails to determine equality of their next visible states. When $b = 0$, the visible dynamics closes as $x_{t+1} = ax_t$, providing an explicit countercondition.

An alternative elimination gives a finite-order description. From the full recurrences,

$$\begin{aligned} x_{t+2} &= ax_{t+1} + b(cx_t + dz_t) \\ &= (a + d)x_{t+1} + (bc - ad)x_t. \end{aligned} \quad (11)$$

The substitution uses $bz_t = x_{t+1} - ax_t$ and requires no division by b . For reconstruction when $b \neq 0$, $z_t = (x_{t+1} - ax_t)/b$. When $b = 0$, solutions of the second-order recurrence must additionally satisfy the first-order initial constraint $x_1 = ax_0$ to represent this full model.

This second description shows why memory claims require a declared state representation. A first-order full state, a history-dependent projected equation and a second-order visible equation can describe the same trajectories under their appropriate initial conditions. The presence of a memory term does not by itself establish a distinctive semantic mechanism.

Even within the example, decay depends on parameters. If $|d| < 1$, the explicit initial-state term decays geometrically; the feedback term can still sustain or amplify visible behavior through the coupled dynamics. Stability of the whole system requires conditions on the full transition matrix. Inferring stable understanding from decay of one omitted component would therefore exceed the derivation.

The philosophical use is limited and precise. Equal immediate observations may conceal different retained organizations, while a richer history or state description may discriminate them. Whether the discriminated organization constitutes a semantic difference depends on the target. Two histories can differ materially yet support the same referent, just as identical visible answers can conceal different interpretations.

8.1 Target-indexed compression of retained histories

This extension asks which historical distinctions need to survive for a particular semantic query. It connects retained organization to the earlier factorization argument while preserving the difference between an adequate record and a complete history.

Let $\rho : \mathcal{H} \rightarrow \mathcal{Z}$ be a retained description of a history. A target u is recoverable from it when $u = \bar{u} \circ \rho$. If two histories merge under ρ while their semantic target differs, recovery fails by Proposition 6.1. If they differ in many respects while sharing the target, merging them can preserve that query. The relevant compression is consequently indexed by the query, not by a general quantity of historical detail.

Consider two learning histories. One listener acquired a window convention through direct correction and another through observation of others. Suppose the declared target concerns only their present

referent for a token and both identify the same window. A record that merges their learning routes may preserve that target. If the query concerns whether direct correction contributed to the present organization, the same compression can fail. The examples illustrate different questions without assuming that the stipulated histories have been observed.

A family of future encounters adds another requirement. Let K index those encounters and let $u_K(h)$ be their labelled target profile. A retained description sufficient for one present referent may be insufficient for u_K . The distinction explains why a capacity attribution demands evidence beyond a single episode even when the episode attribution is well supported. Expanding K changes what historical distinctions the retained description must preserve.

The underlying history itself remains model-relative. If the domain omits a participant's alternative convention, the record may appear sufficient only because the relevant counterhistory was excluded. A compression theorem therefore cannot certify the adequacy of the history domain. The bridge's warrant must address both which histories are admitted and which distinctions matter to the target.

These points refine the source intuition that history remains operative in interpretation. Some historical differences can be irrelevant to a scoped attribution; others become indispensable under a changed question. The contribution of memory is consequently more precise when described through retained distinctions and declared future encounters than through a universal demand to preserve every past detail.

9 Comparative Interpretation of Shared Cases

This section applies several bridges to shared constructed encounters. Holding the encounter fixed makes their different questions visible. The cases illustrate logical possibilities; claims about their frequency or psychological realization require separate evidence.

For the window request, Table 1 identifies a different comparison for each target. Correctly selecting a window can support reference while leaving the listener's appreciation of urgency open. A participant may also grasp urgency and oppose the request because it conflicts with another obligation. Interpreting opposition as failure of uptake would make compliance part of the criterion by stipulation.

Consider next two displayed warnings with identical wording. One is issued through the recognized procedure; the other is a training copy left on a screen. Recipients may react identically. A bridge concerned with attributed urgency can treat that similarity as relevant evidence. A bridge concerned with institutional force must inspect provenance and the applicable rule. The local effect profile is consequently insufficient for the latter query even when it predicts behavior accurately. Enlarging the history to include issuance can improve identification without making the behavior itself a validity test.

The reverse difference is also possible. The same valid warning reaches one experienced recipient and one unfamiliar with its convention. Its force within the stipulated procedure remains fixed while uptake differs. An account that identifies force with the audience's actual reaction would lose this distinction. An account that identifies force solely with rule compliance would leave the recipient's understanding unanswered. Both are legitimate targets when clearly named.

A correction case reveals a further distinction between inferential competence and local repetition. After an explanation, two listeners repeat the same sentence. One can apply its qualification to a new case; the other repeats it across conflicting cases. Transfer evidence can discriminate these candidates within a suitable family. Yet broad competence remains a stronger claim than success on the tested transfer. Proposition 6.3 makes the extrapolation obligation explicit.

Finally, a signal may carry significance that its issuer neither intended nor recognized. A change in greeting can alert a colleague to a deteriorating relationship. A bridge centered on communicative intention may classify the episode differently from one centered on the recipient's practical interpretation. Preserving both descriptions allows inquiry into how unintended effects become meaningful within a relational history. It also prevents the analyst from treating every unintended effect, such as a transient temperature change, as equivalent evidence of significance.

Table 1: Target-specific warrants in a shared request encounter

Target	Relevant comparison	Countercondition to examine
Reference	Track the designated window after a change of viewpoint	A pointing cue alone determines selection
Inferential use	Explain implications and qualifications in a new example	A rehearsed phrase reproduces the expected answer
Practical significance	Relate the request to the listener's concerns	Compliance follows coercion despite accurate uptake
Institutional force	Establish applicable rule, role and valid issuance	A convincing token lacks the required authorization

The cases support a plural organization of the inquiry. Different bridges can share observations, conflict over classifications or expose missing variables. Their comparison is productive when each states its target and criteria. A single undifferentiated score of “meaning” would compress the very distinctions that explain why the cases differ.

10 Philosophical Warrant and Its Counterconditions

This section examines objections to the proposed bridge. The central issues are dependence on prior semantic interpretation, the reach of behavioral evidence, plural standards and the authority to define correctness. Each objection identifies a condition under which the method should be revised or its conclusion narrowed.

The first objection is circularity: a bridge already uses content classifications and therefore presupposes what it seeks to explain. This objection succeeds against a claim to derive every semantic distinction from an uninterpreted dynamics. The present project pursues a different explanatory scale. It asks what warrants a particular attribution given contestable distinctions and candidate accounts. Explicit premises make that dependence available for criticism. A future theory of the genesis of those distinctions would add an explanatory task; it would still need to specify which changes in organization count as the relevant genesis.

A second objection concerns inner understanding. A person might understand every tested token while being unable or unwilling to display that understanding. The objection shows why overt performance should be linked to uptake through a model of response opportunities and constraints. It also places a limit on verdicts drawn from failed performance. A bridge can return unresolved attribution when refusal, expression difficulty and misunderstanding remain compatible. This is a determinate account of the evidential situation, even when it leaves the underlying interpretation unsettled.

A third objection concerns successful imitation. An artificial or human system may reproduce tested responses through an organization the investigator regards as inadequate for understanding. The finite-test result makes the empirical underdetermination explicit. Resolving the remaining dispute requires an account of why the candidate difference matters to the specified semantic target. Calling the organization an imitation already invokes such a standard. Behavioral equivalence under a chosen family neither settles every philosophical target nor renders behavioral evidence irrelevant.

A fourth objection holds that plural bridges invite arbitrary attribution. Plurality becomes arbitrary when incompatible standards are switched opportunistically or insulated from counterexamples. The proposed method counters that risk through declared scope, stable test labels, independent warrants and revision conditions. Two bridges may remain in reasoned disagreement. For example, an institution's authorized meaning and a participant's practical significance may diverge without either target being incoherent. A theory of that divergence may explain more than a forced choice of one privileged meaning.

Power enters through the ability to fix the target and impose its consequences. A supervisor may define understanding by obedience; an investigator may code hesitation as error; a community may protect one conventional interpretation from challenge. The bridge framework can expose these moves by

distinguishing uptake, correctness, acceptance and action. Exposure alone supplies no complete theory of justice. The proposed normative requirement is more limited: consequential classifications should be open to reasons, correction and challenge by affected participants where those opportunities can be provided.

There are also costs to extensive testing. Repeated demands for proof of understanding can burden participants or alter the relation being studied. A proportionate inquiry selects contrasts that address substantive rivals and states what remains unresolved. The ability to imagine further tests creates an open research horizon, not an unlimited entitlement to obtain them.

The resulting philosophical stance is fallible and scoped. A bridge can justify an attribution through a convergence of conceptual and empirical reasons while preserving grounds for revision. Its success is measured by the distinctions it explains, the counterconditions it handles and the transparency of the commitments on which its conclusions depend.

11 A Prospective Study of Interpretive Uptake

The proposed study translates the bridge into an inspectable comparison. Its purpose is to distinguish a small family of candidate accounts of a spatial request, while separately recording interpretation formed during clarification. The design remains a proposal; the paper reports no participant data or validated diagnostic instrument.

The initial task would use a fictional room with several labelled windows and a request that identifies one of them. The target is the participant's attributed referent for that occurrence. A separate question concerns the recognized force of the utterance, such as request, suggestion or instruction. Treating these outputs independently prevents success on the referential task from automatically resolving the force target.

Conditions would cross a declared referential content distinction with a salient carrier feature. A first pilot should establish whether participants actually treat the carrier feature as irrelevant to the chosen target. If the feature acquires a convention or changes perceived authority, the bridge must be revised before confirmatory comparison. The design should include content-preserving changes of viewpoint and wording, together with content-changing contrasts, each justified at the intended level.

The initial candidate family would contain content-sensitive selection, carrier-driven selection, fixed responding and uptake combined with response suppression. These are proposed simplified accounts, not an exhaustive taxonomy of persons. Observations would include selection, a brief account of the interpretation, refusal and performance on a transfer case. The account itself is another response with its own production conditions. Agreement among measures can strengthen a scoped inference while shared demand or coding assumptions can make their errors dependent.

Clarification would occur in a distinct phase. The retained record should distinguish the first answer, the information supplied, the participant's correction and subsequent transfer. Historical and current targets should be analyzed separately. A candidate that learns during clarification can fit the later observations while differing from a candidate that already understood and initially withheld an answer. Discriminating those histories requires evidence beyond their common final performance.

Research Obligation 11.1 (Prospective bridge validation). Before treating the study as evidence for interpretive uptake, justify the content contrasts, the response opportunities, the candidate family, the coding of unresolved cases and the scope of transfer. Predeclare which results would favor a nuisance account, reveal a changed target or require a broader family.

Analysis would first report labelled condition outcomes. Within a deterministic pilot model, compatible candidate sets can be computed directly. A stochastic extension would require explicit response probabilities, sampling assumptions and uncertainty treatment. The deterministic propositions supply an initial logic of discrimination; they do not provide confidence intervals or a statistical model by themselves.

Participant disagreement with the coding should be retained as evidence about the bridge. An explanation that changes the investigator's content classification is a potential conceptual result, even when it complicates the planned analysis. Such revisions should be documented and evaluated in a later design rather than silently absorbed into an apparently prespecified criterion.

The study would support a local conclusion if the selected contrasts discriminate declared rivals under defensible conditions. Broader claims about semantic competence, consciousness or social meaning across institutions require additional bridges and evidence. This scope makes the proposed study useful without giving its task performance an unsupported universal interpretation.

11.1 A worked contrast between transfer and expression

This subsection develops a small candidate comparison for the proposed study. Its purpose is to expose a case in which added tests discriminate referential organization while leaving the grounds of an initial response unresolved.

Suppose a task offers north and east windows. Candidate m_1 understands the north reference and is willing to respond. Candidate m_2 follows a salient border regardless of reference. Candidate m_3 understands the reference but withholds a response while an evaluator can identify the participant. These are stipulated simplified accounts. Their purpose is to identify useful observations, not to classify participants into exhaustive psychological types.

In a condition where the border marks north and answers are publicly attributable, m_1 and m_2 can select north while m_3 refuses. An off-diagonal condition where the border marks east separates the first two candidates. A confidential condition may elicit north from m_3 . The full pattern is more discriminating than an initial success score because it varies content alignment and expression conditions separately.

Yet the confidential condition admits a rival m_4 that learns the reference during the intervening explanation. Its later north response can match m_3 while its earlier interpretation differs. A historical attribution therefore requires recording the explanation and including its possible effects in the candidate history. A current referential target may become identified while the earlier target remains set-valued.

The contrast also shows why a refusal category has conceptual value. If refusal is coded as east or as an undifferentiated wrong answer, the observation map merges distinct responses before analysis begins. Retaining refusal does not prove suppression; it preserves an alternative that the inquiry can investigate. A participant's own explanation can contribute evidence while remaining a situated report rather than an infallible access channel.

For evaluation, the study should report which candidate differences each condition addresses and which remain open. A condition that adds participant burden while separating none of the live candidates needs a distinct justification. A condition that unexpectedly changes the meaning of confidentiality or authority should prompt bridge revision. This makes the design's philosophical assumptions part of the research record rather than a silent background to its numerical analysis.

12 Further Research and the Scope of the Results

This section identifies the obligations left by the argument and the conditions under which its formulations should change. The paper has developed a relation between dynamical evidence and scoped semantic attribution. The remaining work concerns the adequacy of bridges, probabilistic models, changing practices and the distribution of interpretive authority.

The principal formal result is target-relative. A profile identifies a semantic query exactly when the query is constant across candidates producing that profile. Additional compatible tests refine the set under a fixed family and target. Finite tests leave unrestricted extrapolation open. These consequences are useful because they display their assumptions. An empirical application must justify the candidate family, establish the observations and explain the target's relevance.

The bridge itself requires comparative assessment. One research program could construct several bridges for the same encounter, document their agreements and disagreements, and examine which down-

stream questions each answers. A bridge should be revised when its classifications repeatedly erase meaningful participant distinctions, when nuisance mechanisms survive its preferred tests, or when its transfer claims exceed its evidence. Systematic comparison would also clarify whether some components of Equation 3 can be simplified in particular domains.

Probabilistic work should distinguish uncertainty about an interpreter from variability in responses and uncertainty about the bridge. A probability assigned within a fixed candidate family addresses only part of that problem. If the family omits a plausible organization or the content classification changes, a precise posterior can remain attached to an inadequate question. Model comparison and sensitivity analysis would need to represent those possibilities explicitly.

The historical component invites further formal development. Equation 10 gives a transparent example of retained organization, while actual interpretation may involve nonlinear updates, changing relations and variable observational scales. A useful extension would specify which historical distinctions remain relevant to a target and which can be compressed without changing it. That question connects the semantic inquiry to the repository's work on records and reassessment while preserving the separate warrant for a semantic target.

Institutional settings add another layer. Official classifications can alter the very opportunities through which understanding becomes observable. Future work should examine the interaction between evidential access, accepted correctness standards and the authority to settle a disputed interpretation. A technically discriminating test can still serve an objectionable procedure. Conversely, a defensible procedure can encounter genuine evidential limits.

The proposed framework should be retained if it makes those dependencies clearer and produces more discriminating, revisable inquiries. Its central commitment is modest in formal reach and substantial in methodological consequence: the passage from a relational trajectory to an interpretation deserves an explicit argument. Providing that argument preserves the source discussion's interest in co-development while giving its semantic claims a scope, a warrant and conditions of correction.

References

- [1] Herbert H. Clark and Susan E. Brennan. Grounding in communication. In L. B. Resnick, J. M. Levine, and S. D. Teasley, editors, *Perspectives on Socially Shared Cognition*. American Psychological Association, Washington, DC, 1991.
- [2] H. P. Grice. Meaning. *The Philosophical Review*, 66(3):377–388, 1957.
- [3] Stevan Harnad. The symbol grounding problem. *Physica D: Nonlinear Phenomena*, 42(1–3):335–346, 1990.
- [4] Claude E. Shannon. A mathematical theory of communication. *The Bell System Technical Journal*, 27:379–423, 623–656, 1948.

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