

Local Linguistic Convention Formation

A Preliminary Study of Shared-Use Availability

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Abstract

A newly introduced expression can be understood on one occasion without becoming available for subsequent shared use. This paper investigates how local linguistic uses form among already competent participants, with attention to recurrent uptake, correction, contextual extension and continuing support. It reconstructs established convention, grounding and normative-pragmatic accounts before developing a Generative Relational interpretation of historical practice organization. Formation changes the relations through which later applications become intelligible and consequential; its occurrence, evidential identification and justification remain distinct. Typed historical extensions and contextual operations represent introduction, reuse and repair without requiring a fixed complete repertoire. An explicitly restricted nonlinear field model then examines coupled production and uptake after introductory forcing ends. Comparing saturation architectures identifies conditional coexistence and loss of contextual support; a field-transport result separates retained coordinates from retained dynamics. A history-operator algebra makes operation domains and order-sensitive repair inspectable. Published reference-game and conceptual-pact studies constrain the account, while developed workshop and remote editorial examples connect its philosophical, formal and evidential questions. The paper proposes no general measure of meaning, universal convention-formation law or automatic inference from stabilization to legitimate authority. Its contribution is a bounded investigation of shared-use availability and the different obligations involved in explaining its formation.

Keywords: linguistic convention; shared use; correction; Generative Relational framework; nonlinear fields; history operators

Scope Note

This paper investigates the formation of local linguistic uses among already competent participants. Its object is the historically organized availability of an expression or use for recurrent uptake, correction and further application. The inquiry does not attempt to individuate a whole language, explain the acquisition of linguistic competence from its beginnings, or determine who possesses legitimate authority over a community's terminology.

The Generative Relational framework supplies a revisable metalanguage for connecting historical, philosophical, empirical and formal questions. The inherited framework already contains relational formation, formative feedback, history-bearing objects, generated complexes and changing operations. The present discussion develops a particular linguistic problem within that inheritance. Established convention and dialogue research also supplies substantial accounts of historical formation; it is treated as an explanatory resource and a source of objections.

The mathematical investigations are several possible representations. A typed historical construction retains the emergence of applications and repairs; a nonlinear field model examines a declared task regime; an operator algebra records composition and operation domains. A stable solution of the field equations is not a quantity of meaning or a certificate of convention. Philosophical interpretation and empirical inquiry must establish what the represented interactions accomplish.

The empirical studies concern negotiated reference in limited experimental tasks. The workshop and editorial cases are separately identified as stipulated illustrations. References to supplied GR manuscripts identify the consulted versions without implying journal publication or independent validation. The accompanying source packet retains citation verification, reading scopes, formal checks and review records. This is a discussion draft for criticism and author review.

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Status. This discussion draft presents an evolving inquiry. The definitions, translations, formal constructions, empirical interpretations, and conclusions remain open to criticism and author review. It proposes no authoritative terminology policy or universal criterion of linguistic correctness.

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Statement On The Use Of Language Models. The author selected the research direction, supplied prior manuscripts and a reference exposition, and requested consistency with the Generative Relational research programme. AI-assisted research, source comparison, drafting, formal checking, and document preparation contributed substantially to this draft. These contributions include proposed arguments and interpretations that remain subject to the author's review. Preparation of a checked draft does not establish the author's approval of every claim. Authorship credit remains with the human author; the use of these tools is disclosed to support critical assessment of the manuscript and its limitations.

1 Local Use Formation

A participant introduces an expression during a shared activity. Others understand enough to respond, and the activity proceeds. At a later encounter, the same expression may still require explanation; it may instead be used without reopening the initial negotiation; or it may support a disagreement about what follows from its application. These possibilities concern different achievements. Successful interpretation of an occurrence explains neither the availability of a later use nor the development of a practice through which participants can correct and extend it. The present paper investigates that formation problem within a bounded setting: already competent participants engaged in a selected recurring practice.

Consider a stipulated repair workshop. Its members can already communicate fluently and distinguish many kinds of mechanical failure. During a discussion, one member introduces “return-ready” for an assembly whose dismantling leaves an adequately supported route to safe reassembly. An object can be easy to take apart while lacking retained orientation marks, appropriate replacement parts, or the information needed to restore it. The proposed expression brings these concerns into one practical distinction. At first, its interpretation may depend on a diagram and a lengthy comparison. Later, the expression could guide work planning, invite a request for missing evidence, or provide grounds for withdrawing an earlier assessment.

Nothing in this description establishes that a new concept has appeared. The participants may already possess the distinction and merely acquire a shorter name. They may have practical discriminations that the expression helps them articulate jointly. They may also revise the distinction through cases that their earlier practice had not organized together. These interpretations require different evidence. Their common question concerns what happens when an introduced use becomes a resource for subsequent shared activity. The analysis must retain this question without settling conceptual novelty by stipulation.

1.1 The Analytical Object

The primary object is a local use formation: a historical organization through which an expression or pattern of use becomes available for further participant-oriented application. “Local” identifies the selected practice and its relations. It does not require geographical proximity, a small population, or isolation from a wider language. A distributed technical team can sustain a local use; two adjacent groups can sustain different ones. Participants’ established linguistic competence, their material task and their wider institutions remain relevant conditions even when the inquiry does not attempt to explain their entire formation.

Availability is prospective. A term can remain usable during an interval in which no one utters it, and it can be repeated frequently while participants remain unable to interpret a consequential variation. It is also relational. One person’s memory of the introductory explanation may suffice for that person’s later application while leaving others unable to receive or challenge it. An adequate account identifies who can perform which applications, through which interfaces, with which expectations and resources for resolving trouble. It does not require everyone to possess the same representations or perform the same role.

The word convention remains useful, but its boundaries require care. A Lewisian account gives it a demanding specification involving regularity, expectations and preferences. Dialogue research can identify a local pact without establishing a durable convention across an entire population. A normative account can ask what makes an application answerable to standards beyond its immediate success. The paper therefore distinguishes the broader formation inquiry from a single necessary-and-sufficient definition of convention. Its title names the problem family; its particular claims state which conception and evidence they require.

1.2 Historical Organization

The GR starting point is that a formed use can become part of the organization through which later events are received and transformed. This is an inherited idea. Earlier work distinguishes a manifestation from a historically operative relational organization, and it examines how a formed distinction can become a condition of subsequent formation [8, pp. 17–19] [6, pp. 7–13]. Applied here, the question is specific: which relations among introduction, uptake, material discrimination, correction and further application account for the new availability?

In the workshop, a record of the first explanation can become an example participants invoke later. A failed reassembly can revise what the term requires. An accepted correction can alter which evidence is expected before the term is used. These consequences may change both the use and its supporting practice. A purely retrospective list of utterances misses the change in what participants can subsequently do; a purely prospective list of rules can miss the history through which those rules acquired their local significance. The proposed account follows both directions while leaving open which historical information is necessary for a particular explanation.

This perspective also disciplines novelty claims. Historical precedents, mutual adjustment and the formation of expectations already play important roles in established convention and dialogue research. GR does not discover history by redescribing these processes. Its proposed contribution here is to connect a carefully delimited use-formation problem with the framework's historical objects, changing operation families and explicit realization obligations. Whether those connections improve explanation must be shown in the distinctions, models and cases that follow.

1.3 The Formal Question

One component of the formation problem concerns recurrent support. An introductory demonstration may temporarily sustain both production and uptake. After that special intervention ends, the two activities may sustain one another, or they may decay. A coupled nonlinear field model can investigate this conditional problem. It needs a declared task carrier, an interpretation of its coupling and a law governing the distributed field. Calling frequency a field or assigning an arbitrary scalar to meaning would not supply those elements.

Recurrent support is still incomplete as a formation criterion. A dominant pattern can maintain a term's use while omitting a less common contextual distinction. In the workshop, efficient coordination around dismantling could coexist with a failure to retain the reassembly requirement. The formal investigation therefore asks both when a coupled pattern persists and what that result leaves undecided about a declared contextual repertoire. A separate history-operator construction examines why introduction, application and correction can change one another's domains. The two investigations retain different information and are not interchangeable proofs of the same claim.

The investigation also examines its own model boundary. In the first potential law, common saturation changes the norm while normalized direction follows a projectivized linear evolution. A second saturation family allows relative contextual support to depend on nonlinear interaction. An exact transport result then asks when a field solution can be retained after its represented carrier changes. These comparisons keep the historical and generative questions visible: adding a contextual route can alter the support of earlier routes even when their old coordinates and linear couplings remain present.

1.4 Argument Development

The paper first reconstructs the explanatory resources of convention, grounding, innovative interpretation and normative pragmatics. It then develops shared-use availability and its historical GR interpretation before introducing the typed histories, nonlinear field sector and operation algebra. Published studies of negotiated reference constrain these constructions without serving as evidence for an untested field law. The later philosophical discussion examines correction standing, contested extension and the relation between stabilization and authority. A developed workshop history and a contrasting remote editorial

practice show how the distinctions guide an inquiry. Sequential evidence designs separate prior availability from capacities formed through the inquiry itself. The final section identifies the remaining research obligations.

The neighboring investigation of historical language individuation asks which linguistic formation an inquiry follows [7]. The present paper provisionally selects a recurring practice and studies the formation of a use within it. Reproduction of competent participation, large-scale language continuity and terminology governance remain connected questions with different primary objects. The boundary is justified by the current explanatory task, not by an assertion that these processes occur independently.

2 Linguistic Convention Accounts

Local convention formation concerns the relation between an intelligible innovation and a practice that makes its later use possible. Existing accounts explain different parts of that relation: recurrent coordination, the establishment of understanding on an occasion, interpretive adjustment, and the responsibilities associated with a meaningful performance. The following comparison reconstructs their contributions before identifying the question pursued here. The method is philosophical and problem-directed. An account of successful interpretation need not supply a theory of long-term persistence, and a theory of persistence need not explain the content or authority of every practice it describes.

2.1 Recurrent Coordination

Lewis's analysis already supplies a historical account of convention. In the precedent discussion of *Convention*, expectations develop through earlier coordination, selected analogies between occasions, and accumulated experience. Participants can encounter different agreeing precedents; they need not remember identical episodes. Explicit agreement is one possible source of expectations. Lewis also recognizes that competing analogies can leave a precedent ambiguous [18, pp. 33–42]. His later account extends conformity to include hearers' epistemic reasons, connects present exchanges with earlier participants, and permits habitual action under rational control. It distinguishes the persistence of a convention from the original acquisition of language [19, pp. 4–12, 24–26].

These arguments establish an important baseline for the present inquiry. An appeal to relational history, feedback or mutual expectation does not by itself identify a contribution beyond the convention account. The explanatory question becomes more specific. When participants encounter an introduced expression, which features of earlier episodes become relevant to its later application, and how does that relevance become usable within their practice? A list of occurrences leaves this question open. Two participants might remember the same successful episode and draw different lessons from it. One might retain a label for a particular object; the other might retain a distinction between kinds of condition. Their difference can remain unnoticed while the original object is repeatedly encountered.

Consider the stipulated workshop expression *return-ready*, developed in Section 11. A component successfully removed from a device might still lack the markings needed for reassembly. If participants introduce the expression while discussing that component, its later use could track the component, the completed removal, or the availability of reassembly information. Repetition within the original arrangement may leave these possibilities practically indistinguishable. A new component, an interrupted repair or a question about missing markings can make the difference consequential. The example is a philosophical construction, not a reported finding about an actual workshop.

The constructive task is therefore to investigate the formation of relevant similarities and consequences in a selected practice. The historical convention account remains a serious explanation of how those similarities acquire practical force. It should be tested at the point where participants project a use across changed circumstances, rather than dismissed because its presentation abstracts from some details. Conversely, redescribing every successful projection as conformity to an indefinitely enlarged regularity can remove the explanatory difficulty by description. A useful reconstruction should identify

which prior resources, responses and adjustments account for the projection, and what would have made it fail.

This requirement also constrains a GR reconstruction. A history can record where participants spoke, which responses followed, and which subsequent operations became possible. Its explanatory contribution depends on identifying the relations that matter to the selected application. Merely adding more events to a formal carrier supplies a richer record. Showing that a particular dependency enabled later use requires a further historical or interpretive argument. Section 4 develops that inheritance and the associated representational commitments.

2.2 Occasion-Sensitive Understanding

Clark and Brennan characterize grounding through participants' mutual belief that an utterance has been understood sufficiently for their current purposes. Their account includes positive evidence of understanding, collaborative repair, differing understanding criteria, and changes in grounding techniques associated with purpose and medium [3, pp. 127–148]. This makes the relevant achievement more precise than the production of a well-formed expression. The interlocutors need some basis for proceeding together, while the adequacy of that basis depends on what they are doing.

For the present paper, the decisive issue is the temporal reach of that achievement. Evidence adequate to select an object now can provide a basis for later reference to it. Whether the same history also supports a new application depends on what the later task requires. An efficient continuation may thus be good evidence of current understanding while remaining inconclusive about a wider application. There is no inconsistency in these two judgments: they concern different claims. The researcher incurs an obligation to state which claim an observed response supports, rather than treating every successful continuation as evidence of a fully established shared meaning.

The converse deserves equal attention. Local wording can vary while participants continue to use a distinction successfully. A demand for identical formulations would replace practical understanding with a stronger linguistic uniformity condition. In some tasks, a paraphrase or a different perspective on a referent supplies the very evidence that the participants can relate their contributions. The negotiated-reference studies examined in Sections 8 and 9 allow this issue to be assessed within explicit empirical boundaries. The present conceptual account leaves room for asymmetric production and comprehension, alternative descriptions, and context-dependent standards of sufficient understanding.

Davidson presents a complementary challenge to an account that requires an already shared interpretive rule. His distinction between prior and passing theories permits an utterance to be understood through an adjustment made on the occasion. The argument retains systematic interpretation while challenging the requirement of prior conventional preparation. It also expressly distinguishes a new word for an old concept from the acquisition of a new concept, and takes competent interpreters as its starting point [5, pp. 251–265].

An introduced use can consequently become intelligible before participants have settled a reusable description of it. This possibility matters to the explanatory order. If the analyst attributes a complete convention to the introductory episode simply because the episode was understood, the outcome of formation has been imported into its starting conditions. A more discriminating reconstruction can show how existing competence, contextual clues and an interlocutor's response made the first attempt intelligible, then investigate what that episode contributed to subsequent attempts.

Successful novelty nevertheless permits several futures. An ingenious expression may serve one occasion and never recur. A malapropism may be understood while subsequent speakers retain the familiar wording. A locally useful expression may become part of recurrent interaction. These differences concern the continuation of a practice, not the intelligibility of the initial token alone. The current paper examines the third possibility without claiming that recurrence settles Davidson's broader objection to a wholly prepared interpretive structure. Continued use may require further adjustment, and a locally established convention may remain compatible with considerable interpretive improvisation.

The relation between grounding and creative interpretation is therefore selective. Both permit the analyst to examine what participants achieve on an occasion, but they organize the explanatory problem

differently. The present inquiry retains that difference. Its question concerns what an achieved episode leaves available for later use, including the possibility that later interlocutors modify the interpretation that initially worked.

2.3 Normative Use Consequences

A further question arises when an expression changes what participants may claim, infer or ask one another to defend. Brandom's analysis of assertion connects inferential authority with conditional justificatory responsibility and socially recognized deferral. It distinguishes appropriate responses from predictions of what will occur. Its simplified account assumes shared inferential standards, while explicitly postponing the complications of divergent assessments [1, pp. 639–650, especially nn. 17–18]. This is an account of assertion with declared assumptions, rather than a general theory of every local expression.

The analytical benefit is a sharper interpretation of an apparently successful response. A worker who hears *return-ready* might move a component to another bench. That movement can satisfy an immediate instruction. It does not yet show whether the worker regards the expression as licensing a conclusion about later reassembly, can distinguish a justified application from an unsupported one, or can pass responsibility for the claim to someone who checked the relevant conditions. Those questions concern the practical consequences associated with the expression. They can be investigated even if participants do not possess a uniform verbal definition.

The normative-pragmatic perspective also exposes a difficulty for the proposed formation account. If the account invokes a shared standard to explain how a shared standard forms, the explanation is circular at the point that matters. The difficulty can be addressed locally by identifying the resources already available and the particular relations being changed. Participants may already know how to request evidence, exhibit a component, retract an assessment or defer to a colleague. Introducing a new expression can reorganize the application of those capacities. Such a reconstruction explains a bounded transformation within an existing practice; it does not pretend to derive meaningful normativity from an entirely uninterpreted sequence of behaviors.

A second difficulty concerns disagreement. The relevant participants may accept different reasons for applying a term, acknowledge different sources of authority, or dispute whether a correction is warranted. The inquiry should retain these differences as part of the historical organization. Practical coordination might survive them over a limited range. A new case may then expose their consequences. Requiring complete inferential agreement at the outset would remove this kind of formation from view, while treating every disagreement as harmless variation would obscure failures that matter to the task.

Finally, a socially effective correction can be unjustified. A supervisor may secure the use of a term while preventing others from questioning its application. The practice can acquire recurrent force and remain objectionable. The existence of a convention, the distribution of practical correction standing, and the justification of that distribution consequently require distinguishable arguments. Section 10 develops the normative issue. Here the immediate requirement is descriptive: specify who can initiate, answer or disregard a challenge, and how those possibilities affect the use that is being formed.

2.4 Interactional Repair Organization

Repair research gives the account a further distinction that matters before normative assessment begins. Schegloff, Jefferson and Sacks treat repair as addressing trouble in speaking, hearing and understanding; replacement of an error is a narrower case. They separate initiation from outcome and explain their technical use of preference through conversational sequence organization, rather than a claim about participants' psychological preferences [20, pp. 361–364]. These distinctions prevent a request for clarification from being classified in advance as an accusation of error. They also prevent the occurrence of an attempted repair from certifying its completion.

For the present argument, consider an interlocutor who repeats “return-ready?” with questioning intonation. One possible continuation supplies a word the interlocutor failed to hear. Another explains a

locally unfamiliar expression. A third supplies evidence for a claim the interlocutor already understands. A fourth proposes changing the criterion itself. These are constructed alternatives. Their initial audible form can coincide while their relations to formation differ. Recovering a missed word restores access to a presently available use; explaining an unfamiliar use may extend its participant domain; supplying evidence addresses a particular application; changing the criterion can transform what later applications accomplish.

The distinction gives historical investigation a concrete task. Follow the sequence far enough to identify what participants treat as resolved and what they carry into later encounters. Immediate resumption of activity may show that the local trouble was sufficiently addressed. A subsequent unprompted application can establish a different consequence: some result of the repair has become usable beyond the original exchange. The inference requires that later occasion, because a repair can succeed through assistance that leaves no comparable route available afterwards. Equally, an apparently unresolved exchange can prompt a later clarification that does become consequential. The temporal boundary of the record affects the formation claim.

This analysis also refines the paper's terminology. In the mathematical example, correction names a stipulated update of an application condition. It does not purport to encode every conversational repair. In the philosophical discussion, correction additionally raises questions about the grounds of assessment and the standing of an assessor. A hearing repair may raise neither question. Keeping those senses explicit permits interactional research to constrain the model without declaring the model an exhaustive theory of repair. The relevant bridge concerns a selected repair's effect on subsequent application, with its initiation, response and durable uptake distinguished.

2.5 Distinct Explanatory Questions

The comparison among approaches is clearest when the explanatory questions are kept separate. Coordination asks how contributions fit together well enough for an activity to proceed. Convention asks how an historically established pattern becomes something participants can rely on. Semantic interpretation asks what an application says or makes available for understanding. Normative assessment asks which applications or commitments are warranted and which participants have justified standing to require their revision. These formulations identify questions for the present inquiry; they are not proposed as universally accepted definitions of the four research traditions.

A simple divergence shows why one answer cannot silently substitute for another. Suppose a coordinator's pointing, together with the expression, reliably directs workers to the correct object. The activity can be coordinated even if the workers have incompatible accounts of the expression. Their reliable response to this coordinator can acquire a history and become a convention in the paper's working sense. A further claim that the expression communicates a portable readiness distinction needs evidence from occasions on which the pointing no longer settles the relevant contrast. A judgment that workers ought to accept the coordinator's assessment needs reasons concerning evidence and responsibility. The first two achievements can occur while the latter two remain unresolved.

The converse divergence prevents a merely skeptical conclusion. Two workers can understand a readiness assertion, identify the evidence each considers relevant, and disagree about the evidence's adequacy. Their disagreement can obstruct immediate coordination while displaying substantial shared use. A manager who restores unanimity by preventing one objection might improve the appearance of coordination while degrading a formerly available way of examining the claim. The account therefore needs records of both joint action and the differences participants can articulate. Smoothness alone gives neither an adequate semantic criterion nor a general measure of a practice's success.

The questions nevertheless have constitutive connections in particular cases. If saying "return-ready" makes a readiness assessment available for others to rely on, the responses it licenses help specify the use being formed. Removing those consequences while retaining the sound can change the analytical object. Conversely, a participant may understand that undertaking without endorsing its legitimacy. An investigation can therefore preserve the relation between content and practical consequence while separating intelligibility from endorsement. That is a stronger position than either treating every observable

regularity as meaning or requiring a final normative settlement before local meaning can be studied.

This is the contribution sought from the comparison. The theories provide resources for different explanatory tasks, and the present architecture states where those tasks meet in one formation history. It does not rank the traditions by how nearly they resemble GR. A successful account should show why its selected relations explain the proposed transformation, while leaving room for another account to explain those relations more adequately.

2.6 Formation Explanations

The comparison supports a bounded problem rather than a synthesis of the reviewed theories. A recurrent coordination account can explain why an established pattern continues. An interactional account can explain how participants establish sufficient understanding. An account of interpretive innovation can explain successful accommodation beyond a previously shared interpretation. A normative-pragmatic account can specify some consequences of treating a performance as a claim. The present question concerns the historical relations through which an introduced use comes to support later applications within a selected practice.

An adequate answer may draw on several of these resources, but their conjunction does not automatically produce an explanation. It remains necessary to identify the transformation. An introductory explanation might establish a referent while a later repair distinguishes relevant conditions of application. Recurrent reliance might make the expression easy to use while leaving its inferential consequences unsettled. An authoritative correction might stabilize those consequences while restricting who can revise them. Each possibility requires its own evidence and permits alternative reconstructions.

GR provides a framework for representing these histories and their changing possibilities. The translation becomes informative when it preserves the differences that constrain the explanation: interpreted uptake, repeated availability, contextual distinction, practical standing and normative warrant. A representation that encodes these terms without investigating their relations would simply restate the vocabulary of the problem. The following section specifies the proposed analytical object in ordinary philosophical terms before the historical and formal constructions make selected dependencies explicit.

3 Shared Use Availability

Shared use availability names the proposed analytical object of the formation inquiry. It concerns a historically supported possibility of employing an expression or use across occasions within a specified practice. The account developed here identifies the relevant organization, distinguishes several ways that an introduced use can alter it, and explains the roles of continuing support and correction. These are philosophical specifications for subsequent investigation. They supply neither a universal definition of linguistic convention nor an empirical test that can be applied without interpreting the practice.

3.1 Practical Use Histories

An introduced use becomes sharedly available to the extent that relevant participants can draw on an established practical history to employ it, respond to it, and orient to consequential differences in its application. The history may include explanations, examples, unsuccessful attempts, corrections, material arrangements and tacit adjustments. Its significance lies in what it enables within the selected practice. A record of an explanation can remain intact after the capacities needed to use it have disappeared. Conversely, an oral practice can make a use available without retaining a documentary record of its introduction.

The phrase *established practical history* does not require participants to possess an identical account of their past. A speaker may remember an introductory exchange, a hearer may recognize the resulting use, and another participant may know how to check its application through a procedure developed later. Their histories can support complementary roles. The analyst should specify those roles and their

connections rather than attributing a single shared mental content to the group. This is also why the production of identical tokens is an inadequate general criterion: the relevant practical organization can include paraphrase, gesture, written annotation and different but mutually usable descriptions.

Availability nevertheless requires more than a collection of separate abilities. Suppose two people can each explain a proposed term privately, but consistently misinterpret the other's applications. Their individual knowledge may be substantial while the selected shared use remains unavailable. Conversely, the participants may coordinate effectively despite describing the term differently. The relevant question is whether the difference defeats the applications and responses for which availability is claimed. Judgments therefore need an independently described practical target, such as identifying components whose reassembly information has been checked. Agreement with the investigator's preferred wording supplies weaker evidence than successful orientation to that target.

This account makes availability relational without deciding that its bearer is irreducibly collective. A sufficiently detailed account of individual capacities and their interaction may explain the same dependencies. The reason to examine the organized history is that a participant's present performance can depend on contributions, media and expectations that extend beyond that performance. Whether the relational description offers greater explanatory power in a particular case is an open comparative question. The formal constructions later in the paper are accountable to this question; they do not settle it merely by representing a common carrier.

The relevant scope also needs to be stated. A use may be available to two participants during an ongoing task, to a wider work group across several occasions, or only when a particular intermediary is present. These are different achievements. Enlarging the participant set or removing a support changes the claim being assessed. Local formation can be substantial even when broader portability remains limited.

3.2 Prospective Practical Content

Availability is a claim about possible continuation grounded in the present organization of a practice. An utterance need not occur continuously for its use to remain available. The relevant question is whether a suitable occasion can be met through relations the participants presently possess or can presently mobilize. This statement requires a specified range of occasions and an account of what counts as mobilization. A remote possibility requiring the creation of an entirely new institution is different from a use supported by an accessible colleague and an ordinary procedure for seeking assistance. The present inquiry concerns the latter kind of historically supported availability; later recovery receives its own treatment in the programme.

The counterfactual element can be made intelligible without an exhaustive list of future situations. A claim that a term is available for inspecting a class of components commits the investigator to some variations within that class. Changing a component's irrelevant colour should have different consequences from removing the record that makes its orientation identifiable, if orientation is part of the selected distinction. The inquiry need not know the response to every possible component. It must identify enough consequential variations for the claim to say more than that the episodes already observed happened successfully. The declared range remains open to revision when a new case changes the understanding of relevance.

This account explains why successful failure recognition can be evidence of availability. A participant who correctly withholds an application, locates the missing condition and requests an appropriate check may display the relevant use more clearly than a participant who applies the term correctly to every easy case. The former response distinguishes the use from an indiscriminate endorsement cue. The word "correctly" here depends on the particular target and evidence, rather than an investigator's general preference for hesitation. Unnecessary refusal can itself misapply a use. Both positive and withheld applications should be interpreted through what the practice undertakes to distinguish.

A limitation follows from that positive account. A use can be available although evidence of its availability is scarce, and abundant evidence can remain misleading about its range. An interval of ordinary non-use does not demonstrate loss. A rehearsed sequence of correct applications does not demonstrate

extension. These statements concern the relation between a capacity and an observation, rather than a reason to insulate capacity attribution from evidence. Attribution becomes accountable through the specified continuation conditions and through findings that would require narrowing or withdrawing it. An investigator who cannot say what would count against the attribution has not yet supplied a useful formation claim.

The relational bearer of this prospective content can be quite concrete. An application may rely on one participant's recognition, another's access to records, a shared way of requesting the record, and an established response to a discrepancy. Each participant need not duplicate the others' capacities. The arrangement becomes a candidate bearer because these contributions can be connected on relevant occasions. Merely possessing all four capacities somewhere in the group would be insufficient if no usable route connects them. Shared availability consequently concerns an operative organization, including its activation routes, rather than an inventory of assets attributed to a collective name.

3.3 Reciprocal Orientation

Calling an availability shared raises a further question: what relation must hold among its participants? The account does not require complete symmetry. One person can make an assessment that another can understand and question without being able to perform the original inspection. Their roles can remain differentiated. What matters to the selected shared use is that their contributions are mutually consequential in the relevant way. A report reaches an addressee who can treat it as a report of the specified condition, while a request for clarification can reach a source capable of addressing it. More demanding reciprocity requires its own grounds; it is not built into every use by definition.

This permits a distinction between mediated participation and merely being acted upon. A worker who receives an instruction without understanding the specialized expression may still participate competently in the larger activity. That fact does not establish shared availability of this use between the worker and the specialist. A worker who understands the assessment's role and knows how to seek a check participates in a stronger relation, even if the underlying inspection remains specialized. The boundary is drawn around the declared use, rather than around a general ranking of persons as competent or incompetent.

Reciprocal orientation can also survive determinate disagreement. Suppose one participant says that an object is return-ready and another replies that its component map belongs to a different version. Both can identify what is being assessed and why the map matters. Their disagreement concerns whether the present evidence satisfies a recognized condition. This exchange can support an attribution of shared use while defeating the current readiness claim. Treating disagreement itself as evidence of failed convention would erase the distinction between using a claim and accepting its truth. Treating any disagreement as proof of shared understanding would be equally unwarranted; the participants may be pursuing incompatible tasks.

The practical response distinguishes these possibilities. They can inspect the disputed map, articulate different criteria, or recognize that they have been using the same expression for different purposes. Each outcome provides a more specific account of what was available before the exchange. If they then settle a new usage, the record should identify that settlement as a formative event. Sharedness can be partly achieved through an encounter whose beginning exposed its limits. This is why the unit of analysis includes the evolving relation rather than assigning a permanent agreement status to each pair of participants.

3.4 Contextual Application

An introduced expression can change a practice in at least three analytically different ways. It can provide a convenient label for a distinction that participants already use; it can make a tacit distinction available for explicit shared treatment; or it can participate in forming a distinction with new practical or inferential consequences. These descriptions can overlap within one history. Their purpose is to identify the transformation being claimed, rather than to rank outcomes by an assumed scale of creativity.

In the workshop illustration, participants might already separate successfully removed components from components prepared for reliable reassembly. A new expression could simply shorten discussion of that familiar difference. Alternatively, individual workers might attend to missing markings without previously treating that issue as a shared condition that can be requested, checked and reported. Introducing *return-ready* could then provide a means of coordinating those observations. A stronger interpretation would become relevant if the practice develops new connections among inspection, identification, storage and later reassembly, such that participants can now formulate or resolve questions that previously lacked an established treatment.

The stronger interpretation needs evidence of those changed possibilities. The appearance of a new word is compatible with continuity of the prior distinction. A novel description by the researcher is compatible with an old participant practice. Even an altered action can result from a new instruction that leaves the participants' own understanding largely unchanged. To argue that a new distinction has become locally available, the inquiry should show how participants use it to differentiate cases, draw consequences, or challenge an application that the earlier arrangement did not comparably support.

This evidential requirement leaves substantial uncertainty. Historical accounts of what participants could previously do can be incomplete. A newly articulated practice may reveal a capacity that was already present but rarely exercised. Formation can also be uneven: some participants may develop a new distinction while others learn a new label for a familiar one. The correct description may therefore concern a change in shared accessibility rather than the first creation of a concept by any participant. That remains a substantive transformation, because the ability to employ a distinction together can alter the course of the practice.

Contextual variation is particularly informative. Repeating *return-ready* for the original component can confirm a remembered association. Applying the use to a different component, explaining why removal was insufficient, or responding to a missing marking can disclose a wider organization. The contrast is between the claims supported by these observations. An original-object task can establish useful local naming; a broader application claim needs correspondingly broader evidence. Neither claim should be enlarged merely because the repeated performance becomes faster or more fluent.

The contextual boundary remains revisable. A new application may disclose an implication of the existing use, extend it by an acknowledged analogy, or introduce a successor use. The verbal form can remain unchanged across these transformations. Historical continuity therefore requires a reconstruction of the relevant application and response relations. Paper 1 addresses the broader problem of linguistic individuation; the present inquiry keeps that problem local to the use being formed.

3.5 Introductory Support

The introduction of a use often relies on a support that need not be repeated in its original form. An explanation, demonstration, diagram or prompted comparison may make the first application possible. Subsequent episodes can draw on what that interaction established. This change supplies one useful formation question: which parts of the introductory arrangement can be altered or withdrawn while the selected use remains practically available?

A successful comparison establishes a specific dependence result. If participants can later apply the use without hearing the original explanation again, the original explanation is no longer required on each occasion. Continuing memory, access to the component, a shared task and opportunities for feedback may remain essential. It would be an unwarranted further step to infer that the use has become independent of support altogether. The explanatory interest lies in the reorganization of support: what was accomplished through an explicit introductory intervention may now be sustained through retained capacities and recurrent interaction.

The converse also requires care. Dependence on one experienced participant does not automatically make a use unshared. A division of roles may allow others to produce an assessment, request a check and rely on that participant's response. The use is then available through that arrangement, with a particular concentration of knowledge and a particular vulnerability. Its availability to the group after the experienced participant leaves is a further claim. Stating the dependency preserves the achievement actually

present while making its limits examinable.

Material support can play an equally constitutive role. Markings on components may enable an application whose reliability would otherwise require extensive memory. A form, photograph or storage arrangement can preserve distinctions needed for subsequent action. Removing that support may alter the practice's object, rather than simply reveal a supposedly purer competence. Comparisons should therefore explain why the selected withdrawal tests the formation claim. Arbitrarily stripping away enabling conditions can make almost any practical capacity disappear.

The historical organization also includes the work of maintaining these supports. Labels fade, procedures are interrupted, and prior examples become difficult to retrieve. A use can remain familiar while its reliable application deteriorates. Formation and maintenance can consequently overlap. The present boundary concerns the organization through which a local use becomes available and remains available across the occasions needed to establish that result. The wider reproduction of competence among new participants belongs to the next inquiry in the programme.

3.6 Revisable Continuation

Correction enters formation when participants treat some difference as consequential to an application. They may reject a label, question a classification, point to missing evidence, or revise an earlier account of what the use permits. The response can clarify the current practice or change it. An inquiry should trace the relation between the challenge, the subsequent adjustment and later use, because the mere occurrence of disagreement does not determine which transformation took place.

Several familiar situations need to be distinguished. A participant can understand a use and reject the claim made with it. A participant can accept the intended claim while proposing a clearer expression. The participants can agree about the object in view while disagreeing about the inference an application licenses. They can also discover that the existing use leaves the case unsettled. These possibilities show why a repair event cannot be classified from its outward form alone. A request for clarification may restore an already available distinction or help create a new one.

Correction is therefore an informative part of the history without being an obligatory visible event in every successful formation. Some uses become established through uncomplicated repetition. Others remain largely tacit, and explicit demands for reasons can disrupt rather than improve the interaction. The relevant claim concerns the practical treatment of deviations within the chosen scope. Where the investigator claims that a use supports correction, evidence is needed about how an objection could enter the practice and what consequences it could have. A mathematically defined repair operation supplies an available operation in a model; its interpretation as a usable social possibility requires additional warrant.

The account also permits unequal correction arrangements. One participant may be routinely believed, another may have to provide extensive evidence, and another may be understood while lacking an effective opportunity to object. Such differences can shape which use becomes recurrent. They should remain visible even when the current task succeeds. Calling the resulting practice a convention does not endorse its distribution of authority. Section 10 examines the grounds and limits of that endorsement separately.

Revisability likewise does not imply that every proposed change should be accepted. An objection can be mistaken; an extension can compromise a distinction that the task requires. The philosophical requirement is to keep intelligible the grounds on which a continuation is treated as an application, correction or alteration. Those grounds can themselves become disputed. A formation account reaches its limit when the available evidence cannot distinguish the competing reconstructions. Recording that limit is more informative than assigning an unqualified shared meaning to the history.

3.7 Formation Judgments

The proposed account supports several limited judgments rather than one undifferentiated declaration of success. An introductory episode may be intelligible; a pattern may recur; a use may become available across selected contexts; participants may acquire effective correction possibilities; and an application

may support new consequences. These achievements interact, but the inquiry should establish the particular relations it asserts. A practice can display one achievement while leaving another unsettled.

A positive formation judgment should identify the use, the relevant participants and roles, the occasions across which availability is claimed, the supporting history, and the practical consequences that make the judgment significant. The resulting description need not be a numerical score or an exhaustive specification. It should be sufficient to expose the judgment to meaningful counterevidence. A purportedly reusable distinction that disappears whenever a new component is introduced has a narrower scope than a claim about component types. A shared use that depends on one interpreter has a different organization from one available across several independent interactions.

The term *local convention* is used in this paper for a historically established pattern of use and response that participants can rely on within a bounded practice, while the explanation of its maintenance and the interpretation of its content remain open to investigation. This working usage does not declare the reviewed theories equivalent. Where a Lewisian convention, an occasion-specific understanding, a provisional pact or an institutionally imposed regularity would require different descriptions, those differences should be retained. Shared use availability identifies the present research target across these candidate explanations.

The later formal inquiry selects particular aspects of that target. Stable coupling between production and uptake can demonstrate recurrent organization within a declared realization. It can also conceal a loss of contextual distinction. If the practice develops a new comparison or application condition, the realization itself may need to change. The argument developed here therefore supplies both a positive object for formal investigation and a constraint on its interpretation: a result about organized recurrence bears on linguistic formation only through an adequately supported account of what has become usable, by whom, and with which consequences.

4 Historical Practice Organization

Shared-use availability calls for an account of the organization that makes the relevant applications possible. This section develops that account in GR terms before the mathematical constructions begin. It identifies the historical object, distinguishes a formative relation from a merely listed condition, and explains the division of work among spacetime, field and operator representations. The purpose is to specify what those representations must retain, rather than to infer a theory of meaning from their existence.

4.1 Relational Efficacy

The occurrence of an expression is a manifestation. A pattern through which that expression affects later interpretation, preparation, criticism and action is a different analytical object. GR's distinction between manifestational and relational reality makes this difference explicit [8, pp. 17–19]. Its application to local use formation concerns organized consequences across encounters. It leaves open the stronger ontological question whether meanings are fundamentally mental, abstract, practical, normative, or some more heterogeneous formation.

The distinction matters when apparently similar records support different continuations. Imagine two versions of the workshop. In the first, participants repeat “return-ready” whenever a supervisor points to a marked object. In the second, participants use the term to request missing orientation records, withhold a readiness judgment and explain why a replacement component changes the assessment. The same number of utterances could occur in both versions. Their prospective organization differs. The second stipulation includes relations through which an application can disclose and alter conditions of later application. Frequency alone retains none of that difference.

The first version may nevertheless contain a real convention. A stable practice of responding to the supervisor's designation could meet a suitably specified convention criterion. The analytical error would be to identify that achieved coordination with the more demanding readiness distinction. Relational analysis therefore requires an object specification: which use, which participants, which contexts and

which consequences are being explained? It should not conceal an evaluative preference for one practice by declaring only that practice socially real.

Formation changes the subsequent significance of events. After a workshop has developed a readiness practice, a missing mark may be treated as a reason to stop, an exception requiring explanation, or an invitation to repair the record. Before the practice developed, the same mark could have been noticed without those implications. This is a claim about historically acquired relations among attention, interpretation and action. Establishing it in an actual setting requires evidence; merely finding a sequence of matching symbols would not demonstrate the change.

4.2 Constitutive Support

Some conditions enable a practice without entering the selected use's content. Others help constitute what its applications accomplish. Adequate lighting may enable a worker to read an ordinary label; a shared diagram may supply the distinction through which a novel label is understood. Their classification depends on the explanatory task. Removing either can interrupt a particular episode, so interruption alone does not prove that both are constitutive of the meaning. The inquiry must explain how the condition participates.

A useful comparison follows the use through a declared substitution. If a lamp is replaced while the relevant discrimination and uptake remain available, the particular lamp was substitutable for that purpose. If a diagram is replaced by an expert's explanation, the diagram may also be substitutable, although its interpretive role remains necessary in that encounter. Constitutive relevance therefore does not entail an irreplaceable material bearer. Conversely, an irreplaceable local resource can owe its necessity to a contingent shortage rather than to the expression's meaning.

The workshop's initial demonstration is a particularly important support. Later participants may remember it, retain a record of it or acquire examples that allow them to proceed without reenacting it. The expression has then acquired a different support organization. Saying that an introductory scaffold has been withdrawn should identify exactly which support ends. The workshop, its equipment, participants' prior competence and their interpretive relations continue. A claim of self-supporting local recurrence concerns that specified arrangement; it does not mean that language has become causally independent of its world.

This treatment follows the prior GR distinction between a source's capacity and its realized formative influence [6, pp. 10–13]. A diagram, a specialist and a recurrent practice can each contribute differently. Their participation does not require them to be independent inputs with additive weights. A specialist can change the diagram, the diagram can alter what others notice, and their responses can change which expertise later matters. The relevant object is the organization of these relations, including its unequal roles.

4.3 Support Substitution

A claim that different supports realize the same use requires more than similar final answers. Consider replacing a shared diagram with a searchable record. Both might yield the same classification for familiar objects. The diagram may nevertheless make an unrecorded dependency visible, while the search interface offers only established categories. Conversely, the searchable record may connect a disputed case to its earlier correction more reliably. The supports can agree on selected outputs while differing in the routes for extending or challenging those outputs. Which difference matters depends on whether the formation claim concerns familiar application, contextual extension, correction, or a specified combination.

The comparison should therefore identify retained consequences before declaring substitution successful. If the target is an ordinary application, the replacement must allow relevant users to recover the condition being assessed and use the result within the stated task. If the target includes correctability, a discrepancy also needs an effective route back into later applications. These requirements do not demand that the two supports have identical internal organization. They demand that the declared difference in

implementation not erase the particular possibilities attributed to the use. A changed correction route can be an improvement, an acceptable trade-off, or a failure, depending on the claim and its reasons.

This analysis supplies a positive sense in which support is constitutive. The support helps organize what the application does and what follows from it. Its role can be retained across material replacement, because role and bearer have been distinguished. A merely enabling condition can also be indispensable on a particular occasion, but its contribution to the selected explanation is different: it permits the organized use to operate without thereby specifying the contrast or consequence the use carries. A single item can serve both roles at different resolutions. The objective is an adequate explanation of its participation, not a permanent classification of every material object.

Constitutive explanations can then be evaluated through substitutions and contrasts. An account that attributes the use entirely to a public word form should explain why replacing the correction interface changes later application while retaining that form. An account that attributes everything to the interface should explain how competent participants preserve the distinction after they construct an alternative route. Neither observation by itself establishes a metaphysical theory. Together, such comparisons can show which proposed decomposition leaves out a consequential relation. GR's historical configuration is useful precisely when it keeps the substitution and the changed relation available for this examination.

4.4 History-Bearing Spacetime

The GR object is historically extended. A participant is not exhausted by a point carrying a current preference; a practice is not exhausted by its latest utterance. The represented configuration can include prior encounters, material and documentary continuations, overlapping sites of work, and the relations through which an earlier correction remains consequential. Its spacetime character records situated occurrence and historical organization. It does not automatically introduce a smooth manifold, a spacetime metric or a single clock shared by all participants.

A labelled two-complex is one possible representation of this object. Selected events and continuations receive incidence data, and faces can record declared compositions or compatibility relations. The interpretation must say which relations the cells represent. A face is not automatically an agreement, a person is not automatically a vertex, and a path is not automatically a valid inference. A participant's extended involvement may occupy an entire subconfiguration. Finite feature labels in a later field model will be projections of this organization, rather than replacements for its actors.

Historical extension also differs from retrospective reinterpretation. Adding a later repair can preserve a record that an earlier use was accepted while changing whether participants now consider it adequate. Erasing the earlier acceptance would destroy evidence of formation. Freezing its earlier evaluation would prevent correction. The history-bearing account can retain both the event and its changed significance by distinguishing their roles. This is especially important when the same expression comes to require a distinction that the introductory episode left unsettled.

Figure 1 displays that distinction in a schematic history. Horizontal arrows mark the addition of episodes. The lower boxes identify changing resources for future application. Their arrows indicate formation of later resources, not a measured causal law. The diagram neither requires a universal stage sequence nor implies that the initial introduction contains the complete future use.

Spin-foam constructions require further mathematical structure, including appropriate representation labels and amplitudes. The existence of a two-complex supplies none of that structure by itself. Prior GR work distinguishes substrate combinatorics, accessible records, mathematical invariants and the bridge to linguistic interpretation [9, pp. 5–6]. That distinction licenses a genuine spacetime investigation here while setting an obligation for any richer physical instantiation: it must answer a question the more modest representation cannot adequately address.

4.5 Formative Consequences

A formed use can become a resource that reorganizes later formation. In the workshop, “return-ready” might create a recurring occasion to ask whether reassembly records are adequate. That occasion can

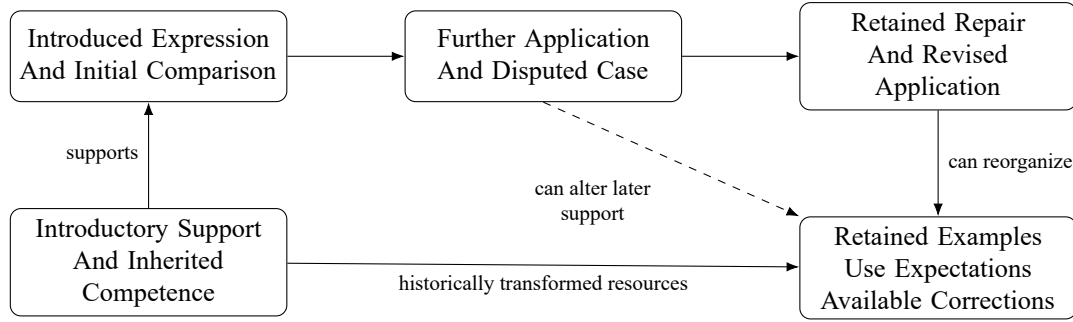


Figure 1: A Schematic Use-Formation History. Horizontal arrows add episodes; vertical and dashed arrows indicate the labelled support relations. Earlier events remain part of the history when later repair changes their evaluation. The configuration is illustrative rather than an observed formation sequence.

produce new examples, refine the distinction and change how members prepare objects. The term's formation and the task's organization then develop together. GR's prior normative-formation account already treats a formed distinction as a possible future source [6, pp. 11–13]; the linguistic case supplies a particular mechanism to investigate.

This process need not increase every participant's possibilities. A compact term can reduce explanation costs for experienced members while obscuring the grounds of judgment for others. A newly recognized distinction can make some failures articulate while rendering other concerns harder to express. The explanatory response is to examine the actual channels of uptake and repair. Assigning one number to generativity would erase the possibility that one operation becomes easier while another becomes unavailable.

Neither constant revision nor unlimited extension is required. A relatively stable use can enable experimentation precisely because participants know what an application presently commits them to. Equally, a rule that treats every mismatch as individual error can conceal a failure of the use itself. The formation account must retain both ordinary application and occasions on which the application framework can be questioned. Whether such occasions are warranted in a particular dispute is a substantive issue, not a preference for change built into the word generative.

4.6 Historical Explanation

An explanatory history identifies a transformation and the dependence through which it matters. Suppose a readiness distinction becomes routinely usable after the workshop records two contrasting cases. The order alone does not establish that the record caused the change. The record might coincide with a new participant, a changed task, or an instruction that makes the answer predictable. A historical explanation becomes stronger when it can show how participants subsequently retrieve, modify or invoke the contrast and when a rival account leaves those responses unexplained. The historical object must carry enough relations for these alternatives to be stated, even when the available evidence cannot decide among them.

This demand also disciplines recursive language. Saying that a convention supports its own continuation can name a genuine mechanism: earlier use creates retrievable examples; those examples facilitate later uptake; later disagreements improve the examples. Each link specifies something that could fail. The examples may be inaccessible, their relation to new cases may be unclear, or disagreements may leave the record unchanged. Without such intermediate relations, self-maintenance merely repeats the observation that the use persists. An adequate recursive explanation locates the work of reproduction and the conditions on which each return depends.

This analysis separates historical efficacy from retrospective importance. The first recorded utterance may be symbolically important to participants while a later comparison supplies the operational distinction used in present work. Conversely, an apparently minor clarification can change later application without becoming part of the practice's public origin story. The history-bearing representation can

retain both the genealogical claim and the operative dependence. Their agreement is a possible finding, not a requirement imposed by the word origin.

4.7 Representational Division Of Work

The following formal sections select three complementary aspects of this organization. Historical extensions retain provenance and changes in application domains. The coupled field model investigates recurrence within a declared task regime. The operation algebra examines composability, partiality and order. Each representation omits something the others can retain. Their combination is useful only where the maps connecting them preserve the distinctions required by the inference.

The field's finite indices will name interpreted occasion and response features. They are not a population of complete GR actors. Its continuous evolution parameter describes an effective modeling regime; the historical object can have a different, partially ordered temporal organization. Its nonlinear stabilization result can explain a conditional recurrence mechanism without constructing a new semantic contrast. A context-changing historical operation can therefore require a new field carrier or realization. Applying the old solution automatically would omit exactly the generative change being investigated.

The operator algebra has an analogous limitation. An operator can represent an enacted correction whose warrant is disputed. Its domain says when the operation is represented as executable, not when its exercise is legitimate. An adjoint or an algebraic inverse, where one exists, does not automatically name a possible social reversal. These differences will remain explicit so that mathematical composition clarifies the formation history without deciding its linguistic or normative interpretation by notation.

5 Generative Formation Histories

The formation of a local use concerns a change in a historically organized practice. An expression that initially requires an explanation may later support an exchange through relations already available to the participants. Their subsequent repairs and extensions can modify those relations again. This section represents that development through typed boundaries, history-bearing complexes, and operations that alter later possibilities. It then identifies the more limited task assigned to the field model. The architecture inherits the GR accounts of formation spacetimes, generative operators, and endogenous operational change; the present application concerns the introduction and recurrent use of an expression [17, Sections Formation Spacetimes and Formation Algebras][14, Sections 10 and 13].

5.1 Historical Practice Carriers

A participant enters the selected practice with linguistic capacities, earlier encounters, material supports, and relations to others. The present inquiry does not reconstruct how the participant acquired linguistic competence. It retains those parts of the history that explain the newly introduced use. A label naming a participant therefore indexes a history-bearing role or region; it does not turn the participant into a point with one numerical attribute.

Let K be a represented labelled two-complex with the data in Equation 1.

$$K = (V_K, E_K, F_K, \partial_K, \lambda_K, \preceq_K). \quad (1)$$

The sets V_K, E_K, F_K contain the retained vertices, edges, and faces. The attachment data ∂_K specify their incidence, λ_K assigns declared types and historical labels, and $\preceq_K$ is an adopted event precedence relation. Equation 1 does not derive precedence from incidence alone. A calendar or encounter-effort parameter can be added for a particular calculation without becoming a universal time coordinate of linguistic being.

In the formation convention used here, vertices represent selected interaction or rearrangement events, edges trace the persistence or replacement of couplings, and faces trace selected elements or roles through those interactions. An expression form, an application condition, a contribution, or an uptake role can

motivate different retained elements. Their interpretation must be supplied explicitly. The same person can participate through several roles, and a finer account can replace a coarse role by its own historical subcomplex. These choices follow the inherited spacetime construction and do not assert that language ultimately consists of mathematical cells [17, Section Formation Spacetimes].

The active boundary of a retained history states which couplings can enter the next represented operation. Let P_Γ be a set of selected ports or elements and C_Γ a set of couplings. A boundary presentation is given by Equation 2.

$$\Gamma = (P_\Gamma, C_\Gamma, \iota_\Gamma, \theta_\Gamma), \quad \iota_\Gamma : C_\Gamma \longrightarrow \mathcal{P}(P_\Gamma). \quad (2)$$

Here θ_Γ types the elements and couplings. A port is an attachment position in the selected representation, not necessarily a participant. In a graph sector where each element meets at most two couplings, coupling nodes and element edges give the inherited boundary convention. A model with more general incidences requires the corresponding generalized structure. Equation 2 retains incidence so that counting the occurrences of an expression does not silently replace the organization connecting its production, interpretation, and use.

For example, an expression can connect an occasion of use to an attributed interpretation, while a repair practice connects a challenged interpretation to an alternative application. The two couplings have different roles. Repeatedly producing the expression need not create the repair coupling, and recording a correction proposal need not establish that others recognize it as authoritative. The representation should be capable of retaining those differences before a model explains how they change.

5.2 Typed Historical Extensions

Let Ω be a selected set of historically interpreted practice configurations. A configuration retains its complex, active boundary, contextual application records, and the additional data needed by the operations under investigation. The selection must be sufficient for the claimed explanation; it need not describe every feature of the participants' lives. A generative operation has the partial type in Equation 3.

$$T_\beta : D_\beta \subseteq \Omega \longrightarrow \Omega. \quad (3)$$

The label β identifies a declared operation type and its contextual parameters. An introduction, a reuse, a clarification, and a contextual extension can have different domains. Equation 3 uses a common configuration carrier capable of holding different complexes; it does not hold their cell sets or active boundaries fixed. The recommended conversion formalism already makes this distinction explicit [14, Section 10].

An operation that extends retained history specifies an incoming boundary pattern, an outgoing pattern, and their attachment to the existing record. A schematic anchored extension is written in Equation 4.

$$K' = j_\beta(K) \cup_{\alpha_\beta} \Delta K_\beta. \quad (4)$$

The map j_β embeds the declared retained past; ΔK_β contains fresh event and incidence data; and α_β specifies the typed attachment. Equation 4 is meaningful only after these maps preserve the relevant boundaries and labels. A failed attachment may indicate an incompatible role, a missing prerequisite, or an unwarranted historical identification. It should not be repaired by silently merging the incompatible records.

The adopted historical convention retains old occurrences while permitting later changes in active interpretation. A correction can record that an earlier application was challenged and introduce a revised application condition. It need not rewrite the earlier event as though the revised condition had already governed it. Similarly, termination of an active coupling need not erase its former operation. These are inherited distinctions between historical persistence and active reconfiguration, rather than claims that all social histories possess perfectly recoverable archives [14, Sections 10 and 13][13, pp. 46–57].

For a sequence of applicable operations, retain the full history in Equation 5.

$$h = (\omega_0, \beta_1, \omega_1, \dots, \beta_n, \omega_n), \quad \omega_j = T_{\beta_j}(\omega_{j-1}). \quad (5)$$

Every intermediate configuration in Equation 5 must lie in the domain required by the next operation. The endpoint composite does not retain this trace by itself. The procedural-ordering source already distinguishes the realized sequence, its starting configuration, and its composite map [16, Section 3]. For convention formation, this distinction preserves whether an application was negotiated, copied, corrected, or extended before it became routinely available.

5.3 Contextual Application Records

The history requires a semantic interpretation that its topology cannot supply. Let $\mathcal{C}$ be the selected family of application contexts. A context identifies the distinctions relevant to the inquiry, such as a task, a participant relationship, a contrast set, or a recognized practical setting. It is not automatically every circumstance surrounding an utterance. Refining the context family changes the model's question and evidential burden.

An application record states which use was attempted, what uptake was attributed, which comparison or repair was made, and what evidence supports those attributions. Uptake, correctness, acceptance, and subsequent action remain distinguishable. A participant can understand an expression while refusing the proposed action, and a successful action can occur through a route that bypasses the expression. The GR account of interpretive uptake makes these separations part of its semantic bridge [11, pp. 5–7].

For the present investigation, a declared repertoire Q is a family of labelled use, discrimination, repair, or extension tasks whose application conditions are stated independently of the field amplitude. Some tasks concern whether a use is executable; others concern what the resulting response supports. A repertoire can permit complementary expressions and different local representations. Its purpose is to state what repeated shared use is alleged to make possible, not to require identical wording or identical mental states.

The repertoire does not become authoritative merely by being mathematically specified. The participants and investigator can dispute whether a proposed contrast matters, whether an apparent error is an alternative interpretation, or whether a correction imposes an inappropriate standard. Recording that dispute differs from deciding it. Section 7 will represent changes in a declared repertoire's operational availability while leaving the standing to select or enforce it to the surrounding philosophical argument.

This separation also protects the historical meaning of a test. A clarification can reveal an earlier interpretation, create a new interpretation, or do both. Evidence of later successful uptake does not automatically establish that the same organization existed before the clarification. The source account already distinguishes historical interpretation, present uptake, and capacity across future situations [11, pp. 9–10]. A formation history therefore records the test's contribution instead of treating all observations as passive readouts.

5.4 Operative Formation Consequences

Formation becomes substantive when an event changes the practice's later possibilities. An introduction may establish an expression as a candidate resource without yet making it available in a new context. A repair may add a discriminating condition that subsequent uses can employ. An extension may create an application record and a corresponding opportunity for further correction. The represented operation family is consequently configuration-dependent, as in Equation 6.

$$\mathfrak{D}(\omega) = \{T_\beta : \omega \in D_\beta\}, \quad \mathfrak{D}(T_\alpha\omega) \text{ may differ from } \mathfrak{D}(\omega). \quad (6)$$

Equation 6 records a possibility already present in the generative-operator and normogenesis formalism [14, Sections 10 and 13]. It does not establish that every repeated token expands the repertoire. Repetition can leave the operation family unchanged, reinforce a restricted application, or make an alternative harder to use.

Figure 2 shows the difference between a successful episode and a historical change that supports further uses. The intermediate record is an analytical object with its own interpretation, not a hidden stage through which every convention must pass.

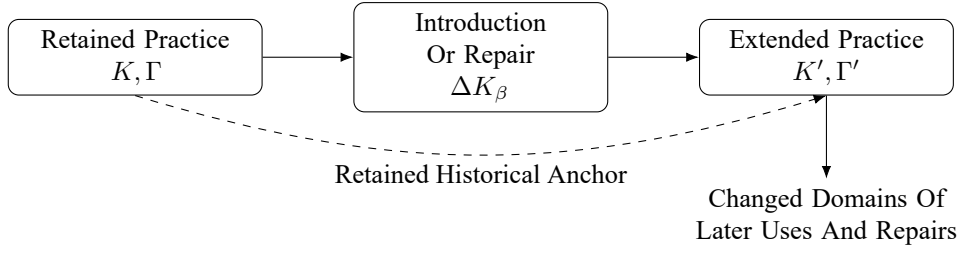


Figure 2: A schematic historical extension and its possible operational consequence. The solid arrows describe a selected formation event; the dashed arrow tracks the retained earlier record. The diagram does not assert that every introduction changes later availability or that a recorded change is legitimate.

Representing later operation types in one mathematical space does not make them available to the earlier participants. An investigator can describe the before-and-after history using a vocabulary that the participants acquired only through that history. Conversely, a genuinely new application distinction can require the investigator to revise the type vocabulary itself. A comparison between the old and new models then needs an explicit translation or embedding. The present construction does not derive every possible future distinction from a fixed initial vocabulary.

5.5 Historically Selected Operations

An operation’s changing applicability is only one way history enters its action. The interpretation of the operation type itself can select a different concrete transformation after a repair. The preservation taxonomy already distinguishes a retained capacity type, its state-dependent schema, and the current executability of the selected transformation [15, Section 7]. That distinction can be applied here without treating the word correction as the name of one unchanging update rule.

Let $\text{PMap}(\Omega)$ be the collection of partial maps between the configurations retained by this representation. A schema F_β selects a concrete map when the historical configuration supplies enough information to do so. Equation 7 distinguishes that selection from execution.

$$F_\beta : \Omega \rightarrow \text{PMap}(\Omega), \quad T_\beta(\omega) = F_\beta(\omega)(\omega) \quad \text{when both selection and execution are defined.} \quad (7)$$

The earlier T_β can thus encode the diagonal action of an explicitly specified schema. Equation 7 introduces an interpretive distinction rather than proving that a sufficiently large fixed state space cannot represent historical change. A mathematical carrier can collect the different realizations while the participants acquire them at different points in the history.

Consider a workshop whose ordinary correction first consists in replacing a label on one object. Later experience leads participants to recognize that the label was copied from a shared catalogue. They adopt a correction procedure that revises the source entry and identifies affected copies. The operation type can still be called correction, but the selected map now acts on a different historical dependency. Its domain requires access to the catalogue and a usable copy relation. An actor who can change the local label may lack that larger domain. The schema can therefore be intelligible and its execution unavailable in the present arrangement.

This account also shows why domain growth and capacity improvement are different judgments. Making the larger correction available expands one family of possibilities. Requiring the larger procedure on every minor occasion could simultaneously remove a timely local remedy. A historical model should retain both effects where they concern the target repertoire. Neither the cardinality of an operation family nor the complexity of its maps supplies a general rank of generativity. The relevant comparison asks which applications, challenges and continuations become possible through the changed relations.

Finally, the schema makes observational provenance explicit. The modeler may learn about the larger correction through a participant’s explanation or may help participants devise it during inquiry. These histories can result in the same final operation description while supporting different claims about

its prior availability. The retained complex records the selection episode and the evidence for it. The operation algebra below specializes to concretely selected maps, so that its exact identities do not obscure this preceding interpretive work.

5.6 Regional Field Realizations

A field model selects distributed coupling data within this historical architecture. For an admitted region U of a practice history, let $\mathcal{F}(U)$ be its chosen field-data carrier and $\mathcal{R}(U)$ its selected practice-record carrier. A partial realization Ξ_U has the type in Equation 8. For an admitted subregion $V \subseteq U$, let $r_{UV}^{\mathcal{F}} : \mathcal{F}(U) \rightarrow \mathcal{F}(V)$ and $r_{UV}^{\mathcal{R}} : \mathcal{R}(U) \rightarrow \mathcal{R}(V)$ be the declared restriction maps.

$$\Xi_U : \mathcal{F}(U) \rightarrow \mathcal{R}(U), \quad r_{UV}^{\mathcal{R}} \circ \Xi_U = \Xi_V \circ r_{UV}^{\mathcal{F}} \quad \text{on their common domain.} \quad (8)$$

The compatibility in Equation 8 is an adopted realization requirement, not a gluing theorem or an assertion that both compositions always exist. It says how a selected interpretation must agree with restriction wherever the comparison is meaningful. It does not establish autonomous evolution of a restricted region; interactions through its boundary can remain essential. The GR field formalism separately requires a dynamical law and a response-extraction relation linking that law to what its fields purport to represent [13, pp. 33–35]. Merely assigning values to regions supplies no formation mechanism.

The model developed next investigates one mechanism: the co-development of production and uptake couplings for an introduced expression in a fixed task regime. It retains a structured field on independently interpreted occasion and response features. The interaction joins those couplings through a conditioned task relation, while nonlinear feedback limits their growth. The existing trust-formation model already supplies the port-composition architecture and a nonlinear interaction functional; here the production and uptake fields remain dynamic while the task relation is conditioned [17, Section Generative Relational Fields].

This reversal of the conditioning question has a precise purpose. A previously available task relation can support a new expressive route without creating the participants' entire ability to perform the task. The calculation asks whether that route can become recurrently supported after an introductory perturbation ends. It also identifies a case in which the supported route omits another contextual distinction required by the declared repertoire. Neither result equates a field minimum with a convention.

A history that changes the relevant application types, repair conditions, or task relation leaves this fixed regime. Its new boundary can require different feature spaces, a different kernel, or another dynamical law. The historical account retains that possibility before the finite sector is introduced. The sector is therefore a conditional investigation inside a formation history, with explicit interfaces to semantic evidence and operational change, rather than a replacement for that history.

6 Coupled Formation Fields

A special introductory encounter can sustain an expressive route that later either persists or disappears. The question addressed here is whether production and uptake can recurrently support one another after that introductory forcing ends. The investigation constructs a nonlinear field realization within the historical architecture of Section 5, derives its dynamics and tests its interpretive limits. Its finite task carrier remains fixed during each calculation. It therefore studies one component of formation, while historical extensions retain changes that require a new carrier or interpretation.

6.1 Interpreted Field Carriers

Let I and O be nonempty finite sets of independently interpreted occasion features and uptake-response features. An index can retain a contextual role, a task relation or a discriminating response. It does not name an entire participant or quantify their linguistic competence. Equip the real function spaces

on these sets with their ordinary Euclidean inner products. The nonnegative fields and conditioned task kernel have the types stated in Equation 9.

$$u \in \mathbb{R}_+^I, \quad v \in \mathbb{R}_+^O, \quad W : \mathbb{R}^I \longrightarrow \mathbb{R}^O, \quad W_{oi} \geq 0. \quad (9)$$

The components of u and v represent effective production and uptake couplings for a selected expressive route. They are model coordinates with declared scales, not amounts of meaning, endorsement or authority. The matrix W specifies which occasion–response couplings the task realization supports. Distinct carriers permit complementary roles and representations; neither identical mental states nor identical lexical forms are required.

Equation 9 describes a finite field on a typed incidence structure. It is a restricted discrete realization of the broader regional field architecture. It does not claim the continuum limit, physical field ontology or generative reach of a group field theory. Such extensions would need their own carrier, interaction and semantic interpretation. The inherited port–interaction construction supplies a more immediate starting point: production, task relation and uptake can enter a contracted interaction [17, Section Generative Relational Fields].

The task interpretation must precede the calculation. In the workshop, an occasion feature could distinguish requests about dismantling from requests about later reassembly, while an uptake feature records a corresponding assessment or request for evidence. A defensible empirical model would need observations connecting those roles to the fields and W . The present construction instead stipulates that connection for a conditional inquiry. No experimental parameter estimates are supplied.

6.2 Interaction Functional

Choose positive coefficients a, g, ε . The model uses the interaction functional in Equation 10.

$$\mathcal{E}(u, v) = a(\|u\|^2 + \|v\|^2) - 2g\langle v, Wu \rangle + \varepsilon(\|u\|^2 + \|v\|^2)^2. \quad (10)$$

The quadratic term represents loss of unsupported coupling. The contracted term represents reciprocal reinforcement through the conditioned task relation. The quartic term supplies shared nonlinear saturation across this selected field. Its common dependence on the total norm is a substantive modeling assumption: increasing one route changes the effective saturation faced by others. It is not derived from a universal resource law. A later comparison will vary that assumption.

Equation 10 reuses the inherited quadratic, contracted interaction and quartic architecture. The earlier trust-formation calculation conditions production-like fields and solves for a composite mediator [17, Section Generative Relational Fields]. Here W is conditioned and both expressive-route fields evolve. The changed conditioning question, its exact consequences and its linguistic limits are the present investigation; the polynomial architecture is not a novelty claim.

Select a half-negative-gradient dynamics after the introductory forcing has ended. With $R = \|u\|^2 + \|v\|^2$, its component equations are Equation 11.

$$\dot{u} = -au + gW^T v - 2\varepsilon Ru, \quad \dot{v} = -av + gWu - 2\varepsilon Rv. \quad (11)$$

The parameter $t \geq 0$ describes effective evolution within this task regime. It is an additional model parameter, not the precedence relation of every event in the historical complex. Differentiating Equation 10 gives Equation 11; the factors follow from the selected half-gradient convention. Reciprocity is an assumption of this potential model. Directionally different learning, delayed responses or antagonistic couplings would require a different law.

Put $z = (u, v)$, write $\mathbf{1}$ for the identity matrix of its carrier, and define the symmetric matrices in Equation 12.

$$H = \begin{pmatrix} 0 & W^T \\ W & 0 \end{pmatrix}, \quad B = gH - a\mathbf{1}, \quad \dot{z} = Bz - 2\varepsilon\|z\|^2 z. \quad (12)$$

The block expression in Equation 12 permits an exact analysis, but the dynamics remains nonlinear: the evolution of each component depends on the total field norm. A spectral calculation of one part of a nonlinear law does not turn the represented practice into a linear system.

Proposition 6.1 (Positive Global Evolution). *For every nonnegative initial field, Equation 11 has a unique solution for all $t \geq 0$, remains nonnegative and decreases $\mathcal{E}$ unless the field is stationary.*

Proof. The polynomial vector field is locally Lipschitz. At a zero component of u the derivative is $g(W^\top v)_i \geq 0$, and the analogous statement holds for v , so the nonnegative cone is forward invariant. Let λ_1 be the largest eigenvalue of the symmetric matrix B . Differentiating the norm and the energy gives Equation 13.

$$\dot{R} = 2\langle z, Bz \rangle - 4\epsilon R^2 \leq 2\lambda_1 R - 4\epsilon R^2, \quad \frac{d\mathcal{E}}{dt} = -2\|\dot{z}\|^2. \quad (13)$$

The first inequality in Equation 13 bounds R by the larger of $R(0)$ and $\max\{0, \lambda_1/(2\epsilon)\}$. A finite-dimensional locally Lipschitz solution remaining bounded cannot escape in finite time. The second identity follows directly from $\dot{z} = -\frac{1}{2}\nabla\mathcal{E}$. $\square$

Proposition 6.1 establishes a well-defined conditional model. It does not show that an observed linguistic history decreases a measurable energy. Here energy names a mathematical functional whose gradient defines the chosen feedback law.

6.3 Recurrent Coupling

Let σ_1 be the largest singular value of W . Its nonnegative entries permit a leading nonnegative singular pair; equivalently the symmetric nonnegative matrix H has a nonnegative eigenvector for its largest eigenvalue σ_1 . One can see this without a positivity theorem: replacing the components of a maximizing vector by their absolute values cannot reduce its Rayleigh quotient. Finite-dimensional compactness supplies a maximizer.

Proposition 6.2 (Supported Field Minima). *For the nonnegative field carrier, the origin is the unique minimum of $\mathcal{E}$ when $g\sigma_1 \leq a$. When $g\sigma_1 > a$, the minima are exactly the nonnegative vectors in the leading eigenspace of H whose squared norm is $(g\sigma_1 - a)/(2\epsilon)$.*

Proof. The singular-value bound gives $2\langle v, Wu \rangle \leq 2\sigma_1\|u\|\|v\| \leq \sigma_1 R$. Consequently Equation 14 holds.

$$\mathcal{E}(z) \geq (a - g\sigma_1)R + \epsilon R^2, \quad R_* = \frac{g\sigma_1 - a}{2\epsilon} \quad (g\sigma_1 > a). \quad (14)$$

The right-hand polynomial has its minimum over $R \geq 0$ at zero when $g\sigma_1 \leq a$, and at R_* otherwise. Equality in the first part of Equation 14 means $\langle z, Hz \rangle = \sigma_1\|z\|^2$, hence membership in the leading eigenspace. A nonnegative leading vector realizes equality at every radial scale. At a nonzero minimum, $\sigma_1 > 0$ and the singular-pair equations also imply $\|u\| = \|v\|$. $\square$

The balance of norms in Proposition 6.2 follows from the chosen symmetric interaction and scales. It is not equality of knowledge, participation or social standing. Nor does the coefficient condition $g\sigma_1 > a$ establish an empirical linguistic critical point. It identifies a bifurcation in a declared finite model whose coefficients have not been estimated for a real practice.

The existence of a minimum does not establish how an introduced route reaches it. The exact trajectory supplies that missing step. For an initial field z_0 , define $y(t) = e^{Bt}z_0$. The solution is Equation 15.

$$z(t) = \frac{e^{Bt}z_0}{\left(1 + 4\epsilon \int_0^t \|e^{Bs}z_0\|^2 ds\right)^{1/2}}. \quad (15)$$

To verify Equation 15, call its denominator $d(t)$. Then $\dot{y} = By$, $d(0) = 1$ and $\dot{d} = 2\epsilon\|y\|^2/d$. Differentiating y/d yields $Bz - 2\epsilon\|z\|^2z$, with the required initial condition. Uniqueness from Proposition 6.1 completes the verification.

Proposition 6.3 (Seed-Dependent Formation Limit). *Suppose $z_0 \neq 0$, and let λ_* be the largest eigenvalue of B for which the orthogonal spectral projection p_* of z_0 is nonzero. If $\lambda_* > 0$, the trajectory converges to the value in Equation 16. If $\lambda_* \leq 0$, it converges to zero. The zero initial field remains zero.*

$$\lim_{t \rightarrow \infty} z(t) = \sqrt{\frac{\lambda_*}{2\varepsilon}} \frac{p_*}{\|p_*\|} \quad (\lambda_* > 0). \quad (16)$$

Proof. Orthogonal diagonalization gives $e^{Bt}z_0 = e^{\lambda_* t}(p_* + o(1))$ and $\|e^{Bt}z_0\|^2 = \sum_{\lambda} e^{2\lambda t} \|p_{\lambda}\|^2$. For $\lambda_* > 0$, the integral in Equation 15 is asymptotic to $e^{2\lambda_* t} \|p_*\|^2 / (2\lambda_*)$. Substitution proves Equation 16. For $\lambda_* < 0$, the numerator tends to zero and the denominator is at least one. For $\lambda_* = 0$, the integral grows as $t \|p_*\|^2 + O(1)$, while the numerator tends to p_* . The norm then decays as $1/(2\sqrt{\varepsilon t})$. Finally the vector field vanishes at the origin. $\square$

Proposition 6.3 explains the role of introduction precisely. The forcing before $t = 0$ is represented only through the seeded initial field. Once it ends, a seed with a component in a positive leading mode can develop a recurrently supported coupling. A zero seed does not spontaneously leave the origin. A seed confined to a disconnected lower sector need not reach the largest possible mode. Thus a favorable task kernel alone does not establish actual formation.

When the largest eigenvalue is positive and simple, a seed with nonzero projection on its nonnegative eigenvector converges to the corresponding positive-branch minimum. Local perturbations in the cone around that minimum retain a positive projection, so the minimum is locally attracting. Its radial linearized eigenvalue is $-2\lambda_1$; transverse eigenvalues are $\lambda_j - \lambda_1 < 0$. If the leading eigenvalue is repeated, those transverse values include zeros and the limit depends on the seed's direction within the leading eigenspace. One obtains attraction toward a set of minima, not asymptotic attraction to one prescribed point. These statements concern the full finite field, not only a homogeneous scalar restriction.

6.4 Directional Selection

The exact solution permits a more precise assessment of the model's nonlinearity. For a nonzero trajectory, put $n = z/\sqrt{R}$, so that $\|n\| = 1$. The trajectory never reaches the origin in finite time, by Equation 15. Differentiating this normalized field and its norm gives Equation 17.

$$\dot{R} = 2R\langle n, Bn \rangle - 4\varepsilon R^2, \quad \dot{n} = Bn - \langle n, Bn \rangle n. \quad (17)$$

For the first identity, substitute $z = \sqrt{R}n$ into Equation 13 before taking its upper bound. For the second, differentiate $zR^{-1/2}$ and use that first identity. The common saturation terms cancel. Equation 17 therefore shows that shared saturation determines the radial feedback while the direction follows the projectivized symmetric linear evolution. The model is nonlinear, but its exact solvability depends on this restrictive separation. It does not supply general nonlinear reorganization of the relative contextual couplings.

The directional quantity $b(n) = \langle n, Bn \rangle$ makes the selection mechanism especially transparent. Symmetry of B gives Equation 18.

$$\frac{d}{dt}b(n(t)) = 2(\|Bn\|^2 - \langle n, Bn \rangle^2) \geq 0. \quad (18)$$

The inequality follows from Cauchy–Schwarz and $\|n\| = 1$. Equality holds when Bn is parallel to n . Thus the field selects among directions already present in the adopted operator, while the nonlinear radial term limits the resulting magnitude. This derivation explains why the model cannot be read as producing a new semantic distinction: the relevant directions and their interpretation have already been supplied.

The restriction nevertheless performs useful analytical work. It isolates one claim that can be tested against a richer law: common saturation can stabilize aggregate coupling while selecting a narrow contextual route. The next example establishes that consequence exactly. A subsequent interaction family then

changes the saturation structure so that relative contextual activity also depends on nonlinear feedback. The comparison therefore investigates a substantive modeling choice instead of treating nonlinearity itself as an explanatory achievement.

6.5 Contextual Mode Selection

A recurrently supported expressive route may still fail the repertoire Q declared in Section 5.3. Consider the explicit two-context kernel and coefficients in Equation 19.

$$W = \begin{pmatrix} 2 & 0 \\ 0 & 1 \end{pmatrix}, \quad a = \frac{1}{2}, \quad g = 1, \quad \varepsilon = \frac{1}{2}, \quad u(0) = v(0) = (0.1, 0.1). \quad (19)$$

The numerical values in Equation 19 specify an illustrative model, not measured linguistic quantities. The leading growth eigenvalue is $3/2$ and the second positive growth eigenvalue is $1/2$. Both contextual routes initially have reinforcing task couplings.

Proposition 6.4 (Contextual Support Loss). *For Equation 19, the shared-saturation dynamics converges to $u = v = (\sqrt{3}/2, 0)$. The second contextual route therefore fails every stipulated requirement that its field coordinate remain bounded below by a fixed positive value at sufficiently late times.*

Proof. The leading unit eigenvector of H has entries $(1, 0, 1, 0)/\sqrt{2}$, and the initial field has positive projection onto it. Equation 16 gives total squared norm $3/2$, hence the stated limit. More directly, the balance $u = v$ is preserved and subtraction of their logarithmic growth rates gives Equation 20.

$$\frac{u_2(t)}{u_1(t)} = \frac{u_2(0)}{u_1(0)} e^{-t}, \quad \frac{v_2(t)}{v_1(t)} = \frac{v_2(0)}{v_1(0)} e^{-t}. \quad (20)$$

The coordinates stay positive at every finite time. Their limiting decay, not a finite-time disappearance, yields the positive-lower-bound failure. $\square$

Proposition 6.4 supports a conditional counterexample to the inference from aggregate stabilization to full repertoire availability. The second contextual coordinate represents a consequential contrast only because the application has independently specified it. The model does not discover that contrast or supply the required lower bound. In a workshop interpretation, recurrent use centered on dismantling could fail a separately required reassembly-sensitive route. This is a possible mechanism to test, not an empirical explanation of workshop speech.

The obstruction depends on the interaction architecture. For the same diagonal kernel, replace shared saturation by the context-specific functional in Equation 21.

$$\tilde{\mathcal{E}}(u, v) = \sum_{i=1}^2 [a(u_i^2 + v_i^2) - 2gW_{ii}u_i v_i + \varepsilon(u_i^2 + v_i^2)^2]. \quad (21)$$

Its half-gradient law splits into two independent paired-field systems. For positive balanced seeds and $gW_{ii} > a$, the argument of Proposition 6.3 applied separately gives $u_i = v_i = \sqrt{(gW_{ii} - a)/(4\varepsilon)}$ at the limit. Thus the coefficients in Equation 19 now retain both routes: $u = v = (\sqrt{3}/2, 1/2)$. Equation 21 shows why the earlier loss should be attributed to shared saturation and differential reinforcement, rather than to linguistic conventionality itself.

Figure 3 compares these exact constructed trajectories. The script also checks the analytic solution against independent numerical integration. The plot illustrates the derivation; it supplies no additional empirical evidence.

A strictly positive kernel has a strictly positive leading eigenvector, so the particular vanishing-coordinate counterexample does not transfer to that case. Even then, positive coordinates need not realize the required discriminations, repairs or extensions. The bridge to Q remains a distinct obligation. Different kernels, local nonlinearities, delayed feedback and asymmetric adaptation can change the result. Their analysis should begin with the proposed mechanism and evidence, not with a demand that every model reproduce the same selection pattern.

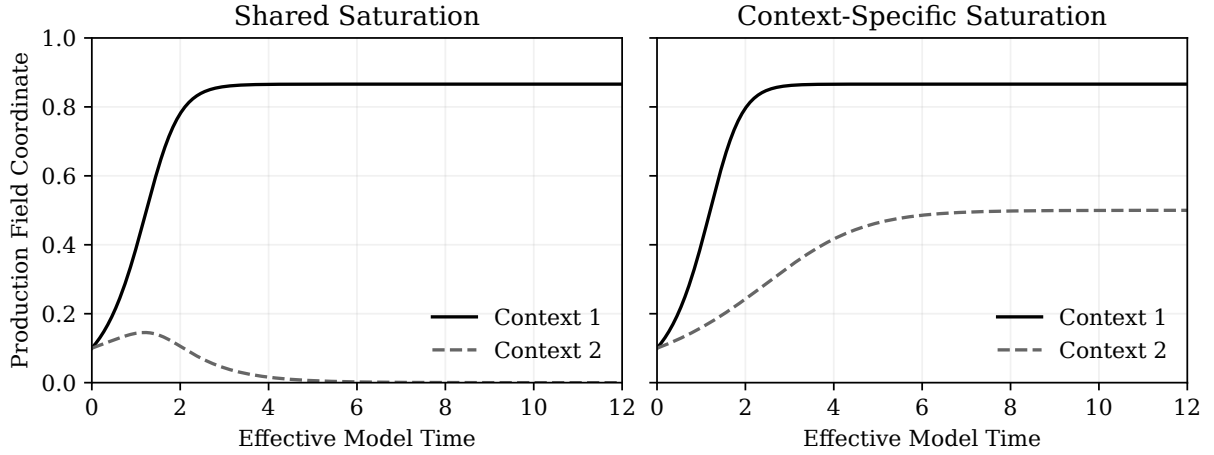


Figure 3: Illustrative Coupled-Field Trajectories. The left panel uses shared saturation and the right panel context-specific saturation, with the kernel, coefficients and balanced seed of Equation 19. Curves show production coordinates; uptake coordinates coincide for these particular initial data. Field coordinates are uncalibrated model quantities. The second route’s different limits isolate the saturation assumption.

6.6 Partial Saturation Coupling

The shared and separate saturation laws are endpoints of a more informative comparison. Retain two diagonal task routes $W = \text{diag}(w_1, w_2)$, with $w_1 > w_2 > 0$, and put $r_i = u_i^2 + v_i^2$. Here r_i is a derived squared field norm, not a measure of the contextual distinction. Choose $0 \leq \kappa < 1$ and define the alternative potential in Equation 22.

$$\mathcal{E}_\kappa = a(r_1 + r_2) - 2g \sum_{i=1}^2 w_i u_i v_i + \varepsilon(r_1^2 + 2\kappa r_1 r_2 + r_2^2). \quad (22)$$

The dimensionless coefficient κ specifies how saturation in one route enters the other. It is a stipulated interaction parameter. At zero, Equation 22 equals the separate-saturation model; its continuous endpoint at one is the shared-saturation model. The present derivation uses $\kappa < 1$, where the quadratic form in (r_1, r_2) is strictly positive definite.

Let $\lambda_i = gw_i - a$ and assume $\lambda_1 > \lambda_2 > 0$. The half-gradient law preserves $u_i = v_i$ when this balance holds initially. On that invariant sector, direct differentiation gives Equation 23.

$$\dot{r}_i = 2r_i [\lambda_i - 2\varepsilon(r_i + \kappa r_j)], \quad \{i, j\} = \{1, 2\}. \quad (23)$$

Equation 23 has the familiar structure of competing nonlinear activities. The present claim concerns its derivation from the declared formation-field potential, not the invention of that dynamical structure. Unlike Equation 17, its relative growth generally depends on the current allocation of field activity.

Proposition 6.5 (Contextual Support Allocation). *For $\lambda_1 > \lambda_2 > 0$ and $0 \leq \kappa < 1$, the nonnegative global minimizer of $\mathcal{E}_\kappa$ is unique. It has $u_i = v_i = \sqrt{r_i^*/2}$, with the squared norms in Equation 24. Both routes have positive field support precisely when $\kappa < \lambda_2/\lambda_1$.*

$$(r_1^*, r_2^*) = \begin{cases} \frac{(\lambda_1 - \kappa\lambda_2, \lambda_2 - \kappa\lambda_1)}{2\varepsilon(1 - \kappa^2)}, & 0 \leq \kappa < \lambda_2/\lambda_1, \\ (\lambda_1/(2\varepsilon), 0), & \lambda_2/\lambda_1 \leq \kappa < 1. \end{cases} \quad (24)$$

Proof. For fixed r_i , the inequality $2u_i v_i \leq r_i$ becomes equality exactly at $u_i = v_i = \sqrt{r_i/2}$. Since $gw_i > 0$, every minimum must have this balance. The remaining minimization concerns $f(r) = -\lambda_1 r_1 - \lambda_2 r_2 + \varepsilon(r_1^2 + 2\kappa r_1 r_2 + r_2^2)$ on $r_i \geq 0$. Its Hessian has eigenvalues $2\varepsilon(1 \pm \kappa) > 0$, so it

is coercive and strictly convex. Its unconstrained stationary point is the first expression in Equation 24; both coordinates are positive exactly in the stated interval. Otherwise the candidate $(\lambda_1/(2\varepsilon), 0)$ has zero first derivative along the first coordinate and nonnegative derivative $\kappa\lambda_1 - \lambda_2$ along the allowed second coordinate. Convexity makes these conditions sufficient. At equality the two formulas agree, and strict convexity still gives a unique minimum. $\square$

Proposition 6.5 identifies precisely how this model's support can change without altering its task kernel. Its coexistence threshold is conditional on symmetric positive coupling, the chosen potential and the adopted field scales. It does not establish a threshold of mutual understanding. For the coefficients of Equation 19, the threshold is $\kappa = 1/3$. Below it both routes occur at the minimum; at and above it the second route has zero minimizing activity. The equality case deserves separate treatment in dynamical claims because one linear restoring rate then vanishes.

For an interior minimum, the reduced Jacobian of Equation 23 is $-4\varepsilon \text{diag}(r^*) \begin{pmatrix} 1 & \kappa \\ \kappa & 1 \end{pmatrix}$. It is similar to a symmetric negative-definite matrix, using multiplication by the positive square roots of the r_i^* . Perturbations that separate u_i from v_i have eigenvalue $-2gw_i$, obtained by subtracting their field equations at the balanced stationary point. The minimum is therefore locally attracting in the full four-coordinate field when it is interior. At the boundary minimum, the largest missing-route eigenvalue is $\lambda_2 - \kappa\lambda_1$, so strict local attraction also holds for $\kappa > \lambda_2/\lambda_1$. No hyperbolicity claim is made at equality, and this argument does not classify every trajectory from every boundary seed.

Figure 4 displays the exact minimizing allocation. The diagram distinguishes an interaction assumption from an inference about the practice. If contextual support is reorganized, unchanged repetition in a dominant route can coexist with an altered capacity to sustain another. The investigator would still need to identify the actual dependence corresponding to saturation. A resource allocation, an attention routine and an institutional filtering procedure are different candidate mechanisms; the polynomial does not establish their equivalence.

6.7 Historical Regime Changes

The derivation concerns an expressive route within an already described task relation. It can model a new coupling for an available distinction. It does not derive an unanticipated conceptual contrast from W . If a repair changes what counts as a relevant application or creates a new role, the historical operation can change I , O , W or the interpretation of their coordinates. The old solution then no longer governs the new configuration without an explicit transport and renewed realization argument.

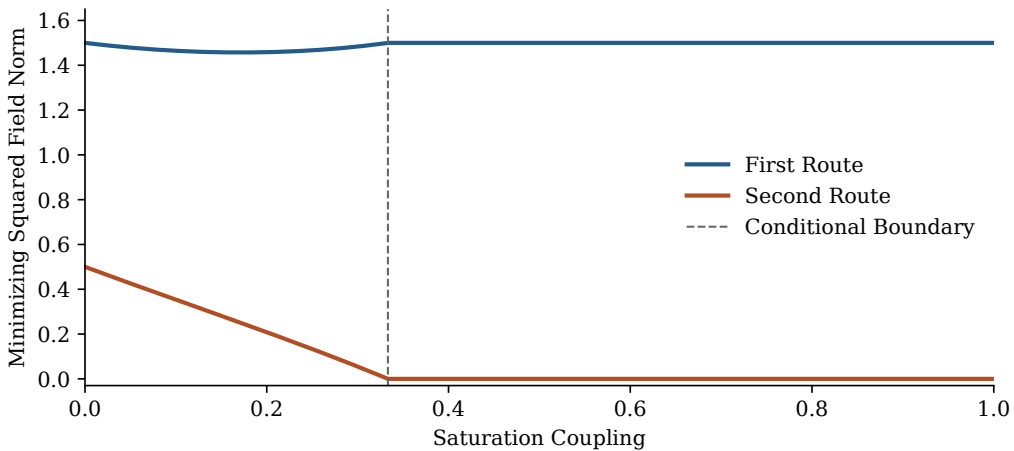


Figure 4: Conditional Contextual Support Allocation. The curves give the global-minimizer squared norms for $\lambda_1 = 3/2$, $\lambda_2 = 1/2$ and $\varepsilon = 1/2$. The vertical line marks $\kappa = 1/3$. The norms are model coordinates, and the diagram supplies no empirical scale of meaning or participation.

The broader GR architecture gives this limit a constructive role. Historical records retain the introduction of a new distinction and its consequences for later operations. Field realizations can then be compared across the resulting boundaries, with attention to which meanings and supports the comparison retains. A future group-domain or continuum field investigation could examine richer generation, but it must still supply these bridges. The present calculation establishes recurrent coupling and a contextual obstruction within one declared sector. The operation algebra next makes changes in executable use and repair more explicit.

6.8 Field Comparison Transport

One exact comparison clarifies what a historical extension would have to preserve to inherit the earlier solution. Let Z and Z' be finite real field carriers with their declared Euclidean norms, and let B, B' be symmetric block matrices of the type in Equation 12. Take a linear map $J : Z \rightarrow Z'$ that preserves the nonnegative cones and is an isometry, so $J^T J = \mathbf{1}$. It represents a proposed comparison of already interpreted coordinates. It is not the substantive operation that produces a new practice. The prior power formalism separates these two roles explicitly [13, pp. 33–35].

Proposition 6.6 (Isometric Field Transport). *Suppose the two shared-saturation field laws have the same $\varepsilon > 0$ and $B'J = JB$. If $z(t)$ solves the source law, then $Jz(t)$ solves the target law with initial field $Jz(0)$. Their flow maps, denoted by Φ_t and Φ'_t , satisfy Equation 25.*

$$\Phi'_t \circ J = J \circ \Phi_t, \quad t \geq 0. \quad (25)$$

Proof. Isometry gives $\|Jz\|^2 = \|z\|^2$. Consequently the target vector field at Jz equals $B'Jz - 2\varepsilon\|Jz\|^2 Jz = J(Bz - 2\varepsilon\|z\|^2 z)$. Differentiating $Jz(t)$ therefore gives the target differential equation and the required initial condition. The uniqueness already established for that equation proves Equation 25. $\square$

Proposition 6.6 is a sufficient compatibility result. Its assumptions identify the retained metric, linear interaction, saturation coefficient and invariant image. A historical anchor that preserves earlier occurrences supplies none of these conditions by itself. Even a successful transport of a selected field has to be connected to the relevant semantic realization before it can support a claim about shared use. The proposition exposes those requirements rather than replacing them with an unrestricted assertion that the old model remains valid.

A direct countercase concerns new active routes. Suppose $Z' = Z \oplus Z_{\text{new}}$ and B' is block diagonal, retaining B exactly on Z . Write the enlarged field as (z, w) . Although there is no linear cross-coupling, its old component follows Equation 26.

$$\dot{z} = Bz - 2\varepsilon\|z\|^2 z - 2\varepsilon\|w\|^2 z. \quad (26)$$

The last term in Equation 26 vanishes on the image of $Jz = (z, 0)$, as the proposition requires. It generally persists when a historical extension activates w . Thus preserving old coordinates and their linear couplings does not preserve their old evolution when they share nonlinear support with added routes. The distinction between representational inclusion and active extension is already visible in this restricted field model.

In a linguistic interpretation, a new application can introduce demands on an arrangement that previously sustained a local use. It can also bring new supports, changing the potential rather than merely adding a coordinate. The correct modeling response depends on the historical mechanism. Equation 26 establishes one possible interaction under its assumptions, while the transport theorem specifies an exact case of retained dynamics. These alternatives give historical comparison a substantive mathematical task without claiming that every contextual extension follows the same law.

7 Contextual Operation Algebras

The field investigation established a recurrent-coupling mechanism within a declared task regime. A formation history also contains events that change that regime: a use is introduced, an application is corrected, or a context becomes available for further testing. This section develops a representation of those events that retains domains, ordering and historical traces. Its operator algebra supplies a conditional test for continuation of a declared repertoire. It does not assign linguistic correctness or legitimate authority to an operation merely because that operation has a representation.

7.1 Typed History Paths

Take a selected countable configuration family Ω_0 and countable operation-label family $\mathcal{B}$, with partial maps T_β of the type introduced in Equation 3. These are symbolic historical records for this algebraic realization, rather than every point of the continuous field carrier. A nondeterministic event can be represented by separately labelled realized branches; an unresolved set of branches requires a richer operation specification. Countability and determinacy are explicit assumptions of the construction used here.

Configurations are objects of a path category. A morphism from ω to ω' is an actual finite admissible path of the form in Equation 5, beginning at ω and ending at ω' . The empty path is the identity at its starting configuration. Composition concatenates paths whose endpoint and starting configuration agree. Associativity follows from concatenation, and every path retains its intermediate configurations. Two paths with the same endpoint can remain different morphisms.

This construction inherits the procedural distinction between a trace and its endpoint composite [16, Section 3]. It also follows the boundary-changing history operators of the trust-formation account [17, Section Formation Algebras]. Path categories, shift representations and noncommutative composition are established mathematical constructions. The present use concerns which features of a local linguistic history their representation can make inspectable.

An attachment can add a context without adding a new alphabet symbol to the observer's formal language. A record then encodes when that context becomes available to participants. If the investigator's own type system must change, the categories before and after revision need a specified comparison. Writing all conceivable types into an observer's carrier does not show that they were already practically available in the earlier configuration.

7.2 History Shift Operators

Let $\mathcal{H}$ be the countable set of finite admissible paths, including empty paths, and let $\mathcal{H} = \ell^2(\mathcal{H})$ have orthonormal basis $\{e_h : h \in \mathcal{H}\}$. The Hilbert structure is bookkeeping for history operations. It introduces neither quantum states of meaning nor a Born-rule interpretation of empirical histories. Write $\text{end}(h)$ for the last configuration of h . The append operator for a label β is defined on basis vectors by Equation 27.

$$L_\beta e_h = \begin{cases} e_{h \cdot \beta}, & \text{end}(h) \in D_\beta, \\ 0, & \text{end}(h) \notin D_\beta. \end{cases} \quad (27)$$

Here $h \cdot \beta$ includes both the new label and the resulting configuration. The full incoming history remains a prefix, so appending is injective on its domain even if T_β identifies different active endpoints. This is why Equation 27 differs from an unqualified many-to-one shift on endpoint states.

Proposition 7.1 (Partial History Isometries). *Each L_β extends to a bounded partial isometry on $\mathcal{H}$. Let P_{D_β} project onto histories where β is executable, and let $P_{\text{ran } \beta}$ project onto histories ending in an appended β step. Then Equation 28 holds.*

$$L_\beta^* L_\beta = P_{D_\beta}, \quad L_\beta L_\beta^* = P_{\text{ran } \beta}. \quad (28)$$

Proof. Distinct applicable basis histories have distinct appended histories. Consequently the squared norm of a finite linear combination after applying L_β is the sum of squared coefficients over its applicable histories, bounded by the original squared norm. Continuity extends the operator with norm at most one. The adjoint deletes a final β step when present and annihilates other basis histories. Applying these two operations in both orders gives Equation 28. The norm is one whenever the domain is nonempty. $\square$

Proposition 7.1 retains executability through a projection. The adjoint’s deletion is a mathematical operation on a history record. It is not an assertion that participants can reverse an enacted correction, recover lost equipment or remove an event from their past. The algebra can contain operators without a corresponding admissible social operation; its interpreted generators must remain separately identified.

Ordered products append events in the convention stated by Equation 29.

$$L_{\beta_n} \cdots L_{\beta_1} e_h = e_{h \cdot \beta_1 \cdots \beta_n} \quad \text{when every intermediate step is applicable.} \quad (29)$$

If any required step is inapplicable, the product in Equation 29 gives zero. The rightmost operator acts first. Let $\mathcal{A}$ be the unital norm-closed algebra generated by the L_β , their adjoints and the bounded diagonal observation operators specified below. It is a concrete operator algebra closed under adjoints. This algebraic completion is not an assertion that arbitrary sums, limits or adjoints are executable acts of linguistic practice.

7.3 Order-Sensitive Repair

Noncommutativity of history shifts alone is a weak diagnostic of practical consequences. Two orders can leave different traces even when they lead to the same currently interpreted result. A substantive formation claim should identify a consequence sensitive to the ordering, rather than infer one from different words in the path alphabet.

Consider an explicitly stipulated active record (r, s) . The source context has interpretation version $r \in \{0, 1\}$, where version 1 includes a selected corrected application condition. The target context has version $s \in \{\perp, 0, 1\}$, with $\perp$ denoting absence of a transferred application. A source correction C and a contextual extension E have the partial updates in Equation 30.

$$C(0, s) = (1, s), \quad E(r, \perp) = (r, r). \quad (30)$$

The historical operations additionally append their events to K . The active-record formulas in Equation 30 deliberately assume that correction remains local unless another operation transmits it. That assumption is the proposed mechanism to examine.

Both orders are applicable at $(0, \perp)$, but Equation 31 gives different active outcomes.

$$(E \circ C)(0, \perp) = (1, 1), \quad (C \circ E)(0, \perp) = (1, 0). \quad (31)$$

For a readout $q(r, s) = 1$ exactly when $r = s = 1$, the two outcomes of Equation 31 have values one and zero. Correction before transfer carries the revised condition to the target; transfer before a purely local correction leaves a stale target interpretation. In the workshop illustration, the copied use could retain a dismantling-only assessment after the source practice incorporates a reassembly requirement.

Figure 5 displays the two paths and their distinct readouts. It is a constructed example of an update architecture. It does not show that the word “correction” invariably denotes a local update, or that one operation order is always preferable.

There is a useful control case. A different correction C^+ can update both contexts whenever a target is present, while updating only the source when the target is absent. Then both orders starting at $(0, \perp)$ end at $(1, 1)$. The full history paths still differ, so their shift operators still distinguish the sequences. The selected endpoint readout does not. This control demonstrates that the practical order effect requires the local update rule; it does not follow merely from the algebra’s noncommutativity.

Let $M_q e_h = q(\text{end}(h)) e_h$ be the diagonal observable of this readout. The two expectation values after $L_E L_C$ and $L_C L_E$ acting on the initial empty history reproduce one and zero. Those values are deterministic bookkeeping for the two stipulated records, not experimental probabilities. The same construction with C^+ yields equal values.

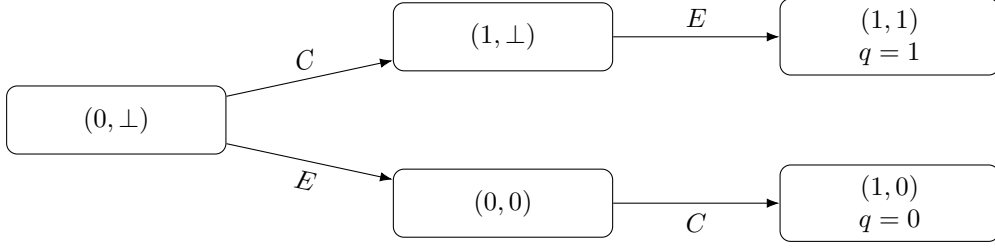


Figure 5: A Stipulated Correction-Transfer Order Effect. The two routes retain different active target versions because correction is local in Equation 30. The readout records the selected application condition; it does not measure understanding or legitimate authority.

7.4 Repertoire Continuation

The history representation can examine more than a single binary readout. Take a finite declared repertoire Q of partially applicable tests $q : \Omega_0 \rightarrow \{0, 1\}$. A test can concern a task-specific use, contextual discrimination or represented repair. A value of one records satisfaction of its stipulated condition, zero its failure, and undefinedness its inapplicability or insufficient record. These three statuses should not be collapsed into a claim that an undefined use is false or impossible.

Define the diagonal projections P_Q^{def} and P_Q on $\mathcal{H}$ by Equation 32.

$$\begin{aligned} P_Q^{\text{def}} e_h &= \mathbf{1}_{\{\text{every } q \in Q \text{ is defined at } \text{end}(h)\}} e_h, \\ P_Q e_h &= \mathbf{1}_{\{\text{every } q \in Q \text{ is defined and equals 1 at } \text{end}(h)\}} e_h. \end{aligned} \quad (32)$$

The indicator symbols in Equation 32 are mathematical predicates. Their use does not provide a measurement model for linguistic understanding. The two projections separate recorded test applicability from satisfaction; in particular $P_Q \leq P_Q^{\text{def}}$.

Let S be a selected family of histories that satisfy Q , and let P_S project onto their basis vectors. The condition $P_S \leq P_Q$ records that selection. An operation is a successful continuation of this selected family only if it is executable there and its outcomes still satisfy the repertoire. Proposition 7.2 expresses both requirements.

Proposition 7.2 (Executable Repertoire Continuation). *For $P_S \leq P_Q$, the operation β is executable at every history in S and all its outcomes satisfy Q if and only if Equation 33 holds.*

$$P_{D_\beta} P_S = P_S, \quad (\mathbf{1} - P_Q) L_\beta P_S = 0. \quad (33)$$

Proof. On e_h with $h \in S$, the first identity in Equation 33 says exactly that β is executable. Given this, $L_\beta e_h = e_{h \cdot \beta}$, and the second identity says that the resulting history lies in the range of P_Q . Conversely, these two stated properties of every selected basis history give both identities on their finite linear span. Boundedness extends them to its closure. $\square$

The two conditions in Proposition 7.2 perform different work. A nonexistent repair could satisfy the second equation by acting as zero everywhere. The first equation excludes that vacuous success. An executable operation can instead violate the second by destroying a required distinction. Undefined outcome tests also fail the second condition, but P_Q^{def} distinguishes this evidential or applicability failure from a recorded negative outcome. Formation gains can be examined on histories outside the range of P_Q whose appended successors enter it; that is a different claim from preservation of an existing repertoire.

The criterion applies to an ordered operation word by replacing L_β with its product and using the product's actual execution domain. Domain compatibility cannot be inferred from the domains of the individual labels at the initial configuration alone. Earlier steps can create or remove the conditions required by later ones. This is the algebraic reason to retain the intermediate historical records.

7.5 Intermediate Availability

The domain condition in Proposition 7.2 becomes more informative when a practice's nominal correction procedure is unpacked. A challenge may have to be recorded, delivered to someone capable of assessing it, interpreted as relevant to the selected use, resolved, and incorporated into the resource consulted on later occasions. These are possible components of a procedure, not a mandatory universal sequence. The interpretation determines which components an operation label abbreviates. A formal composite can stand for the complete enacted route only where each required intermediate action is available.

Consider the local-copy example. Recording the revised source condition can leave the target's copy untouched. Notifying the target can leave the notification unread. Reading it can reveal that the target uses a different criterion, requiring a decision about translation or adoption. Updating the target then changes the operative record. A model that represents the first notification as the completed correction has absorbed several substantive premises into its label. The history construction permits those premises to be reopened by splitting the label and declaring the intermediate configurations.

This refinement changes how failure is described. If the target has no accessible recipient, the delivery step can be undefined. If a recipient receives the correction but it has no intelligible application to the target's task, the semantic comparison can remain undefined. If the comparison is understood and the target deliberately retains the earlier version, the outcome is a defined difference whose justification requires separate assessment. These cases cannot all be represented as a small value of the same correction variable without losing their possible remedies. The partial-operation language earns its place by making the different obstructions expressible.

A finer representation is not automatically better. If the purpose is only to compare two completed and adequately documented update histories, the composite label may retain all relevant information. If the purpose is to explain why an officially available remedy fails to affect future uses, the intermediate route is part of the analytical object. The appropriate resolution therefore follows the inference being tested. The algebra supports refinement, while the philosophical question determines which additional distinctions deserve a representation.

The distinction between a history and an endpoint also acquires practical force here. Two current copies can both display the revised term. One can result from understanding and adopting the correction; another can result from a compulsory replacement whose meaning remains unclear. Their identical endpoint strings do not warrant the same shared-use attribution. A retained readout of the relevant uptake, alongside the operation trace, can separate the accounts if the evidence supports it. Adding that readout to an algebra records an interpretation; the evidence for the interpretation remains indispensable.

7.6 Semantic Revision

The construction deliberately fixes Q for each comparison. A consequential repair can instead change the repertoire's interpretation. In that event, an old test and a new test may share a name without testing the same thing. One must identify which conditions are retained, revised or newly introduced before comparing their projections. The equality of two matrices would not establish historical or semantic identity across an unexplained relabelling.

This boundary preserves the philosophical contribution of the algebra. The construction makes a selected formation claim precise enough to expose its operation-domain and sequencing assumptions. It also separates recorded history from active readout, executability from successful continuation, and test satisfaction from the warrant for the test. A field minimum supplies none of these identifications by itself. Together, the historical and algebraic representations provide questions that the empirical and interpretive inquiry must answer about the practice actually being studied.

8 Negotiated Reference Practices

The preceding account requires cases in which participants' earlier interaction changes the conditions of later linguistic activity. This section examines two experimental investigations of reference, then devel-

ops a limited philosophical reconstruction of their relevance to local formation. The experiments concern already competent speakers engaged in recurring tasks. They therefore help isolate changes within a practice without requiring a theory of language origins or the acquisition of an entire linguistic competence. The reconstruction asks what can become shared, how historical dependence enters the explanation, and which conception of formation accommodates successful variation. It keeps the experiments' findings separate from the stronger account of extensible use investigated in this paper.

8.1 Experimental Reference Histories

Clark and Wilkes-Gibbs studied eight pairs arranging twelve tangram figures across six trials. Directors' descriptions shortened, exchanges required fewer turns, and initial proposals could be repaired, expanded or replaced through interaction. The authors explicitly concern themselves with speaker reference rather than semantic reference; their discussion also recognizes pressure to appear to understand and unequal opportunities to provide feedback [4, pp. 2, 10–17, 34, 36–37]. This combination matters: collaborative accomplishment is already distinguished from both an independently sufficient expression and an ideally equal interaction.

Brennan and Clark varied the competing objects, repetition history, conversational roles and, in their third experiment, the partner. Their findings support provisional conceptual pacts affecting later reference. In the partner-change comparison, retention of an earlier description was greater with the same partner; the first-trial contrast was reliable by participants and marginal by items. An explicitly atypical appendix example shows successful understanding alongside alternating descriptions [2, pp. 1485–1493]. Neither the experimental contrast nor that example establishes how frequently an entire community sustains a particular convention.

These studies can be used as more than illustrations of the familiar thought that context matters. They place pressure on a particular explanatory strategy: reconstructing every later contribution from the currently visible referent, a speaker's general linguistic competence and a context described without the relevant interaction history. The philosophical issue is the adequacy of that reconstruction. When explaining a later contribution, an inquiry may need to retain what these participants have already done together, which alternatives became salient, and which ways of proceeding they can now take for granted. Such retention does not require the hypothesis that a new dictionary meaning has been added at a uniquely identifiable instant.

The restriction to a selected task is methodologically productive. A local investigation need not decide every question about the participants' language before studying a change in their joint practice. It can identify an introduced use, specify the recurrent occasions on which it matters, and examine the transition from laborious establishment to comparatively ready reuse. That transition supplies a bounded object of explanation even where the participants' wider linguistic repertoires remain largely unchanged.

8.2 Changed Conditions Of Reuse

The present reconstruction begins with a distinction between an episode's accomplishment and its consequences for another episode. Suppose an unfamiliar description enables a listener to locate an intended object. This establishes something about that encounter. A formation claim asks additionally whether the encounter changes how a subsequent description can be produced, recognized, challenged or elaborated. The change may consist in a remembered association, an expectation about a partner, an accessible example, an accepted contrast, or several of these together. A successful introductory episode and a changed organization of later use are therefore distinguishable even when one contributes causally to the other.

The distinction supports an explanatory account of reduced introductory work. An early description may require a comparison, a demonstration and an explicit check. Later use may require only the expression because the earlier work has altered participants' expectations and practical orientation. The omitted explanation has not necessarily become irrelevant. Its consequences can remain operative through memory, material arrangements and a continuing relation among participants. What has changed is where the

work is carried. A trace of an earlier encounter can make a later operation available without the earlier encounter being reproduced in full.

The account also explains the limits of utterance length as a formation criterion. Length concerns a manifested utterance. The historical explanation concerns an organization supporting its use. A short utterance can remain usable because there is only one possible object, because a pointing gesture does most of the work, or because the listener has learned how this partner selects descriptions. These possibilities can coincide in one episode. An explanation must identify their respective contributions rather than read a single mechanism directly from the number of words.

Conversely, an established use may require a longer expression when a new ambiguity appears. Increased explicitness can then sustain the practice by restoring a distinction that earlier circumstances made unnecessary to articulate. If formation were defined as monotonic abbreviation, this successful adjustment would be classified as regression. The more useful object is a changing organization of occasions, expectations and available responses. Efficiency is one possible consequence of that organization, while the ability to elaborate a use can disclose another.

The positive GR interpretation lies here. A history can transform the availability of later operations without producing an autonomous object detachable from every enabling relation. The introduced expression becomes usable through a historically organized relation among its form, the occasions of its deployment and participants' practical capacities. It can subsequently contribute to that relation's further development. This is a selective interpretation of the formation history, consistent with the historical and operational representations developed earlier; it is not an additional empirical finding attributed to the experiments.

8.3 Partner-Relative Availability

A local use can be established between participants while remaining unfamiliar to an equally competent outsider. This possibility clarifies the sense in which availability is shared. General competence provides resources for interpreting an expression, but participation in a particular history can supply an additional route to its locally intended use. The outsider's need for clarification need not show that the earlier participants lacked a convention. It may instead identify part of that convention's domain.

Three different questions arise. Can the original participant remember and produce the expression? Can another participant in the established practice interpret and respond to it? Can a newly encountered participant enter that practice without further introduction? These concern retention, joint availability and entry, respectively. Success on the first two does not settle the third. Yet difficulty with entry also does not make the use intrinsically private: an intelligible introduction may extend participation. The inquiry must examine the available route rather than infer either universal publicity or unshareable privacy from a single boundary.

This distinction gives historical specificity a constructive role. Earlier coordination can allow participants to rely on a use without continually negotiating its entire application. The resulting economy creates room for further action: attention can move to another feature of the task, to a difficult exception, or to a proposed elaboration. Such room is a possible generative consequence, not something established merely by detecting lexical repetition. It becomes an evidential question whether participants actually acquire these further possibilities and under what continuing conditions.

Historical specificity can also impose costs. A newcomer may have to learn how several expressions are used locally, and the experienced participants may need to articulate distinctions that they usually leave implicit. A failure to articulate them can impede entry even when established partners continue to coordinate. A practice can thus become locally more available and externally less accessible at the same time. These are different relations to a formation, not contradictory verdicts about a scalar quantity of conventionality.

An enriched individual account remains a serious explanatory rival. It can represent each participant's memory, expectations about partners and sensitivity to feedback. Nothing in the present reconstruction proves that such an account must fail or that a collective formation is an irreducible entity. The

positive commitment is that the relevant dependencies must appear somewhere in an adequate explanation. Treating the organized practice as an analytical object makes those dependencies available for joint investigation; it does not establish a unique ontological decomposition.

8.4 Complementary Linguistic Use

The possibility of understanding without matching descriptions motivates a further reconstruction. Participants may orient successfully to one another's uses while describing a target differently. If the inquiry measures only whether their forms become identical, it can overlook what they have learned about each other's ways of proceeding. Their coordination may involve a relation between different descriptions rather than convergence on a single description.

This does not make every instance of successful translation evidence for an established convention. A listener may solve a new interpretive problem afresh on each occasion. The stronger local claim requires evidence that some relevant orientation has become available for renewed use. Participants might anticipate which description another will employ, recognize when an alternative is intended, or carry a distinction across an exchange without a fresh explanation. Those are candidate forms of shared availability. Which of them matters depends on the use being investigated.

The distinction is especially important when different descriptions preserve different useful aspects of a task. Forcing one expression on all participants can improve one measure of uniformity while removing a contrast needed elsewhere. Equally, retaining several forms can create avoidable ambiguity. Neither plurality nor uniformity is sufficient by itself. The explanatory question concerns how the practice handles the relations among its uses: whether participants can identify the intended contrast, notice a consequential mismatch and continue the task through an appropriate response.

The paired fields developed earlier can represent selected production and uptake relations without equating the two carriers. Their interpretation must consequently specify which route through a practice is being represented. A nonzero recurrent mode can concern the reliable coordination of different activities. It need not mean identical words or identical mental representations. Conversely, apparent agreement along the selected mode does not establish that every context required by the practice remains supported. The contextual repertoire supplies a further object of assessment rather than a synonym for the field amplitude.

8.5 Formation Beyond Referential Repetition

Reference provides a tractable site for investigating local formation because a task can make some consequences of an utterance observable. The broader problem nevertheless concerns more than repeatedly selecting the same object. An introduced use may make a previously unarticulated contrast available, license a new inference, organize a joint activity or permit a novel comparison. These possibilities require their own evidence. They cannot be obtained by expanding the word *reference* until every linguistic accomplishment falls within it.

The transition to a stronger formation claim can be stated positively. First identify what participants are proposed to have acquired: for example, a reusable distinction relevant to a recurring practical decision. Then identify occasions on which that acquisition would make a difference. Finally examine whether participants can use, explain or repair the distinction across those occasions through the developing practice. This sequence keeps the philosophical object connected to evidence without assuming that every extension must be anticipated by an explicit rule.

An extension can disclose the formation of a use rather than merely test its pre-existing limits. Participants may encounter a difficult application, compare it with earlier cases, and revise how they proceed. The episode then supplies evidence about the earlier practice and contributes to a successor organization. These two roles should be distinguished in the record. A capacity that emerges through the investigation should not be silently backdated to the period before the encounter.

The empirical studies therefore function as constraints and resources for the present account. They make historical interaction an inspectable part of the problem and offer bounded settings in which ri-

val explanations can be compared. The additional philosophical investigation concerns how recurrent availability, contextual differentiation and possible extension fit together. Its evidential requirements are developed in Section 9.

9 Formation Evidence

A formation account becomes informative when its distinctions change which histories an inquiry must inspect and which conclusions those histories support. This section develops that evidential connection. It separates the target of an inquiry from an observed performance, relates historical and field descriptions to discriminating comparisons, and explains how inquiry can participate in the process it investigates. The method is a philosophical analysis of possible evidence. The comparisons proposed below are research designs and interpretive obligations, not experiments already conducted or a universally sufficient test for linguistic convention.

9.1 Formation Targets

An inquiry should begin by identifying the use whose formation it seeks to explain. A phrase's occurrence, its successful interpretation, its renewed shared availability and its productive extension answer different questions. They can concern one historical process without supplying interchangeable measures of that process. A record adequate for locating an initial occurrence may omit the later responses needed to assess shared availability. A record of smooth repetition may contain little evidence about the contexts in which participants can elaborate or challenge a use.

The declared target must therefore include more than a string of words. It identifies relevant participants or roles, recurring occasions, the practical or interpretive contrast at issue, and the horizon over which renewed availability is claimed. These elements need not be fixed forever. They must, however, be sufficiently explicit for contrary evidence to bear on the proposal. Otherwise every unsuccessful application can be removed from the domain after the event, leaving a formally consistent but uninformative claim.

There is a difference between legitimately refining a target and protecting it from evidence. Suppose an inquiry proposes to explain how participants can apply a distinction across several kinds of recurring occasion. It subsequently finds that only one authorized office can issue an accepted designation. Narrowing the target to that office may yield a true description of an institutional procedure. It does not yet answer the original question about participants' practical use of the distinction. A responsible refinement records what the revised target explains, why the change is warranted and which earlier question remains unresolved.

The author's earlier account of language futures already distinguishes a declared bearer and content of continuation from the indicators later used to investigate them, while separating persistence, reproduction and becoming [12, pp. 6–8]. The present formation inquiry inherits that discipline at a smaller scale. It asks how a selected use becomes available within a practice; it does not redescribe every change in a language future as local convention formation.

9.2 Discriminating Comparisons

An observable pattern becomes stronger evidence when a comparison separates explanations that otherwise agree about it. Repeated correct responses may fit several accounts: participants recognize the intended distinction; they remember a fixed item sequence; a visible cue supplies the answer; or one participant repeatedly directs the other through the task. Each account predicts some successful performances. Their differences become visible only through appropriately selected changes in occasion, support or relation.

Table 1 organizes possible comparisons by the inferential role they serve. Its entries are proposed analytical tests. They do not supply a universal checklist whose completion would certify a convention,

Analytical Target	Discriminating Comparison	Evidential Limit
Renewed availability	Reuse on a later relevant occasion without repeating the full introduction	One success does not establish a durable or unrestricted capacity.
Contextual discrimination	Cases where the proposed distinction and a simpler cue recommend different responses	The probe must preserve the relevant meaning of the task.
Partner dependence	Retain the task while changing a declared participation relation	Failure can locate an entry requirement rather than negate earlier formation.
Support dependence	Withdraw one introductory aid while retaining specified continuing conditions	Persistence establishes independence only from the tested aid in that setting.
Correction access	Trace a challenge, its reception and its consequences for subsequent use	A recorded challenge does not by itself establish recognized or justified standing.
Productive extension	Introduce an unfamiliar but relevant application and follow the resulting interpretation	The encounter may help form the capacity it appears to test.

Table 1: Formation Evidence Comparisons. The comparisons distinguish selected claims about one use; their adequacy depends on the practice and the intervention.

and they do not assume that every practice should permit every intervention. A comparison earns its place when it addresses a live rival explanation without destroying the very activity under investigation.

Consider the comparison involving contextual discrimination. If a proposed distinction always coincides with a visible feature in the observed cases, either may explain successful classification. An informative further occasion separates them. A participant who changes the response in accordance with the practical distinction supplies evidence different from a participant who follows the old visible cue. This reasoning does not demand an inaccessible inspection of private meaning. It connects an interpretive claim to differences in what participants can do, explain or repair under declared circumstances.

The same logic also restrains the interpretation of failure. A newly introduced probe may add a material difficulty, an unfamiliar medium or an ambiguous instruction. Failure then need not concern the distinction the inquiry intended to test. The comparison has to retain enough of the original task for its result to bear on that target. Establishing this relevance is substantive work involving the practice and its participants; the mere availability of a controlled manipulation does not perform it.

Several limited comparisons can consequently be more informative than a single global score. They can identify where a use is readily available, where it requires support, and where its application remains unsettled. Such a profile does not postpone explanation until everything is known. It identifies the particular dependencies through which the formation presently operates.

9.3 Introductory Support Dependence

The field investigation considers recurrent organization after removal of a selected introductory forcing. Its empirical interpretation requires a distinction between the aid used to establish an activity and the relations that continue to sustain it. Removing a demonstration while retaining familiar partners, recurring tasks, accessible records and opportunities for repair tests one dependence. It does not test the withdrawal of every condition on which the use relies.

This matters because an apparent transition to autonomy can have several different meanings. Participants may no longer need the original demonstrator. They may no longer need the original wording. They may be able to continue through a different material interface. Each is a substantive achievement when it concerns the relevant practice. None entails that the use persists independently of participants, memory, material organization or a domain in which the distinction has consequences.

A useful historical account therefore traces the substitution of supports. What earlier work is now carried by familiarity? Which clarifications have become incorporated into a record? Which parts of a task must remain recurrent for the use to retain its significance? The investigation concerns a reorga-

nization of dependence, potentially including the removal of a particular dependence. Describing that organization is more informative than treating all assistance as evidence that formation has not yet occurred.

There is also an asymmetry between dependence established by interruption and independence inferred from survival. If removing an aid disrupts a practice, the result may implicate that aid or a disturbance introduced by its removal. If the practice survives, the result concerns the tested circumstances and interval. Neither result determines how the practice behaves in every future environment. A conditional formation claim can still be strong: it identifies the conditions, the relevant occasions and the evidence that the use remains available within them.

The earlier cultural-reconstruction manuscript distinguishes engagement, learning, transfer and historical warrant, and treats documentary resources and living practice as potentially recursive supports [10, pp. 13–14]. Here this inherited distinction prevents a successful training encounter from being treated automatically as transfer and prevents a surviving record from being treated automatically as operative shared use. It also provides a constructive possibility: a record can become part of a new support arrangement rather than merely preserve evidence of an earlier one.

9.4 Contextual Field Adequacy

The mathematical fields represent selected features of production and uptake. Connecting them to an investigated practice requires a realization account specifying which observations warrant assigning which field values, over which occasions, and with what limitations. Repeated expressions, acknowledgments, task outcomes and repair episodes provide different kinds of evidence. They should not become interchangeable merely because each can be counted.

A mathematical projection can preserve a recurrent mode while omitting a contextual distinction. An inquiry may find that a selected production–uptake route persists across many occasions, yet discover that a required application remains unsupported. These descriptions are compatible because they concern different retained content. The mistake would be to promote recurrence in the projection into adequacy for a repertoire that the projection does not distinguish.

The converse possibility deserves equal attention. Participants may preserve a useful relation among different forms while a measure of identical expression remains low. A projection built to detect lexical matching would then be poorly suited to the declared target. Replacing it with another observable requires justification from the practice, not simply a preference for a favorable result. The replacement should retain the explanatory question and state which newly included distinctions matter.

The full historical description has a different role from the reduced field state. It can retain how a response became available, which repair preceded it, and what changed at another site before a later application. The contextual operation algebra makes such ordering inspectable under its declared assumptions. A reduced field can then study selected recurrence while the history and repertoire retain questions that recurrence alone cannot settle. This division of labor gives the mathematics a positive use without asking one representation to answer every linguistic question.

Observation itself can be partial. A researcher may hear a participant accept an expression without seeing the subsequent activity, or inspect a finished record without observing the negotiation that produced it. An unobserved response is not equivalent to an absent response. Equally, a recorded sequence can be accurate yet omit the distinctions needed for a particular inference. The appropriate response is to state which claim remains underdetermined and what further evidence would discriminate it; assigning a numerical score does not remove the omission.

9.5 Formative Inquiry Effects

An investigation of a developing use may change that use. Asking participants to compare applications can make an implicit difference explicit. Presenting an unfamiliar case can initiate a repair that participants had not previously undertaken. Requesting an explanation can produce a teaching device that

later becomes part of the practice. These possibilities are especially relevant when the target includes extensibility rather than the reproduction of a fixed response.

The evidential task is to distinguish discovery, elicitation and contribution. A participant's immediate competent response can support a different historical claim from a response achieved after a researcher supplies a contrast and guides a revision. Both encounters may be informative. The latter provides evidence about a capacity to develop the use through that interaction; it need not establish that the resulting application was already available beforehand.

This distinction does not require a fiction of inquiry without effects. It requires provenance adequate to the inference. The record should retain the prompt, the assistance supplied, the participant's response and any subsequent reuse. If a later unprompted application succeeds, the history includes the intervening contribution of the inquiry. The resulting formation can be genuine while its genealogy remains different from that of an independently established use.

Productive extension is therefore neither unlimited novelty nor a demand that participants invent an unprecedented expression on command. A bounded inquiry can investigate whether a use supports an unfamiliar relevant application, whether participants can articulate a consequential contrast, or whether a difficulty leads to a revised but traceable continuation. The evidence concerns that selected capacity. A familiar use can remain generative through faithful application, maintenance and recombination; the present paper's attention to introduced uses does not redefine the wider GR concept by novelty alone.

9.6 Sequential Evidence Designs

The proposed comparisons can be organized into a sequence that separates retained availability from formation during the inquiry. Begin with a record of ordinary use before offering a new explanation. Identify an occasion on which the proposed distinction and a simpler cue would support different responses. Record the participant's initial response, any clarification requested, the assistance actually supplied and the resulting continuation. Later inspect a further relevant occasion without repeating that assistance. This design yields several temporally distinct claims instead of collapsing the whole sequence into one success score.

An immediate discriminating response can support pre-existing availability within the tested conditions. A response achieved through explanation supports assisted performance and possibly formation during the encounter. A later appropriate response can support retention or renewed access to what the encounter established. Failure on the later occasion can point to loss, changed support, a changed task or an inadequate original interpretation. The sequence narrows those alternatives only to the extent that its contextual records permit the relevant comparisons. There is no assumption that assistance is a contaminant: it can be the mechanism whose formative effect the inquiry seeks to explain.

The inquiry should also examine who bears the work. Suppose a novice's short descriptions appear to improve rapidly while an experienced partner silently adds more inferential or checking work. The pair's achieved coordination can be real, yet an attribution of independent novice application would be premature. Conversely, measuring only the novice's explicit explanations can miss successful participation through legitimate deferral. A useful account records how the two contributions connect and which role the claim attributes to each. The target determines whether concentrated support is an intended realization or a failure of the advertised availability.

Comparisons across partners require comparable care. Replacing a familiar partner can remove shared history, alter the interaction medium and change the distribution of expertise simultaneously. A difference in performance then identifies the effect of that combined change. A more specific claim about historical familiarity needs either a comparison that holds relevant alternatives adequately fixed or an explicit argument about why they do not explain the difference. Qualitative process records can help identify where the exchange changes; controlled contrasts can help isolate a particular dependence. Neither method eliminates the need to interpret what task the participants are actually accomplishing.

The proposed field explanation introduces a further comparison obligation. An investigator could observe that one contextual route becomes dominant and another fades. That observation fits the shared-saturation example, but it also fits reduced demand for the second route or independent loss of its support.

Evidence for coupled saturation should address the interaction: changing support for one route should have the predicted conditional consequence for the other, with relevant alternative pathways examined. The partial-coupling model in Section 6.6 makes that dependence explicit. Its coefficients would require independent operational interpretation before a numerical fit could be assessed.

Lastly, reports of unresolved cases have positive explanatory content. An account might establish routine application while leaving its extension under a new medium undecided. It might establish intelligible disagreement while lacking evidence about who can make the disagreement consequential. Such a result specifies the boundary of supported understanding and the next discriminating inquiry. It is more informative than averaging these different states into a single uncertain conventionality score. The historical record should preserve that partial result so a later settlement can be studied as a possible development rather than retroactively assumed.

9.7 Explanatory Adequacy

The account supports a comparative explanatory commitment. When earlier interaction changes what participants can subsequently do with a use, an adequate explanation should retain those changes and their enabling relations. It may locate them in individual learning, interpersonal expectations, material arrangements or a coordinated model of the practice. The present approach favors making their relations explicit when those relations explain the formation. It does not establish that every adequate rival must adopt the same ontology or segmentation.

Nor does a formation finding settle justified authority. Participants can acquire effective expectations while disagreeing about who may correct an application or decide a contested extension. Inquiry can trace whose challenge changes later practice, whose challenge is ignored and what makes either outcome possible. Those histories concern realized standing and influence. Whether the standing is justified requires an argument that recurrence, success and institutional recognition do not supply on their own. The following discussion of correction standing develops this boundary without excluding unequal practices from descriptive analysis.

The resulting standard of evidence is demanding but bounded. A warranted account specifies the use, preserves the relevant historical comparisons, distinguishes its observations from its interventions and connects each conclusion to the conditions under which it is supported. It remains open to a rival explanation and to a challenge concerning the adequacy of its target. These obligations make local formation a researchable problem while leaving the general individuation of languages, competence reproduction and the justification of terminology governance to their respective inquiries.

10 Correction Standing

A recurrent use can support correction, but the existence of a repair operation does not settle who may invoke it or why its result should be accepted. This section develops the philosophical issue left open by the formal and empirical investigations. It distinguishes different grounds of correction, examines the apparent circularity of convention formation, and considers disagreement about extension. The aim is to identify the normative premises internal to a formation claim. A general account of legitimate terminology governance requires a separate inquiry.

10.1 Grounds Of Assessment

Four judgments can separate in one workshop exchange. A participant may understand what “return-ready” is intended to mean. The participant may judge that the object fails the intended condition. Others may recognize that participant as entitled to request a check. The distribution of that entitlement may itself be defensible or objectionable. Understanding, application assessment, practical standing and the justification of standing are therefore distinct issues. Their distinction does not imply that they operate independently: an institution can affect whose assessment becomes audible, and a successful objection can alter future standing.

A correct factual observation need not be a correction of linguistic use. Suppose a worker points out that an assembly lacks a necessary orientation record. If the local expression is openly used only for dismantling success, the observation may show that the term is unsuitable for a reassembly task without showing that its current application is linguistically mistaken. If the participants have instead undertaken to use the term for readiness for reassembly, the same observation can challenge that application within their adopted practice. The difference lies in the commitment being assessed. Material facts constrain the judgment, while the expression's local role determines which judgment its application purports to make.

This distinction provides a positive ground for some criticism without claiming a complete theory of correctness. When participants publicly rely on a readiness claim for a specified activity, evidence that the claimed condition is absent is relevant to the claim's adequacy. The criticism need not wait for agreement about every aspect of meaning. Its force is local to the undertaken commitment and the supported factual account. An objection to the commitment itself, or to whose interests determine the selected task, opens a further question that the factual finding does not answer.

The algebra in Section 7 represents this separation by keeping the repertoire specification outside the operator identities. An operator can be executable and preserve every selected test while the tests exclude a consequential concern. A different operation can interrupt the selected repertoire while enabling a justified revision of it. The formal criterion is useful because it makes the commitment explicit; it is not a reason to treat every chosen commitment as final.

10.2 Formation Circularity

The most immediate objection to the account is that it assumes precisely the shared meanings and standards it proposes to explain. The fields have interpreted indices, the repair example has versions, and the repertoire contains meaningful distinctions. If all of those were already available in the same form to the participants, what has the formation account added?

The response begins with the paper's restricted object. Participants already possess linguistic competence and practical resources. An introduced use can make a familiar distinction easier to invoke jointly, connect previously separate applications, or reorganize the responsibility associated with an assessment. Explaining such a transformation legitimately starts from meaningful prior practices. It does not derive the first meaningful norm from an uninterpreted physical regularity. An account of that much stronger problem would require different premises.

The objection remains decisive where the claimed transformation exceeds those premises. A fixed task kernel can explain the development of an expressive coupling for an already specified contrast. It cannot establish that the participants thereby created a contrast absent from their previous resources. To support that stronger interpretation, the inquiry needs a history in which problems, comparisons and consequences change, together with evidence that the changed distinction becomes available to the participants. A formal operation can record such a change after it has been interpreted. Its mere inclusion does not explain how the interpretation became possible.

There is nevertheless a constructive middle position. A distinction can be individually available without being jointly usable; it can be tacitly enacted without being available for explicit challenge; and it can guide a narrow comparison without supporting the consequences of a wider practice. Formation across these boundaries can be substantial without amounting to conceptual creation from nothing. The evidence should identify which boundary was crossed. This account avoids measuring philosophical importance by how radically the investigator describes novelty.

10.3 Contested Extension

Successful past applications do not uniquely determine every future application. Two candidate interpretations can agree on all retained cases while differing on a new component or procedure. This elementary underdetermination does not make all extensions equally good. Participants can draw on the purpose of

the use, prior reasons, material differences, accepted analogies and the consequences of each interpretation. The earlier convention and normative-pragmatic accounts provide different resources for explaining those assessments [18, pp. 36–42][1, pp. 639–650].

The distinction between application and revision can itself be disputed. One worker may say that reassembly evidence was implicit from the outset; another may regard it as a later addition. An adequate history preserves both interpretations and asks what the earlier encounters actually support. The current practice can adopt the more demanding use even if its precise origin remains unsettled. Present formation and retrospective attribution then have different evidential statuses.

Three forms of continuity can help clarify the dispute. The word can remain unchanged. The use can retain a historical connection through explicit discussion and modification. Selected inferential or practical consequences can continue. None entails the others without further assumptions. A new word can preserve an old distinction; an unchanged word can acquire an incompatible role; an acknowledged revision can preserve some consequences while replacing others. The preceding paper's distinction between profile comparison and historical lineage remains relevant at this local scale [7].

The resulting account permits a determinate local decision without claiming a final semantic essence. Participants may specify how the expression will be used for the next task and record the unresolved interpretation of its past. A historical model can represent this as an added operative settlement. It should not rewrite the disputed past to manufacture unanimity. Equally, the fact of earlier disagreement does not prevent later coordination from becoming effective.

10.4 Effective Authority

An accepted correction can be effective because of expertise, demonstrable evidence, institutional office, habitual deference or constrained alternatives. Several of these conditions can coexist. A formation explanation should identify how the correction becomes consequential rather than infer its source from agreement alone. Prior GR work already distinguishes interpretive authority from control over the conditions under which alternatives become intelligible [6, pp. 23–25]. Its relevance here is specific: a use can become easier to repeat while becoming harder to question on the terms that matter to some participants.

Consider a stipulated inspection form permitting only “return-ready” or “not return-ready.” The form can help participants coordinate if the relevant assessment is sufficiently settled. It can also obscure whether failure concerns the object's condition, missing evidence or disagreement about the category. A worker unable to enter the distinction may select the nearest permitted answer. High agreement in the completed forms then provides limited evidence of agreement about the underlying issue. The mechanism concerns the interface that organizes available responses, not an assertion that forms or binary categories are inherently oppressive.

Some concentrated authority can improve formation. A specialist may detect a consequential distinction and make its reasons inspectable; a responsible coordinator may settle a temporary usage so work can proceed. The relevant questions include whether the authority tracks the task, whether its evidential grounds can be examined and whether discrepancies can reach an appropriate forum. Those questions differ from requiring equal influence over every application. The formation inquiry can describe these relations and identify failures of a claimed arrangement without deriving a universal distribution of authority.

The field model provides a disciplined analogy at this point. Its dominant mode can omit a required contextual route under shared saturation. That mathematical example makes one possible failure of an aggregate indicator clear. It does not prove that a dominant speaker suppresses others, assign speakers to eigenvectors or identify a coefficient with power. A social explanation would need the actual mediation, incentives, access conditions and histories connecting participation to the observed loss. Maintaining this boundary preserves the model's diagnostic value.

10.5 Local Reasons For Answerability

A correction procedure needs positive justification when a participant claims that others ought to answer a challenge. One limited argument begins with an undertaken practical commitment. Suppose the group invites others to rely on “return-ready” as indicating a checked relation between an assembly and its supporting record. It has then presented the application as answerable to that relation. Evidence that the record belongs to a different assembly bears directly on the offered ground of reliance. Responding to that evidence follows from taking the declared commitment seriously, provided the commitment itself is one the participants can defensibly undertake.

This argument has identifiable premises. It assumes that the relevant application actually undertakes the stated commitment, that the challenge provides a reason bearing on it, and that answerability to such reasons is appropriate to the practice. The last premise is normative. It is not derived from the frequency of the expression or the stability of a field. The argument can nevertheless be informative without a complete general theory of legitimate authority. It locates an internal tension when a practice invites reliance on a check while systematically excluding evidence that the check failed. The criticism concerns the relation between an undertaking and its operative treatment.

Standing to raise the issue also differs from authority to decide it. A participant can possess relevant information without possessing the expertise to resolve the complete assessment. An arrangement may properly route the challenge to someone else. Its adequacy then depends on that route: whether the evidence can reach a competent assessment and whether the result can affect later applications. Giving a participant a nominal right to submit a concern while making its receipt or consideration unavailable may fail the arrangement’s own promise of answerability. The operation-domain analysis makes that possible discrepancy precise; it does not require every participant to hold every decision power.

Reasons for a temporary settlement can likewise be stated positively. Participants sometimes need a sufficiently definite local use to proceed while a broader dispute remains open. A provisional convention can specify the present task, the evidence it relies on, and the circumstances that would reopen it. Such a settlement creates an intelligible basis for action. Its provisional character is substantive only where the reopening conditions connect to a usable procedure. Calling an interpretation revisable while no later difference can reach its governing operation does not establish practical answerability.

There are competing considerations. A procedure that reopens every settled application can consume the attention required to perform the practice; a procedure that blocks recurrent challenges can protect a mistaken criterion. The present argument supplies no universal optimum between these possibilities. It does identify the relevant object of comparison: which differences are consequential, through which channels they become assessable, who bears the work, and what the selected commitment requires. A mere count of objections or corrections misses whether these relations serve the task for which they were established.

The remote editorial example in Section 11.7 makes the limitation clear. A participant can understand that “open” means revisions are invited while objecting that an unresolved issue was closed prematurely. The semantic account identifies the local status; the normative criticism addresses the decision governing that status. Answering the latter by repeating the agreed word meaning would evade the challenge. Conversely, finding the closure objectionable does not show that the status label was unintelligible. Keeping these questions connected and distinct is necessary for explaining how a convention can be both effective and open to warranted criticism.

10.6 Revisable Practical Commitments

A positive formation account can now be stated more carefully. A locally available use permits participants in specified roles to undertake and receive meaningful applications through a historically established organization. Where correction is part of the claimed achievement, the organization must also provide an effective way for consequential differences to enter its continuation. The adequacy of that way remains answerable to the commitments, evidence and standing at issue.

This does not make comprehensive contestability an existence condition for every convention. An

imposed or rigid use can become recurrent and understood. It does mean that a claim to have formed a reusable, correctable practice requires more than a record of conformity. The demanding claim must show how objections can matter within its declared scope. If correction is always formally admitted but never reaches the operation that governs later applications, the represented repair route and the actual practice have diverged.

The philosophical and formal accounts thus constrain one another. A philosophical specification supplies the distinctions a model must retain. The model exposes hidden dependence on domain coverage, update order or contextual support. A case can then reveal that the specification omitted a role or misidentified a contrast. Revising the account in response is part of the inquiry rather than an inconsistency to conceal. The developed workshop analysis next makes this reciprocal examination concrete.

11 Formation Inquiry

The workshop example can now serve a more demanding purpose than initial motivation. This section develops a comparative inquiry into the formation of “return-ready,” showing how the philosophical distinctions, historical representation, field model and operation algebra constrain one another. Every event described below is stipulated. The case is neither a report of fieldwork nor a recommendation for mechanical safety procedures. Its task is to identify observations and comparisons that could support different formation claims.

11.1 The Initial Difficulty

Suppose a recurring repair practice already distinguishes intact components, damaged components and components successfully removed from larger assemblies. Participants also possess substantial tacit knowledge of reassembly. A particular episode exposes a gap in coordination: an assembly is successfully dismantled, but its orientation records and component correspondence are insufficient for the planned reassembly. One participant introduces “return-ready” to coordinate attention to that difference.

The introduction can have several objects. It might name a familiar state more briefly. It might make previously distributed knowledge jointly usable. It might organize a new relation among preparation, storage, evidence and later work. The investigator should state these alternative reconstructions before selecting an indicator. Otherwise a reduction in explanatory effort could be mistaken for conceptual innovation, or a lack of lexical uniformity could be mistaken for failed understanding.

The first historical record should preserve the problem, the compared objects, the expression, the explanation and the interlocutors’ responses. It should also retain the possibility that participants proceed for different reasons. One may understand the reassembly distinction, another may follow the demonstrator’s gesture, and another may accept a practical instruction without accepting the proposed terminology. A successful episode gives a reason to continue the inquiry; its interpretation remains more specific than a declaration that a convention has formed.

11.2 Successive Formation Episodes

The formation history can be developed through five stipulated episodes. Their order supplies a comparative argument, rather than a universal developmental sequence. In the first episode, the demonstrator contrasts two dismantled assemblies. Both are physically present, but only one has a usable component map. The other participants select the mapped assembly when asked which is return-ready. This establishes successful orientation within the demonstrated contrast. It remains compatible with following the demonstrator’s pointing, selecting the visibly labelled object, or grasping the relation between the map and the intended reassembly. The record should preserve those live alternatives rather than assign the strongest interpretation to an uncomplicated response.

In the second episode, a different participant applies the term to another assembly bearing a neatly printed map. A colleague notices that the map belongs to an earlier version and asks whether its component relations still apply. Suppose the first participant then compares the versions and withdraws the

assessment. This sequence supports more than lexical repetition: the printed map is treated as evidence whose relation to the object can be questioned. It still leaves open how far the distinction was available before the challenge. The withdrawal could express an earlier understanding, an understanding formed through the colleague's prompt, or temporary deference to that colleague. Those interpretations concern different histories of availability.

In the third episode, the challenged participant encounters a further version mismatch and independently asks for a comparison before applying the term. This adds evidence for retention and later mobilization of the distinction. It weakens the explanation that the earlier withdrawal was only a transient response to personal authority. It does not eliminate every rival: the participant may have acquired a rule to ask about version numbers while still missing other relevant correspondences. A further comparison should therefore vary the relevant relation rather than simply repeat the same version-number cue. The point of the sequence is the progressive discrimination of explanations, not a declaration that one successful transfer ends the inquiry.

In the fourth episode, the group discovers an assembly whose individual components and labels are intact but whose relations cannot be recovered from the records. Participants disagree about the proper use. One treats the inventory as sufficient; another argues that a component's place in the assembly matters to the assessment. Suppose they adopt a record of component relations and subsequently use it in discussing readiness. This can be a substantive local transformation even if both participants already understood relations among parts. The new achievement may be their joint articulation as a condition of this assessment. A stronger claim of new concept formation would need evidence about the participants' earlier comparisons, which the stipulation does not supply.

In the fifth episode, another team receives the revised record. If its members can identify the condition and raise a relevant discrepancy, the use has acquired a wider participation route. If they can only reproduce the designation, the achievement is narrower. If their task is different, the imported test may require reinterpretation before either success or failure can be assigned. The original group's own use can remain well formed in all three cases. Portability is therefore a further achievement whose conditions should be investigated, rather than a hidden requirement that retrospectively invalidates every local formation.

The sequence supplies a concrete positive account of what has changed. The introductory contrast becomes a remembered comparison; a challenge makes the evidential relation inspectable; later independent use carries that relation forward; a disputed configuration reorganizes the criterion; and a transfer tests a new participation boundary. These transformations may occur through different media and divisions of work. What connects them is their historical contribution to the declared use's subsequent availability. The complex, fields and operation algebra can represent selected parts of that explanation once the parts have been identified.

11.3 Rival Formation Histories

Consider four possible continuations. In the first, workers repeat the term for the originally demonstrated object and falter when its appearance changes. In the second, they apply the distinction to other objects but depend on one specialist to confirm every use. In the third, different members can invoke and challenge the distinction through accessible records, even while using different paraphrases. In the fourth, a supervisor requires the term on a form while reports about missing reassembly information receive no effective response. Each continuation can contain many apparently successful tokens.

The cases differ in what becomes available. The first may establish an object-specific naming pact. The second establishes a distributed but concentrated support arrangement. The third supports a broader claim about shared application and correction. The fourth can establish a recurrent administrative use while leaving the purported readiness distinction poorly supported. These descriptions remain provisional because further evidence can change the interpretation. They should not be converted into a universal ladder from inferior to superior language.

Table 2 connects each interpretation to a consequential comparison. The comparisons are chosen to investigate the particular claim; they are not a demand to remove all supports from the practice. In an

Candidate Formation	Informative Comparison	Remaining Obligation
Object-specific naming	Change the displayed object while retaining a recognizable task.	Establish which similarities participants actually use.
Specialist-mediated use	Compare ordinary interaction with an available, appropriate alternative checking route.	Distinguish loss of interpretation from loss of evidence or authorization.
Shared contextual distinction	Examine novel applications, reasoned disagreement and retained repairs.	Trace whether responses alter later application rather than only the current report.
Administrative conformity	Compare completed forms with accounts of discrepancies and their subsequent treatment.	Identify whose distinctions can enter the official record and become consequential.

Table 2: Stipulated Workshop Formation Comparisons. Each comparison targets a particular availability claim. These are research questions, not findings about an observed workshop or validated safety tests.

actual consequential setting, inquiry would also need to avoid exposing participants to preventable harm.

11.4 Historical Representation

The represented spacetime should retain the selected encounters and their material, interpretive and documentary continuations. A worker’s role may extend across several episodes. A diagram can connect an introductory comparison to a later challenge. A form can mediate which assessment reaches the next team. Those connections are candidates for explanation; their presence in the complex should be supported by the stipulated or observed history rather than supplied by the desired conclusion.

A typed operation can represent introduction of the expression, addition of a contextual example, registration of a challenge or adoption of a revised application. The active boundary changes when these events alter the couplings available for subsequent operations. The retained complex preserves the previous accepted use as a historical fact, even if it later becomes classified as inadequate. This permits an inquiry into how the practice learned without pretending that it always possessed the final distinction.

The representation should also distinguish a proposed correction from its uptake. Recording a challenge does not show that someone can act on it. A correction can become official while remaining inaccessible at the point of use. Conversely, an informal repair can shape later practice without entering an administrative record. These possibilities identify different maps between event, record, active interpretation and subsequent operation. An adequate explanatory model states which map its evidence supports.

The original experimental literature supplies a useful discipline here. Partner history can affect reference, and lexical uniformity need not be required for successful coordination [4, 2]. It would therefore be misleading to use the workshop’s official vocabulary list as a complete record of shared availability. The task must be observed through the responses and comparisons that its participants actually use.

11.5 Field-Model Realization

One limited field realization might select two recurring routes: application centered on removal and application sensitive to reassembly preparation. The production and uptake coordinates would need interpretations tied to those routes. A kernel could then represent declared reinforcement relations, while the saturation term would represent the assumed interaction among their continuing supports. This realization is a proposal requiring evidence; the words “removal” and “reassembly” do not determine matrix entries.

The exact example in Section 6 clarifies a possible comparison. Under its shared-saturation assumption, the stronger route eventually suppresses the weaker route’s effective field coordinate. Under separate saturation, both routes persist. An actual inquiry should therefore seek evidence about coupling

among supports. Does attention to the routine application reduce the occasions or resources through which the less common distinction is exercised? Can the second route be maintained through a separate practice without changing the first? Other mechanisms, including changing demand, missing materials or a revised task, remain alternatives.

An investigator must not fit these two outcomes by redefining a field coordinate after observing the data. The distinction, observation protocol, allowed parameter variation and comparison models should be specified well enough to expose the proposal to failure. Successful curve fitting alone would not establish the proposed relational mechanism. Nor would a failed fit refute the broader GR historical account, which does not require this particular potential law.

The strongest conceptual-innovation case lies beyond the fixed realization. Suppose participants come to recognize that readiness depends on recoverable relations among components rather than possession of each component separately. The task description and its relevant contrasts may then change. The historical model can retain the episode that makes this distinction available, and the field carrier can be revised to represent it. The old stabilization theorem does not explain the creation merely because a new coordinate has been added. The philosophical and historical argument must establish what that coordinate now means and why the change matters.

11.6 Repair-Sequence Comparison

The order example provides another precise inquiry. Suppose one team copies the source team's use before the source incorporates a new application condition. A correction confined to the source leaves the target version unchanged. If transfer occurs after correction, the target can receive the revised condition. These are the two stipulated updates in Equation 31. The difference concerns transmission architecture, not an intrinsic preference for doing everything earlier.

The practical investigation should identify the update route. A shared record that reliably propagates a correction can realize the control case C^+ , where the selected endpoint result is insensitive to order. An unread notice, incompatible file or unrecognized source can instead make the alleged propagation unavailable. The history algebra distinguishes an operator's formal declaration from its actual domain. The empirical question is whether the needed operation is executable at the relevant intermediate configuration.

The repertoire criterion then checks a deliberately bounded claim. For example, a selected set of histories may already support application of the revised condition. A transfer operation preserves that repertoire only if it can actually be performed and its outcomes retain the specified tests. If the target task differs, the test may be undefined rather than failed. This difference matters: extending the inquiry may require a new interpretation, not merely more forceful enforcement of the source standard.

11.7 Remote Editorial Practice

A second constructed case tests whether the account depends on physical inspection or a newly coined word. Imagine a dispersed editorial group whose members already use a common working language. They introduce a local status label, "open," on draft passages. One member intends the label to mean that the passage's issue remains unresolved; another takes it to mean that revisions are presently invited. During the earliest work, unresolved passages are also the passages accepting revision. Smooth coordination can therefore leave the difference undisclosed.

The two readings become separable when a deadline closes a still unresolved passage, or when the current issue is treated as settled for the task while the group continues to invite improvements. Table 3 specifies these constructed contrasts. The example concerns the formation of a local status use, not a universal meaning of the English word.

Suppose a participant offers a substantive revision to an unresolved passage that another has marked closed. An adequate reconstruction first asks which disagreement has occurred. They may disagree about the argument, about the invitation to revise, or about the local label. If one participant simply changes the label after receiving an objection, that update may settle the immediate coordination while

Argument Status	Revision Status	Unresolved Reading	Invitation Reading
Issue unsettled	Revisions invited	Open	Open
Issue unsettled	Revisions closed	Open	Closed
Issue treated as settled for this task	Revisions invited	Closed	Open
Issue treated as settled for this task	Revisions closed	Closed	Closed

Table 3: Constructed Editorial Application Contrasts. The middle two rows separate readings that agree in the first and last rows. The classifications are stipulated for this example; they are not empirical findings or a recommendation to close unresolved work.

leaving its interpretation unclear. The same visible transition from closed to open can mean recognition of an unresolved issue, a newly granted invitation, or correction of an earlier status-entry mistake. The history needs the relevant reasons and responses to distinguish these possibilities.

Now stipulate that the group discusses the contrast and chooses the invitation reading for its workflow, recording unresolved arguments in a separate field. This settlement changes the local organization of contributions. A participant can recognize that a passage has an unresolved issue while also recognizing that the current procedure does not invite further editing. Understanding the status does not entail approving that procedure. The label’s practical consequence partly concerns permission, whereas the argument’s epistemic status concerns reasons and evidence. Their separation makes disagreement more articulate without settling the legitimacy of the deadline or the quality of the argument.

A further institutional premise is needed before an application of the status can change permissions. Stipulate that the adopted workflow empowers designated coordinators to issue or withdraw the invitation by updating that status through an authorized procedure. On this arrangement, a qualifying update both records and enacts the invitation. An unauthorized display edit does not acquire that power merely by using the same word, and explaining the status in a legend does not itself open or close revision. An alternative workflow could use the status only to report a separately issued invitation. In that alternative, the local linguistic settlement improves the representation and routing of existing permissions without creating them. The enacted-permission version of the example therefore depends on the stipulated coupling of a linguistic use to an authorization procedure, rather than on semantic clarification alone.

The formation claim requires later episodes. If subsequent contributors use the status consistently with the invitation reading and can locate the independent issue record, the settlement has become a resource for shared work. If they continue treating closed as evidence that the argument has been resolved, the official agreement overstates its operative result. If established members understand the distinction while newcomers lack access to its explanation, the use has a narrower participation domain. These outcomes identify different achievements within the same project. They avoid treating a public rule declaration as a completed formation.

The historical representation also distinguishes the adoption from its propagation. A central platform may update existing status descriptions, while exported documents retain an earlier legend. New interpretations can then coexist with old copies. The correction-transfer algebra applies only if the copying and correction maps match the actual update routes. Where exports automatically retrieve the revised legend, the propagated correction control is the better model. Where authors retain independent copies, further operations may be needed. Merely calling the platform shared does not settle which transformation occurs.

This case places pressure on several shortcuts. Identical words can sustain different understandings; a disagreement can reveal a shared distinction; an authorized status update can change practical permissions when an adopted procedure gives it that force; and the resulting settlement can be understood while remaining normatively contested. Physical co-presence and a newly invented lexeme are incidental to those relations. The relevant GR object is the situated history through which the status acquires a use,

including the media that carry it and the operations that make a revision consequential.

The two cases have a useful difference. In the workshop, a practical task helps constrain whether the represented readiness condition is met. In the editorial case, the local act of invitation helps constitute part of the status being communicated. Both require material and institutional context, but their semantic and normative dependencies are not identical. A common formal architecture can record their histories without declaring the contents interchangeable. The comparison therefore tests the framework's ability to preserve a difference between realizations, rather than merely its ability to redescribe both with the same vocabulary.

11.8 Research Judgment

A defensible judgment would report the achieved scope. It could conclude that a naming pact recurs for a known object, that a readiness distinction is available through a specified specialist, or that multiple participants can apply and repair the use across a declared task family. It should identify the historical support, important alternative explanation and unresolved extension. These statements permit substantive positive findings without treating local success as evidence of unrestricted portability.

The inquiry may also find that the public description overstates the achievement. A practice advertised as shared readiness assessment can actually sustain only administrative conformity. Such a finding requires the documented mismatch between the advertised or adopted commitment and the available operations. The criticism does not depend on denying that some convention exists. It identifies which convention has formed and why that formation does not establish the stronger claim.

This developed case shows the work the proposed metalanguage performs. Historical objects retain formative sequences; philosophical analysis specifies the uses and commitments at issue; field dynamics tests a selected recurrence mechanism; operator algebra exposes domain and order conditions; empirical inquiry evaluates their realization. The connections are explicit and revisable. No one component can supply the others' missing premises.

12 Formation Research Boundaries

The investigation has treated local convention formation as a problem of historically organized shared-use availability. Its conclusion is bounded by the participants, practice and kinds of continuation being explained. This section identifies the resulting contributions and the remaining obligations, including the point at which the present object gives way to the reproduction of competent participation.

12.1 Established Conditional Results

The conceptual argument distinguishes an intelligible introductory episode, recurrent coordination, contextual application, effective correction and the justification of correction standing. Those distinctions permit a positive formation account: an introduced use can become available through reorganized relations among competence, task, material support, expectation and historical uptake. Neither identical wording nor complete independence from support is required. The account remains answerable to the specific applications and consequences it claims to explain.

The formal results establish consequences of declared representations. The coupled nonlinear field has global positive trajectories and an exact seed-dependent limit. Supported recurrence depends on the task coupling, the initial seed and the nonlinear saturation architecture. A two-context example shows that aggregate stabilization can coexist with loss of a required route; a comparison model retains both routes by changing the saturation assumption. The history algebra preserves partial execution domains and distinguishes trace order from consequential order effects. Its repertoire criterion separates actual executability from preservation of selected tests.

The comparison of saturation laws makes the mechanism more specific. The original exact solution has a restricted radial nonlinearity; its normalized direction follows the fixed interaction operator. Allowing partial saturation coupling changes the allocation of support and gives a conditional coexistence

boundary. A separate transport proposition states sufficient assumptions for retaining a flow across an isometric field comparison. Activating a new route can violate retained dynamics even when old linear couplings survive. These conclusions connect the field calculation to the historical question of which transformation actually preserves a selected possibility of use.

These results do not collectively constitute a general theory of meaning. Their contribution is an explicit investigation of several formation inferences that would otherwise remain compressed into the word stability. Each has a stated carrier and an interpretive obligation. The mathematical proofs are definite within those assumptions; the proposed linguistic realizations remain open to criticism and empirical investigation.

12.2 Inherited Architecture

Historical convention formation is already an important part of the reviewed literature. Lewis supplies precedent and expectation formation; grounding and conceptual-pact research supplies collaborative understanding and partner-sensitive reuse; innovative interpretation and normative pragmatics identify further constraints on what an application accomplishes. The present account preserves their differences rather than treating them as incomplete anticipations of GR.

Within GR, historical relational efficacy, formative feedback, boundary change, partial operations and interpretation-sensitive evidence are also inherited. The field interaction architecture and history-operator tools have direct predecessors. The current paper's proposed contribution lies in a bounded linguistic application, the paired-field calculation and its comparison, and the coordinated analysis of support, repertoire and repair order. Establishing broader novelty would require a wider mathematical and linguistic comparison than the problem-directed review conducted here.

12.3 Open Investigations

The strongest open issue is conceptual formation. The fixed-task field can model a newly available expressive coupling for an already described contrast. An explanation of a genuinely new contrast requires evidence about changes in the participants' comparisons and practical consequences. Historical extension can represent that development without supplying a general mechanism that produces unforeseen meanings. A richer generative field or algebraic model should be judged by the additional explanatory work it performs at that boundary.

Empirical realization is another substantial obligation. The two primary reference studies establish findings within constrained dialogue tasks. They do not estimate the proposed field coefficients, validate its gradient law or establish a universal developmental sequence. Future work would need interpreted records of introduction, reuse, contextual variation and repair, together with explicit alternatives to the proposed mechanisms. A retained history can be both an evidential record and a formative intervention; the inquiry should investigate that reflexivity rather than assume passive measurement.

Normative assessment remains plural. Formation can enable coordination, reduce explanation burdens and make previously obscure concerns articulable. It can also concentrate interpretive control or stabilize misleading categories. The existence of a convention supplies no general duty to preserve it, and the possibility of revision supplies no general duty to accept every alternative. Such judgments require the interests, commitments, evidence and legitimate responsibilities of the particular practice.

12.4 Competence Reproduction

The present object begins with participants who can already interpret, compare, question and respond. Their local achievement can remain fragile if its supporting capacities are concentrated or cease to be reproduced. The next question is therefore how further participants become capable of continuing and transforming such practices. That question concerns changes in competent participation rather than only the recurrent availability of a particular introduced use.

The two objects remain connected. A new term can become a teaching resource; a learner can expose a distinction that established participants had left implicit; a teaching arrangement can change who can correct a use. The current paper supplies a historically and formally specified account of one side of that relation. It leaves the reproduction inquiry to its own development, retaining shared-use formation as a distinct and revisable problem within the broader language and generativity programme.

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