

Generative Invitation: A Relational Mechanism of Heterogeneous Co-Creation

Wanhong HUANG
huangwanhong@serendip.ngo

Abstract

This paper develops *generative invitation* as a provisional description of relational praxis in which an addressed offering enters another participant's historically situated activity. It distinguishes affordances, offerings, recipient uptake, counterproposal, immediate achievement, and possible changes in effective opportunities or enduring capacities. Buber, Levinas, Ricœur, Arendt, ecological affordance theory, educational scaffolding, participatory sense-making, and literary reception provide substantial philosophical precedents. The generative-relational (GR) proposal is therefore evaluated for its incremental usefulness in tracing the relation between an offering, heterogeneous receiving conditions, subsequent trajectories, and control over enabling resources. Constructed cases from aesthetics, education, interspecies encounters, and human–AI interaction illustrate both this possible scope and the differing evidence required for claims about experience, autonomy, and agency. A comparative account tests whether established theories already explain the same observations, and distinguishes productive influence from ethical legitimacy or entitlement to resulting value. Conceptual discrimination, explanatory adequacy, and normative accountability provide three separate tests of this account. Its immediate contribution is a set of revisable distinctions; whether they jointly identify an explanatory mechanism beyond existing theories remains a question for comparative and empirical inquiry.

Keywords: generative invitation; heterogeneous subjects; relational praxis; interpretive autonomy; co-creation

Discussion Paper Note

The present working discussion paper introduces generative invitation as a provisional philosophical concept for examining how one participant can make a form or question available to another participant's generative activity. It is the second study in a proposed series addressing poetic and aesthetic unfolding, relational co-creation, education, and heterogeneous value formation. The first study addresses poetic reception and aesthetic judgment; the present study develops the proposed general relational mechanism.

The analytical focus is the relation among offered conditions, recipient uptake, historical and material constraints, subsequent generative trajectories, and the possible persistence of transformed capacities. Its claim of originality is conditional and comparative. Dialogue, problem-posing education, intellectual emancipation, situated design, and relational agency have major intellectual precedents. The proposed GR extension requires examination against these traditions, including circumstances where their explanations already suffice.

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The discussion of invitations among heterogeneous systems is intended to support critical inquiry into cooperation and autonomy. Offering generative conditions may also constitute manipulation, exploitation, or coercion; a positive description of generative change does not establish ethical legitimacy. Claims involving human–AI encounters do not demonstrate artificial consciousness, independent moral standing, or reliable agency. Any practical intervention should attend to consent or meaningful choice, relevant safeguards, cultural translation, asymmetric power, and recipients’ ability to question or refuse a proposed offering.

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Notices

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1 Introduction

This investigation develops *generative invitation* as a provisional concept for relations in which one participant offers a form, question, practice, or enabling condition that another may develop through historically constituted capacities. Its central problem concerns the relation between an offering and the activity that the offering makes possible: the receiving participant may develop a course of interpretation, inquiry, production, or self-transformation that exceeds the offerer's understanding and control. The discussion proceeds through a conceptual distinction among offering, uptake, generative unfolding, and subsequent relational development; a critical dialogue with philosophies of encounter, action, education, and interspecies relations; and a preliminary examination of autonomy, asymmetry, and contribution. The method is philosophical and comparative. Constructed examples articulate possible relations, while the proposed generative-relational (GR) vocabulary remains a revisable descriptive framework whose claims require further justification in each practical domain.

The motivating case is a familiar feature of encounters with poems. A finite arrangement of words and rhythms may enter the distinct histories of several readers and participate in significantly different courses of attention, memory, interpretation, and creation. The poet's contribution is consequential even where the resulting experiences cannot be reconstructed from the poet's intentions or transferred intact between readers. The prior companion investigation, *Poetic Form and Aesthetic Unfolding Across Heterogeneous Generative Systems*, develops the aesthetic dimensions of this encounter. The present inquiry isolates a possible relational configuration that extends beyond literature: an intentional offering opens a condition for another participant's activity while leaving the content of its subsequent development substantially recipient-directed. A question in dialogue, a collaboratively negotiated representation, a learning environment, and a material arrangement might all serve as offerings. Their respective histories, material supports, institutional conditions, and recipients' capacities determine whether the description *generative invitation* illuminates the encounter.

One source of the theoretical difficulty lies in a tempting model of communication as transfer. A sender possesses a meaning, procedure, or valued result, encodes it in an offering, and judges successful reception by the recipient's recovery of the intended content. This model describes many legitimate practical tasks, including instructions in which consistency of execution matters. Yet several important encounters have a different organization. A teacher's question can enable a learner to formulate an inquiry that the teacher had not anticipated; a collaborator's example can lead another participant to construct a new method; and a poetic form can participate in aesthetically distinct realizations. The relationship between the offered condition and the subsequent production is therefore an object of philosophical study in its own right. The analysis concerns the formation and transformation of possibilities within relationally situated systems, without treating novelty as automatically beneficial, aesthetically significant, or ethically justified.

The proposal's distinctive burden arises at the interface of several explanations already available in the literature. Affordance theory describes action possibilities relative to abilities; dialogical accounts illuminate address and recognition; learning theories explain guided and situated development; and enactive accounts examine meaning arising through coordinated interaction. A single encounter can fall under each description. An additional GR analysis would earn its place by tracking a specified relation between the originator's offering, the recipient's historically established operations, the scope for counterproposal, and subsequent alterations in access or initiative. The concept therefore makes a *comparative explanatory proposal*, not a priority claim over those traditions. Its value remains conditional on showing how a distinction drawn with this vocabulary changes the interpretation of a concrete case, identifies a previously obscured dependency, or improves the accountability of a practical intervention.

The adjective *generative* has been used across several intellectual traditions. Within educational philosophy, Paulo Freire's account of problem-posing education, dialogue, and generative themes already places participants' lived vocabularies and historical conditions at the center of critical inquiry [13]. His analysis gives substantial prior attention to a form of teaching in which an educator works with meanings emerging from participants' own social practices. The proposed term accordingly requires a differentiated

account of address, uptake, and later changes in capacities; learner discoveries beyond an instructor's stated objective are already well documented. Freire's normative horizon also concerns emancipation amid structures of oppression; a general account of invitation cannot absorb that political and ethical project into a neutral formal mechanism. Conversely, a structurally successful invitation may occur within coercive conditions, which makes its ethical assessment independently necessary.

Jacques Rancière's account of intellectual emancipation presses the problem from another direction. His reconstruction of Joseph Jacotot's pedagogical practice challenges the hierarchy that treats explanation by an expert as the precondition of another person's learning [31]. That challenge supports an inquiry into how a recipient can take responsibility for an activity that the person offering a prompt does not fully command. Rancière's argument, however, is part of a particular controversy about equality, authority, and intellectual capacity. The proposed GR framework will need to distinguish these claims from its more modest descriptive concern with different capacities, enabling conditions, and trajectories. An uneven distribution of knowledge or material power need not disappear for an invitation to occur; it becomes one of the conditions whose influence and legitimacy must be examined.

Ron Eglash and collaborators provide an important practical predecessor through culturally situated design tools. Their research examines how mathematical and computational relations situated in cultural practices can become resources for learners' own simulations and constructions, with design choices negotiated among researchers, educators, and communities [12]. Its significance for the present inquiry lies in the relation between a deliberately structured medium and the generative agency of those who use it. This precedent also exposes an issue that a purely interpersonal account might overlook: invitations are frequently constituted through infrastructures, cultural histories, intellectual-property arrangements, and institutional control. The analysis offered here should therefore be understood as a possible philosophical extension and comparison, not as an original discovery of culturally grounded participatory teaching or of generative value production.

The philosophy of encounter supplies another set of distinctions. Martin Buber's *I and Thou* places the relation between self and other at the center of an account of dialogical life [6]. An offering may be received within a relation of address that acknowledges the other as a participant whose response cannot be reduced to a manipulable object. Yet Buber's *I-Thou* relation carries a demanding philosophical and religious context; a GR description of an invitation does not entail that this form of encounter has occurred. A sender can supply an effective question while treating its recipient instrumentally. The contrast is important because the descriptive presence of generative development cannot certify the character of the relation in which it develops.

The difference between initiating an activity and controlling its outcome also has an illuminating precedent in Hannah Arendt's account of action. In *The Human Condition*, action unfolds among plural agents and becomes implicated in a web of relationships whose consequences exceed the intentions of any one actor [2]. An invitation may likewise introduce an initiative into an evolving relational situation, generating consequences that emerge through another's activities and responses. Nonetheless, Arendt's distinctions among labor, work, and action caution against extending her concept of political action to every technical or interpretive process. The present inquiry draws on the limited analogy between plural, open-ended action and relational unfolding, while preserving differences between public action, pedagogical practice, artistic reception, and computational interaction.

A further ethical tension appears through Emmanuel Levinas's account of responsibility to the other in *Totality and Infinity*. The other exceeds the self's attempt to comprehend and assimilate it; the encounter may make a demand prior to the self's deliberate project [23]. Generative invitation, by contrast, names an initiated offering within a relational process. Its descriptive orientation risks returning the other to the status of an object of design if the receiving participant is treated merely as a system whose latent capacities are to be elicited. A responsible account must therefore distinguish making conditions available from directing another toward a preferred state. Levinas's asymmetrical emphasis on ethical obligation also questions an easy assumption that mutual benefit or symmetrical recognition completes the justification of an encounter. Some relations involve a duty to refrain, protect, or withdraw, even where an offering could produce new possibilities.

This tension is especially clear when the recipient's capacities or language differ from the offerer's. The paper uses *heterogeneous* to refer to differences relevant to a particular encounter: histories of learning, perceptual access, bodily or material organization, representational resources, dependency relations, institutional positioning, and possible mechanisms of change. Heterogeneity is accordingly relational and task-sensitive, rather than a claim that two participants inhabit entirely untranslatable conceptual worlds. A person may understand another's project only partially and still offer a fruitful question; two collaborators may share certain practical constraints without sharing the value attributed to an eventual result. A careful theory will identify the aspects of difference that bear on uptake, rather than infer radical incommensurability from the mere singularity of participant histories.

Donna Haraway's exploration of companion species offers a strong challenge to an exclusively human communicative model. *When Species Meet* examines encounters in which histories of training, bodily responses, mutual shaping, and unequal dependencies matter to what the participants become capable of doing together [17]. These relations suggest that an offering need not be a linguistic sentence, and that responsiveness may develop through gesture, movement, material arrangement, or coordinated practice. Their asymmetries also warn against romanticizing co-creation: the ability to organize another's environment can coexist with extensive power over that other's opportunities, agency, or welfare. Interspecies examples must be approached through evidence appropriate to the organism and practice at issue. Observable adaptation may justify an account of coordinated activity while leaving the subjective significance of that activity unresolved.

The proposal's central distinction is between *an offered generative condition* and *a recipient's realized trajectory*. An offering can be identifiable and in some respects repeatable, whereas uptake occurs within a particular historical and relational configuration. To describe such an encounter, one would need to specify what is offered, how it becomes accessible, which interpretive or practical resources the recipient brings, what subsequent activity occurs, and which changes persist. These descriptive conditions avoid treating generativity as an intrinsic, context-independent quantity contained in a sentence or artifact. A question that opens inquiry for one participant may prove unintelligible, irrelevant, intrusive, or exhausting for another. The offering can also be refused, reinterpreted, or displaced by an alternative. Such possibilities form part of its relation to the recipient's autonomy rather than evidence that the original sender had failed to deliver a fixed message.

A preliminary terminological distinction will organize the remainder of the paper. *Generative affordance* denotes a relation in which a material, symbolic, or practical condition supports a further activity, whether or not the condition was intentionally arranged for that purpose. *Generative offering* denotes an act of making a candidate condition available to another participant. *Generative invitation* names a more demanding relation: an offering is addressed or presented as an opportunity for the recipient's own participation, with a meaningful space for uptake, reinterpretation, transformation, or refusal. These are proposed analytical terms rather than established natural kinds. An invitation may be made without being taken up, while generative development may arise through a condition that nobody intended as an invitation. A stronger claim of *co-creation* requires further analysis of the contributions and relationships through which something new is realized; it cannot be inferred from a single act of offering.

The distinction between description and evaluation is equally central. An encounter may modify the recipient's capacities while undermining its independence. A carefully tailored question may lead to insight, or it may manipulate the receiver toward a conclusion preferred by the more powerful participant. Likewise, a generative process may result in knowledge, aesthetic experience, improved skills, value for others, distress, or practices whose significance remains contested. *Generative success*, if the expression is used, must be indexed to the process or capacity being described. Ethical justification, aesthetic value, epistemic warrant, and equitable allocation of resulting benefits remain analytically distinct. Their relations may themselves emerge through the encounter, yet none can be deduced simply from the presence of increased output, complexity, or novelty.

The problem of normative formation further complicates these evaluations. Participants can bring inherited standards to an encounter, undertake reflective revisions of their judgments, and develop new norms through interaction. These are distinguishable pathways in the history of norms, with various

overlaps and dependencies. The present paper draws on that three-stratum idea to ask how invitations may become permitted, trusted, criticized, or resisted. It also preserves a distinction that matters across the wider research programme: a norm's source does not settle its ethical justification, and a norm's presence does not by itself produce knowledge, beauty, or value. In asymmetric settings, externally imposed constraints can shape what appears to be voluntary uptake. A theory of generative invitation therefore needs both a descriptive account of its causal and interpretive conditions and a normative inquiry into whether the recipient has meaningful alternatives.

Three philosophical cases orient the initial analysis. In an aesthetic case, a short poetic offering enters the different histories of two readers and participates in divergent interpretations; the subsequent significance of those interpretations remains a separate aesthetic question. In a pedagogical case, an educator working with learners' existing conceptual and cultural practices offers a problem that learners reformulate and pursue through their own modes of inquiry; the presence of learning does not yet establish emancipation or procedural fairness. In a cooperative case, participants with differently constituted capacities exchange partial representations or practical arrangements, and one contributor develops a result that neither side could have specified independently. Each case asks where the initial condition ends, where the recipient's own activity begins, and whether the continuing relation warrants an attribution of collaboration or co-creation. The examples are conceptual constructions. They supply no empirical evidence for a universal mechanism.

The third case raises a particularly demanding issue of contribution and entitlement. When one participant offers a finite enabling structure and another transforms it into an unanticipated result, both may have participated in a relational history of production. Their respective roles remain different. To claim that the result is *jointly created* requires criteria sensitive to initiative, dependence, interpretation, independent work, power over resources, and ongoing response. To infer a right to govern the outcome requires an additional ethical and institutional argument. The subsequent paper on heterogeneous value co-creation will address these questions in depth; the present study identifies the conceptual threshold at which invitation becomes a candidate mode of participation. This restraint matters because an apparently generous invitation can be appropriated as a retrospective claim over the recipient's achievements.

Artificial systems provide a further limiting case, rather than evidence for an already established category of artificial aesthetic or moral subjecthood. A trained model may present a question, adapt its wording to a user, respond to emergent preferences, or change its future behavior under an updated training or memory procedure. These are possible objects of behavioral and computational investigation. Their description does not settle whether the model has lived experience, independent practical authority, or a capacity for self-legislation. Conversely, a person using an artificial system can plausibly experience insight through a question generated by that system, with no need to settle the system's phenomenal status in order to study the person's learning. Claims about an AI's reciprocal subjecthood, responsibilities, or ownership of resulting value require distinct evidential and normative foundations. This distinction enables comparative inquiry without prematurely assimilating artificial and human participants.

The proposed GR account would contribute meaningfully only if it helps explain more than familiar ideas of dialogue, situated learning, affordance, reception, or cooperation already explain. Several preceding approaches explicitly acknowledge open-ended response and transformation: Freire's dialogical pedagogy, Rancière's challenge to explanatory hierarchy, Arendt's plural action, and Haraway's relational formation each supply substantial conceptual resources. One possible additional focus of GR is a disciplined comparison of historically differentiated generating conditions across modalities and kinds of systems, together with a distinction between an encounter's immediate result and the durable alteration of capacities governing subsequent encounters. Another is its attention to how norms and control over enabling conditions shape the possibilities of uptake. Neither focus constitutes novelty by assertion. The paper will compare its explanations with the more economical alternative that known theories already provide sufficient accounts of a given case.

A plausible way to assess the proposal is to study consequences beyond the original encounter. In a constructed comparison, two recipients might produce similar immediate answers after receiving an identical question, while one subsequently develops a new capacity to formulate independent problems

and the other merely reproduces the prompt's pattern. The difference, if convincingly established, concerns the persistence and transfer of a generative change. Such an observation would still require careful explanations of prior capacities, material conditions, learning histories, and incentives. A separate comparison could show that a proposed invitation elicited compliance under asymmetric pressure, in which case the same outwardly productive result would have a different ethical standing. These examples indicate what the theory would have to discriminate, without supplying a ready-made experiment or a claim of confirmed effectiveness.

The proposed contribution can therefore be assessed through three different questions. *Conceptual discrimination* asks whether the analysis distinguishes an addressed offering from a merely available affordance, an immediate achievement from a persistent capacity change, and reciprocal participation from one-way influence. *Explanatory adequacy* asks whether these distinctions illuminate an actual trajectory beyond what dialogical, ecological, educational, or enactive accounts already establish. *Normative accountability* asks how effective refusal, control over the question, recognition of contribution, and access to results condition the ethical standing of that trajectory. A satisfactory account may contribute at the first level while remaining redundant at the second; the third requires justificatory arguments whose validity cannot be derived from generative efficacy.

The present paper will first reconstruct relevant philosophical lineages of address, dialogue, action, and educational autonomy, identifying their agreements and differences. It will then specify heterogeneous GR conditions, distinguish offering from uptake and durable transformation, and examine partial translation and the limits of formal comparison. Later sections consider meaningful refusal, reciprocity and asymmetry, normative formation, and the difference between inviting another's development and legitimately participating in the resulting work. Artistic, pedagogical, interspecies, and artificial cases serve as qualified illustrations. The concluding critical comparison will state where the proposed mechanism appears useful, where established accounts may suffice, and which claims require empirical or normative support. Throughout, the conceptual argument takes priority over mathematical display. The resulting account is intended as a revisable philosophical framework for studying how one participant can open possibilities for another while leaving the other's activity and value partly independent of the initial offering.

2 Dialogical Relations, Otherness, and the Philosophical Conditions of Invitation

The philosophical study of generative invitation requires an account of the relation through which an offering becomes addressable to another participant. An offering may be available without being encountered; an encounter may alter a participant without constituting an invitation; and a meaningful invitation may remain unanswered. The present section examines these distinctions through four approaches to relational agency: Martin Buber's philosophy of dialogue, Emmanuel Levinas's account of responsibility before the other, Paul Ricoeur's analyses of capable and vulnerable selves, and Hannah Arendt's theory of action amid plurality. The comparative method preserves their different understandings of reciprocity, initiative, and ethical obligation. Its aim is to specify provisional conditions for an invitation that acknowledges another participant's distinctive generative activity while preserving the possibility of refusal, transformation, and unforeseen consequences. These conditions remain philosophical proposals rather than a universal classification of encounters.

A preliminary distinction concerns the kind of relation that the term *invitation* names. An object can furnish a use that its maker never anticipated, and a question can occasion insight even when it was intended as an examination of memorized material. Such encounters may be generatively consequential. An invitation, in a stricter practical sense, additionally involves an addressable offering: an agent makes a possibility available to a recipient under an intelligible orientation toward that recipient's participation. The recipient's response may realize, revise, decline, or transform the offered possibility. This initial account makes room for multiple levels of intentionality. The offerer may intend that the other undertake

independent inquiry while remaining unable to predict its particular course; alternatively, the offerer may expect compliance while the recipient nevertheless appropriates the materials creatively. The second case demonstrates generative uptake without automatically demonstrating the offerer's invitational orientation. Descriptions of the causal contribution and the practical relation therefore require different evidence.

Buber's distinction between the *I-Thou* and *I-It* modes of relation provides an influential philosophical resource for identifying the attitude involved in address. In *I and Thou*, relation is fundamental to how the self encounters the other: the distinction concerns ways of relating, including an instrumental or objectifying orientation and the immediacy of a dialogical encounter [6]. The force of this contrast lies partly in its refusal to treat another's presence as exhaustively describable through the purposes for which that other can be employed. Generative invitation can inherit this warning. An offer addressed to a learner, colleague, or partner acquires a different practical meaning when its recipient is regarded as capable of forming a response with significance of its own. A question can then open a space for the other's inquiry, even where the offerer has substantially greater formal expertise.

Buber's philosophy nevertheless raises an important tension for a contemporary relational mechanism. His dialogical vocabulary makes a strong claim about the character of encounter, whereas a GR description seeks to remain modest about the ultimate ontology and experiential status of interacting systems. The philosophical value of *I-Thou* therefore lies here in its account of address and the preservation of otherness; the present proposal does not infer from that account that every instance of generative uptake is an encounter in Buber's strong sense. An automatically displayed question may participate in a person's discovery while leaving open whether its source addresses the person as a dialogical subject. A human teacher may be capable of dialogue yet structure a lesson so narrowly that the student's response is counted only when it duplicates a predetermined answer. The existence of a person-to-person relationship by itself does not certify the practical openness of an invitation.

Reciprocity also requires qualification. Buber describes different modes of encounter with humans, nature, and other spheres of relation; these modes carry distinct expectations about mutual response [6]. An invitation may involve reciprocal recognition where both participants are capable of addressing and revising one another, while some offerings occur across profound differences of language, vulnerability, or capacity. Reciprocity of response and symmetry of power are separate matters. A student and teacher can respond to one another while possessing unequal authority over grading and institutional access. A recipient may experience a work as an occasion for inquiry despite having no access to its maker. Consequently, the dialogical quality of an exchange, its responsiveness, and the institutional parity of its participants should be examined along distinct dimensions. Calling the exchange reciprocal should state exactly which dimension is intended.

Levinas brings a different philosophical demand into view. In *Totality and Infinity*, the other's exteriority places a limit on the self's claim to comprehend or assimilate another person within its existing categories [23]. Ethical responsibility arises through an encounter whose significance exceeds an exchange among equivalent interests. His account of the face and responsibility begins from the other's claim upon the self, and it gives asymmetry a constitutive place in ethical life. This differs from an ideal of mutual dialogical fulfillment and from accounts of cooperation that begin with an agreement about shared projects. The difference matters for generative invitation because the offerer can understand only part of the recipient's history, needs, and possibilities. The recipient's capacity to develop meanings beyond the offerer's representation is therefore compatible with acknowledging an ethical limit on the offerer's authority to define the other's good.

At the same time, a demand of ethical responsibility and a practical invitation have different directions of address. Levinas gives priority to the other's call upon the responding self; an invitation often describes an offer initiated by the person who possesses some resource, question, or institutional power. The two movements may intersect, particularly where an offer arises as a considered response to another's expressed need. They should remain analytically distinguishable. An offerer may claim to be helping while imposing a task, an evaluative vocabulary, or a burden of gratitude that the recipient did not request. A recipient may accept such an offer because declining threatens an important relationship. The language of invitation becomes ethically precarious when the sender's benevolent interpretation substitutes for

evidence about the recipient's practical alternatives.

Levinas also prevents the account from resting on the assumption that all participants enter an encounter as equally situated collaborators. Someone with limited resources, constrained mobility, or an unfamiliar communicative practice may be positioned as a recipient largely because another participant controls the enabling conditions. Such asymmetry does not determine the ethical worth of every encounter. It does, however, make the distribution of initiative and exposure an explicit object of judgment. The offerer's responsibility may extend to asking whether the invitation places additional risks on the recipient, whether its terms are intelligible in the recipient's practices, and whether the recipient has a genuine opportunity to contest them. These questions cannot be settled by the novelty or productivity of the recipient's eventual response. A brilliant creation can emerge from an unjustly structured encounter, and the value of the creation alone supplies no retrospective vindication of the conditions under which it arose.

Ricoeur's account of selfhood provides an intermediate perspective by linking agency and alterity with the conditions under which persons act and are recognized. In *Oneself as Another*, analyses of the capable self, narrative identity, the ethical aim, the moral norm, and practical wisdom are brought into a single investigation of how selfhood is implicated in relations with others [32]. The resulting orientation is especially helpful because an invitation ordinarily presupposes something about the recipient's capacities, yet those capacities are neither fully known nor independent of the relational circumstances in which they are exercised. A participant may possess the ability to interpret an offering but lack the material means, time, social assurance, or linguistic opportunity to do so. A relational account ought therefore to distinguish capacity as an attributed possibility, its situated exercise, and the alteration of that capacity through experience.

This distinction also illuminates the difference between *recognizing someone as capable* and *pre-signifying what their capacity is for*. The former can support freedom of response; the latter may become a way of narrowing what counts as successful participation. A teacher who knows a learner's existing conceptual resources can formulate a question that the learner is able to transform. Yet the teacher's knowledge remains provisional. The learner can discover that the framing is unsuitable, bring another question into focus, or reorganize the meaning of the proposed task. Ricoeur's concern with practical wisdom suggests that responsible judgment attends to the particularities of such relations and the conflicts among general norms, solicitude, and actual capacities [32]. The GR extension places additional emphasis on the historical changes that an encounter might occasion in what a participant can subsequently generate.

Ricoeur's later *The Course of Recognition* further distinguishes recognition as identification, the recognition of oneself, and mutual recognition [33]. These different senses can clarify an ambiguity in accounts of heterogeneous cooperation. One participant may correctly identify another's behavior or competence while withholding the respect or opportunity that would allow that competence to be exercised. An institution may symbolically acknowledge a participant's contribution without giving that participant authority over the uses of the resulting work. Mutual recognition, understood in an ethically fuller sense, requires more than successful classification of another's abilities. The present investigation uses these distinctions to separate the epistemic assessment of uptake from the ethical and institutional acknowledgment of the contributor. Recognition of a generative response, recognition of a recipient as a participant, and recognition of claims over the outcome are related yet differently justified judgments.

Ricoeur and Levinas should nevertheless retain their respective emphases. Ricoeur's articulation of capabilities, solicitude, and practical wisdom offers resources for understanding reciprocal agency within institutions and ongoing relations. Levinas makes an ethically prior demand and stresses the other's resistance to assimilation. A relational account that treats these approaches as interchangeable would lose their most illuminating disagreement. The proposed GR vocabulary may describe a setting in which both concerns arise, but descriptive unification does not resolve their ethical divergence. There may be circumstances in which reciprocity advances the recipient's autonomy and others in which care calls for an unequally borne responsibility, including an offerer's willingness to relinquish control over the process. These distinctions bear directly on educational authority, collaborative credit, and the relation between enabling another's activity and appropriating its results.

Arendt introduces a fourth dimension: initiative enters a plurality of actors and thereby acquires

consequences that exceed the initiator's intentions. In *The Human Condition*, action is distinguished from labor and work and analyzed through freedom, plurality, disclosure, and the unpredictable development of relationships [2]. Action arises among others whose responses cannot be contained in a single actor's design. This account has a close conceptual affinity with the proposed mechanism of generative invitation. An offering can initiate a course of exchange, yet its later trajectory depends on how recipients interpret, resist, modify, and circulate it. The initiating contribution remains significant without rendering the originator sovereign over the unfolding result. The analogy is strongest where an invitation is a practical act of address and where the ensuing relation involves persons who can answer through words and deeds.

Arendt's argument carries its own specificity, however. Her account of action is developed within a philosophy of human plurality and political freedom. Her concept of natality is anchored in the condition of human birth and the possibility of beginning. Its philosophical force should be acknowledged without assigning literal natality to computational processes or turning every technical interaction into political action. Within GR, one can separately represent the opening of a new trajectory or the transformation of a capacity as a structural hypothesis. Such representation need not claim Arendtian action in the full political and existential sense. This restraint is particularly important when describing the generation of a prompt by an artificial system, where open-ended influence upon a human participant is conceivable while the system's own agency, moral standing, and experience remain unsettled.

A further contribution of Arendt concerns the relation between uncertain consequences and continuing responsibility. Her discussions of promising and forgiveness address the difficulties created when actions cannot be perfectly controlled or simply reversed [2]. A theory of generative invitation requires a comparable concern with the ongoing relation, although Arendt's remedies should not be converted into generic rules for every kind of system. The author of an invitation might reasonably commit to maintaining access to shared resources, explaining the terms of participation, or allowing recipients to withdraw. Such commitments cannot guarantee beneficial outcomes. They can provide some practical stability within the open-ended effects of an offering. Where significant harm occurs, the fact that the response exceeded the originator's predictions is relevant to responsibility, yet does not automatically remove it. Responsibility depends also on foreseeability, authority, the distribution of risk, and subsequent opportunities for remedy.

The four traditions can therefore discipline different kinds of claims rather than provide interchangeable definitions. Buber asks what orientation to another is enacted by an address; Levinas asks what obligation persists when the other exceeds the initiator's understanding; Ricoeur asks how capability, vulnerability, and recognition enter practical judgment; Arendt asks what an initiative becomes once others can respond in unforeseen ways. These questions can conflict. A dialogically warm encounter may still place an unfair burden on its recipient; a responsible response to vulnerability may require unilateral support rather than reciprocal exchange; an innovative outcome may originate within a relationship whose terms need ethical criticism. The GR proposal takes these tensions as limits on any attempt to infer legitimacy from the generativity of an encounter.

Consider a constructed encounter in a multilingual community archive. An archivist offers a group of contributors a provisional scheme for classifying oral histories, inviting them to describe how their own practices distinguish episodes, voices, and relations. One participant rearranges the scheme around seasonal gatherings, another refuses a requested disclosure, and a third develops a novel way of linking stories without assigning them to the archivist's categories. The archivist's proposal supplied a point of engagement, yet the resulting classifications have histories and purposes of their own. The invitation's practical meaning depends on whether these responses can change the archive's procedures, including its rules of access and attribution. This example concerns an imagined situation and makes no empirical claim about an actual community.

Buber's perspective directs attention to whether the contributors are addressed as interlocutors rather than treated as sources of cataloguing material. Levinas makes salient the obligation to respond to a refusal or a vulnerability that the archive's initial design failed to anticipate. Ricoeur clarifies why recognition involves the contributors' capacities to identify, narrate, and contest the significance of their histories. Arendt illuminates the plurality of initiatives through which the project acquires directions beyond the

archivist's control. These readings reach different judgments about what matters most. The GR hypothesis adds a narrower explanatory question: did the encounter alter the participants' available practices of interpretation and initiative, and through which relations did this occur? Evidence of such a change would still leave questions of ownership and justice to separate inquiry.

A fixed classificatory question can therefore acquire distinct practical meanings in two institutional contexts. It may function as an invitation where contributors can replace categories and retain control over their materials; it may function as an extraction protocol where the same verbal request is tied to mandatory disclosure. The difference lies in the enacted relation, including authority over revision and the consequences of dissent. This comparison prepares the account of recipient-relative capacities and the later analysis of uptake; it also explains why sincerity of intention alone cannot determine an invitation's standing.

The comparison supplies four distinct questions for analyzing a proposed invitation. Was a possibility actually addressed to an identifiable recipient? Did the relation allow the recipient to interpret, redirect, contest, or decline it? Did the encounter contribute to a change in subsequent practice, and on what evidence? What duties accompanied the offerer's power over materials, access, and public recognition? These questions concern address, effective autonomy, generative consequences, and ethical justification respectively. Their answers need not coincide. They are diagnostic questions for relational inquiry, and their necessity or sufficiency remains open to challenge.

Dialogical philosophy clarifies address, responsiveness, and irreducible otherness. Further analysis must nevertheless specify historically differentiated capacities, evidence separating intentional offerings from encountered affordances, the recipient's effective authority to contest judgments of success, and the conditions distinguishing reciprocal co-unfolding from one-sided influence. The following sections develop these issues by specifying the GR conditions of capacities and dependencies, before turning to offerings, trajectories, translation, autonomy, and the ethics of co-creation. The philosophical inheritance traced here serves as a set of productive constraints: alterity disciplines the offerer's claims, capability clarifies the recipient's participation, plurality illuminates unfolding effects, and ethical judgment remains answerable to the concrete history of the encounter.

3 Heterogeneous Generative-Relational Systems and Relational Capacities

A philosophical account of generative invitation requires a description of the recipient that preserves differences in history, embodiment, interpretive practice, and material dependency. An invitation has practical significance only in relation to the capacities through which an addressee can encounter and respond to an offered possibility. The analysis uses a provisional generative-relational (GR) vocabulary to distinguish those receiving conditions. It first considers philosophical accounts of embodied situation, species-specific perceptual worlds, individuation, and capability; it then distinguishes the organization of a capacity from its exercise and from its normative evaluation. A limited formal representation clarifies the analytical commitments without treating them as an ontology of subjectivity. The resulting framework prepares the subsequent examination of how affordances, offerings, and uptake acquire different meanings across heterogeneous participants.

The word *heterogeneous* does substantial work in this argument. It may refer to different perceptual organizations, distinct ways of forming or revising interpretations, uneven access to materials, asymmetrical institutional authority, and differences in how a system persists or changes. These dimensions can coincide, but they can also vary independently. Two people using the same natural language may differ considerably in their training, dependence on institutional recognition, or access to tools. Two machines built from similar components may operate under different permissions, data histories, update rules, or resource constraints. An organism and a technical system may both respond systematically to environmental variation while providing radically different grounds for attributing experience or independent practical agency. The mere observation of unlike behavior does not establish unlike inner experience; equally, comparable output does not establish identical generating conditions. Heterogeneity is therefore best specified relative to the activity and explanatory question under consideration, rather than treated as

an undifferentiated metaphysical distance between types of beings.

Merleau-Ponty's account of embodied perception provides a first resource for describing this situated character of capacity. In *Phenomenology of Perception*, perceptual experience is investigated through the lived body and its practical involvement in a world, including the body's orientation, movement, and possibilities of action [26]. This approach challenges a description of an encounter in which a neutral stimulus reaches a passive interpreter possessing a complete and independently given vocabulary. An offered gesture, question, or form enters a field already structured by bodily habits, learned discriminations, and ongoing projects. A skilled musician and an inexperienced listener can attend to the same performance through different organizations of bodily anticipation and listening; a person learning a new tool can encounter its resistance and possibilities through an emerging coordination of movement and perception. These examples are illustrative applications of an embodied perspective. They do not imply that all forms of understanding are reducible to motor habit, or that a specific perceptual phenomenology can be inferred from a behavioral description alone.

Embodiment also complicates the apparent neutrality of the object offered. A sheet of notation, a diagram of a current, or a pattern of light has a physical organization that constrains what can be done with it. Its practical availability nevertheless varies with sensory access, experience, and available means of action. Even among people, capacities associated with disability, language difference, specialized training, or changing bodily conditions can alter the accessible field without establishing an ordered hierarchy of interpretive worth. A theoretical approach that compares recipients only by the sophistication of their verbal reports would risk mistaking one particular means of expression for the underlying possibilities of encounter. Merleau-Ponty's philosophy does not itself specify the technical architecture of every GR system; it supplies a warning that capacities arise in embodied worldly relations and should be investigated through their conditions of exercise.

Jakob von Uexküll's notion of the *Umwelt* offers a related perspective that places greater emphasis on the organization of an organism's significant surroundings. His *A Foray into the Worlds of Animals and Humans* describes animal environments through differentiated perceptual and effectual relations rather than through a single, species-neutral environment merely received from different viewing positions [42]. This approach helps explain why the same physical structure can participate in different practical worlds. Environmental variation that remains inconspicuous to one organism may orient another's movement or behavior. Differences in significance therefore deserve attention alongside differences in sensory input. For the present inquiry, the critical implication concerns the recipient-relative availability of a proposed offering: a form that one participant can use as a problem, pattern, or prompt may lack that role for another participant unless an appropriate relation can be established.

Uexküll's biological framework and Merleau-Ponty's phenomenology nonetheless make different commitments. The former organizes a comparative biology of meaning-bearing environments; the latter addresses lived perception and the body's presence in the world. Their convergence on situated access should not be mistaken for an identity of accounts. Nor should the vocabulary of *Umwelt* be extended without qualification to every computational system that accepts sensor data. A machine can possess a designed field of inputs and possible operations, and that field can be described in relation to its operating conditions. Whether it inhabits a meaningful world in the stronger biological or phenomenological sense requires a separate argument. GR employs the weaker, explicitly descriptive insight that the significance and usability of an encountered structure depend on the receiving system's organization. This restrained extension allows comparisons across human, animal, and technical processes without resolving the philosophical status of their experience in advance.

A third lineage, developed by Gilbert Simondon, directs attention from situated capacities to the constitution and transformation of the individual. In *Individuation in Light of Notions of Form and Information*, the individual is approached through processes of individuation and relations with an associated milieu, including tensions and potentials through which structured transformations can occur [38]. The attraction for the present inquiry lies in treating an encountered form as potentially consequential for an ongoing process rather than solely as information received by a fixed entity. A learner may acquire a new distinction that changes the kinds of questions subsequently available; a collaborative practice

may reorganize its participants' roles, tools, and expectations. The relevant subject of analysis is then partly the evolving relation that supports or limits subsequent activity. An invitation can be investigated as a possible occasion of such transformation, while the account remains open to outcomes in which the offered form is ignored, resisted, or incorporated without durable change.

The relation to Simondon requires careful boundaries. His account of preindividual potentials, metastability, and transduction advances a philosophical project about individuation with commitments that exceed a modest model of learning or social cooperation. GR draws here on process, milieu, and transformations of capacity as analytical resources; the representation makes no claim to disclose the ultimate constitution of the beings involved. Moreover, an increase in the number of conceivable responses does not itself establish an improvement, an ethical good, or an aesthetic achievement. New generative capacities may arise in coercive training, exploitative production, or destructive activities. The evaluation of those developments requires criteria attentive to their substance and consequences. Simondon therefore helps motivate a process-sensitive account of invitation without furnishing an automatic positive valuation of every process of individuation or expansion.

Amartya Sen's capability approach supplies a fourth resource, especially for distinguishing an available possibility from an achieved result. In *Capability and Well-Being*, Sen differentiates a person's achieved *functionings* from the set of alternative functionings the person is effectively able to attain, stressing that advantage and freedom may require attention to genuine opportunities rather than resources or realized outcomes alone [37]. This distinction is relevant to generative invitation because an available prompt and a successful response are inadequate substitutes for inquiry into what the recipient can actually undertake. A student might be handed a research problem while lacking the time, accessible language, equipment, or social permission needed to explore it. Another student might produce the required answer through strong institutional pressure while retaining little freedom to form an alternative question. In both cases, performance and available agency need separate assessment. The strength of Sen's analysis lies precisely in making room for this distinction.

Sen's account also resists a simple transfer into the broader GR vocabulary. It is an explicitly evaluative approach to human well-being, advantage, and freedom, whereas the present inquiry compares multiple kinds of recipients and includes processes whose subjectivity or welfare status may be unknown. One cannot automatically translate a technical system's operation set into the freedoms of a person, or a possible configuration change into an ethically valuable functioning. At the level of analogy, Sen clarifies why a set of available possibilities matters alongside observed achievements. At the level of normative argument, different kinds of participant require a justification of which possibilities count as valuable, who may assess them, and whose agency is at stake. The value of the analogy therefore depends on openly maintaining the difference between an operational capacity, an experienced freedom, and a justified claim about well-being.

These approaches make it useful to distinguish *a disposition or skill, its effective availability, an exercise, and a change in the conditions of future exercise*. A disposition can be retained while its exercise is blocked by the absence of equipment or permission. Effective availability concerns what a participant can undertake under the actual material and relational conditions of the case. An exercise is an occurrence within those conditions. A later change may concern a learned ability, an enabling relation, or both. These distinctions should be identified at a specified scale: an individual may lack access that a community possesses collectively, and a machine may have a programmed operation disabled by deployment constraints. This section characterizes the receiving-side configuration; the evidential test for durable change belongs to Section 5.

The historical aspect of this account does not presuppose a privileged present from which an ontologically completed past determines an open future. It refers more modestly to temporally structured dependencies among events, retained traces, institutional arrangements, and transformations that may be reconstructed from particular observational positions. A present description of a subject's capacity may depend on learning episodes, inherited practices, interactions, and material conditions distributed across scales. Conversely, the description may be revised when additional evidence becomes available or when the subject's activities alter the surrounding relations. Historical identity should therefore be

understood as an explanatory commitment to the particularity of development, rather than as the demand for complete reconstruction of every event. Such total reconstruction would generally exceed accessible evidence and add little to the specific question of whether an invitation changed a capacity.

For analytical clarity, the present inquiry represents a generative-relational configuration for participant i at a model index λ by the tuple stated in Equation 1.

$$\mathfrak{G}_i^\lambda = (\mathcal{X}_i^\lambda, \mathcal{R}_i^\lambda, \mathcal{H}_i^\lambda, \mathcal{C}_i^\lambda, \Phi_i^\lambda, \mathcal{N}_i^\lambda, \mathcal{M}_i^\lambda). \quad (1)$$

Here $\mathcal{X}_i^\lambda$ designates a domain of states or distinguishable configurations, $\mathcal{R}_i^\lambda$ the relations through which the participant interacts with other systems, $\mathcal{H}_i^\lambda$ historically retained or reconstructible dependencies, $\mathcal{C}_i^\lambda$ the capacities relevant to a specified activity, Φ_i^λ an abstract description of possible transitions or generative operations, $\mathcal{N}_i^\lambda$ normative conditions relevant to conduct and appraisal, and $\mathcal{M}_i^\lambda$ material and institutional dependencies. The index λ marks a location within an adopted model of change; it does not assert that all participants share one fundamental clock. These components may overlap in an application: a training institution can be represented as part of the relational setting and as a material condition, while some rules may enter both norms and transition constraints. The tuple is a bookkeeping device for specifying assumptions and omissions, rather than a claim of seven independent ontological substances or a fully parameterized scientific model.

The tuple's most important consequence concerns relative possibility. An object or question has features available for description from the offerer's position, but its capacity to occasion generative activity depends on the recipient's specific configuration and on the relation actually established. Accordingly, an inventory of prompts indexed only by their textual properties cannot settle whether they are generative invitations for a given population. A mathematically elegant question may furnish a productive opening to one researcher, an inaccessible task to another, and a mandatory demonstration of obedience to someone subjected to coercive evaluation. A change in permission, equipment, language mediation, or trust can transform these relations even when the words of the question remain identical. Such changes may belong principally to the environment rather than to an internal learning process, yet they still alter what the recipient can effectively do. A GR description should preserve that distinction so that relational enablement is not repeatedly misreported as a newly acquired internal ability.

The framework also requires an account of dependencies that become visible only through sustained participation. Capabilities often rely on energy, maintenance, communication, social recognition, access to information, and the time needed to exercise discretion. Participants with apparently similar cognitive competences may have unequal opportunities for creative work when one faces insecure employment, language exclusion, or control over the tools of production by another institution. In a technical setting, a machine-learning system's ability to produce a proposed response depends on computation, data access, interfaces, and externally specified constraints. These dependencies bear directly on who can invite whom, what participation is genuinely available, and how an apparent invitation might strengthen existing power. The same conceptual apparatus can track constraints across domains; their ethical consequences and the presence of morally considerable subjects must be investigated independently. Treating material conditions as constitutive of the effective opportunity prevents the offerer from assigning sole causal significance to a question while overlooking the relationships that make its reception possible.

A further source of differentiation is what the present paper provisionally calls a *generative language*: an organized repertoire of distinctions, relations, expressive forms, and practices through which further operations become intelligible. Natural language, scientific notation, embodied craft, and institutional procedure may each contribute to such a repertoire, although their semantic, social, and experiential properties differ. The term names a research problem rather than a single universal faculty. For each case, an investigator should specify what can be distinguished and transformed, what is accessible through testimony or observation, and whether meaning is appropriately attributable to the participant. An offerer may learn enough of another's repertoire to formulate a productive question while remaining unable to share the other's experience or reconstruct the entire historical formation of that repertoire.

A constructed example makes these distinctions more concrete. Consider two participants engaged in the restoration of an old mechanical instrument. One has learned through a craft tradition that organizes

sound, touch, and repair as interrelated practices; the other approaches the object through computational modeling and written specifications. A short diagram of periodic motion becomes an available offering in their exchange. The craft practitioner may recognize an unfamiliar relationship to an established technique, while the modeler may learn that material irregularities have practical significance absent from the initial simulation. Their responses can transform the joint inquiry without converging on a single mode of understanding. But further claims require care: the diagram could also leave both practices unchanged, or its use might be mandated by an institution that discounts the craft practitioner's expertise. Evidence about later independent work, reciprocal revision, access to materials, and the opportunity to disagree would help distinguish a generative encounter from superficial agreement.

In the same example, an automated diagnostic program could participate in the encounter by comparing measured vibrations against learned patterns. Its contribution might materially affect what the human participants discover, and new programming or revised parameters could alter its later performance. Such observable functions justify speaking of operational capacities and causal contributions. They supply limited grounds, by themselves, for attributing a first-person perspective, aesthetic experience, moral self-legislation, or equal standing as a partner in recognition. The philosophical analysis should therefore distinguish participants whose ethical and experiential status is independently supported from tools, institutions, and hypothetical subjects whose status remains open. This differentiation keeps the term *heterogeneous system* sufficiently broad for analytical comparison without smuggling a uniform theory of subjectivity into the GR tuple.

Even among subjects whose practical agency is uncontroversial, another's capabilities are only partially legible. Testimony may disclose a preference or intention while leaving tacit competence unarticulated; performance under a familiar task may conceal capacities that appear under new conditions; an institution may systematically discount expertise outside its established categories. The offerer's knowledge of the recipient is therefore corrigible and relationally mediated. This limitation gives particular importance to asking, listening, observing revisions, and allowing the recipient to characterize their own possibilities where appropriate. It also limits the justification for claiming that an intervention has revealed the recipient's latent potential. The offerer can supply conditions and interpret observable transformations, yet the significance of those changes may remain contested by the recipient. In some settings the recipient's interpretation deserves special practical weight, although questions of shared resources, conflicting claims, and potential harm may require additional deliberation.

Temporal succession between a question and an insight provides limited evidence for generative causation. The present section can specify relevant receiving conditions—prior capacities, effective access, relational authority, and interpretive repertoire—without treating the specification as proof of an effect. Identifying a change calls for a different inquiry: the trajectory must be reconstructed across encounters, with attention to independent exploration, other contributors, institutional modifications, and rival explanations. This division keeps the receiving-side GR model descriptive and reserves causal assessment for Section 5.

The resulting GR description concerns the conditions in which an address can become practically available to a particular participant. Embodied phenomenology directs attention to lived involvement; *Umwelt* theory to differentiated fields of significance; Simondon to processes of individuation; and Sen to effective opportunities and their normative appraisal. The present framework retains the philosophical differences among these approaches. Its further task is to relate recipient-specific capacities and dependencies to the mechanisms through which forms are offered and taken up. The following section therefore turns from the recipient's configuration to the situated encounter, where an affordance, an offer, and an invitation may diverge.

4 Generative Affordances, Offerings, and the Structure of Uptake

The recipient-relative capacities characterized in Section 3 do not determine how a possible activity becomes available in an encounter. Four relations organize the inquiry: situated affordance, offering, addressed invitation, and recipient response. Their distinctions turn on availability, communicative address,

and actual engagement. Ecological accounts of affordance clarify available activities; speech-act theory clarifies the recognition of an address; situated-action research clarifies the contingencies of response. The conceptual task is to prevent an observed creative result from retrospectively supplying evidence of every earlier stage. The section therefore specifies how an addressed offering may be recognized, reinterpreted, declined, or transformed in a heterogeneous relation.

Affordance is a particularly useful starting point because the term already places an actionable possibility in a relation between an environment and the capacities of an organism. In *The Ecological Approach to Visual Perception*, James J. Gibson describes perception in connection with the opportunities for action furnished by a surrounding environment [15]. A surface that affords walking or an object that affords handling can be considered through the relation between environmental organization and a situated perceiver. This ecological emphasis provides an important precedent for a GR account of encounters. An invitation directed at another person operates within conditions that are already practically differentiated: a question may be explorable for a person with relevant concepts and time, while a visually presented diagram may remain inaccessible to someone who needs a different sensory presentation. The material structure of the offering matters, and the possibilities associated with it are partly recipient-relative.

The philosophical status of affordances remains contested. Anthony Chemero develops a relational theory according to which affordances connect the abilities of animals with environmental features, rather than belonging exclusively to either term [7]. Such a view makes it possible to describe a change in available action when a participant's abilities develop, even if the surrounding object stays materially stable. A person who has learned to read a graph, for example, can begin to use familiar printed marks in new ways. Erik Rietveld and Julian Kiverstein broaden the investigation by examining a rich landscape of affordances dependent on the skills of situated participants [34]. Their discussion provides a further precedent for relating culturally cultivated abilities and forms of practical access. The GR vocabulary adopted here shares this attention to skill-dependent possibilities while leaving open the ontological question of whether the range of relevant generative processes should be identified with ecological affordances in the original technical sense.

There are reasons for keeping that boundary visible. An action possibility and the subsequent generation of an interpretation, artwork, institution, or research question can be connected while remaining analytically different. The scope of an ecological affordance has been extended by later scholarship to encompass complex skilled activities, yet the present proposal also concerns changes in the very practices through which a possibility is recognized. A participant can encounter a question whose significance becomes intelligible only after reflection and the creation of new conceptual distinctions. The recipient may thereby alter the available field of future questions. It would be too quick to treat this development as a special property secretly residing in the initial question. It may be studied as a trajectory of encounters in which the offered structure, earlier capabilities, other relations, and successive transformations each play a role. In this sense, *generative affordance* is a provisional term for an actionable or interpretable possibility capable of participating in such a trajectory; it carries no automatic claim about the desirability or aesthetic standing of the result.

An affordance can therefore remain available without being recognized, exercised, or intentionally supplied. A forgotten notebook in a shared laboratory may offer a colleague a way to reconstruct an experimental procedure; an unfamiliar geometric pattern may support a mathematical conjecture; a naturally occurring rhythm may furnish material for an artistic activity. In each example, the relevant possibility depends on a relation between a material or symbolic configuration and a receiving practice. The notebook's existence alone tells us relatively little about how its later reader will employ it. Similarly, the colleague may detect a meaningful possibility that its original author never contemplated. Where such episodes occur without an intentional interpersonal address, it is more precise to describe an encountered generative affordance than an invitation. This distinction preserves the practical significance of unintended discoveries and prevents every generative encounter from being retrospectively assimilated to a purposeful act of invitation.

Offering introduces a different relation: a participant makes a structure or opportunity available to another through an action or an established arrangement. An offering can consist of a verbal question,

a collection of materials, an open repository, a performed gesture, a place to work, or an intentionally altered environment. It can involve the removal of a barrier as readily as the addition of an object. The offering may be sustained over time, and its recipients may form a dispersed group rather than a single addressee. A teacher who brings a locally familiar craft pattern into a classroom, for example, establishes a concrete opportunity to investigate relations among customary techniques, geometry, and design. The teacher's action helps organize the conditions of encounter. Whether a particular learner finds the pattern generative remains a further question, to be answered through that learner's history, capacities, and unfolding engagement.

The offering relation helps distinguish *availability* from *accessibility*. A resource can be publicly accessible in an administrative sense while remaining practically unavailable to a recipient because of language, cost, mobility, time, risk, or institutional permission. Conversely, a small offering adapted to an individual's existing interpretive practices may have considerable practical reach despite its limited physical form. Sen's distinction between available capabilities and achieved functionings, developed in Section 3, provides a useful reminder that possession of a resource, the effective freedom to use it, and the resulting accomplishment require separate descriptions [37]. In a GR inquiry, making an offering therefore includes attention to material and social conditions through which the recipient can engage it. A promising question supplied under severe time pressure may afford little meaningful exploration; a technically sophisticated interface without accessible documentation may remain practically remote from those it was meant to include.

An *invitation* adds the practical significance of addressing another's possible response. In paradigmatic cases, an inviter intentionally makes an offering available while acknowledging that the addressee can respond from a distinct position and may produce an outcome the inviter has not specified. This combines a directed act with an openness concerning uptake. An instructor can invite a learner to develop a conjecture from a familiar practice. A musician can offer an unfinished pattern to another performer. A group can invite an affected community to formulate questions about a shared environment. The term signals a relationship involving an addressee whose response matters as their own activity. It is therefore sensitive to the practical circumstances in which an offer is made, including the addressee's ability to recognize its significance and to decline or transform it.

It is important to keep a descriptive account of invitation apart from an ethical standard for good invitations. An address can solicit another's initiative while placing heavy penalties on refusal; a nominally optional exercise can be practically compulsory. Such cases remain intelligible as *purported invitations* or solicitations of uptake, whose ethical deficiencies require separate appraisal. In other cases, a recipient may recognize and decline a genuine invitation, so that the episode has an intelligible communicative outcome without generating the offered activity. For analytical purposes the researcher should report separately the initiator's address, the recipient's evidence of recognizing it, the accessible alternatives, and any observed subsequent activity. Grouping these as a single success variable would conflate the relation offered with the activity realized and its legitimacy.

The philosophy of speech acts illuminates one portion of this distinction. In *How to Do Things with Words*, J. L. Austin investigates utterances as actions and distinguishes aspects of an illocutionary act from effects subsequently brought about through speech [3]. In Austin's discussion of illocution, *securing uptake* concerns the hearer's grasp of the utterance's force and relevant content; it differs from securing the intended practical response and from further perlocutionary consequences. His account also distinguishes uptake, taking effect, and inviting a response as different relations between illocution and effects (Lecture IX) [3]. The analogy is valuable because an inviter may successfully communicate an invitation although the addressee declines to pursue it; another utterance may produce substantial change even when its illocutionary force was misunderstood. The difference between recognizing an invitation and producing a generative result therefore matters even in straightforward linguistic encounters.

Austin's technical concept cannot simply be imported without qualification. The proposed expression *generative uptake* deliberately has a broader extension than Austin's technical term. It names a family of ways in which a recipient practically relates to an offering, including noticing, discerning a possible use, accepting, deferring, reinterpreting, refusing, or transforming it. Thus an analyst should distinguish

communicative recognition from *practical response*, and from a subsequent *generative outcome*. Some acts of uptake are themselves interpretive achievements; others change what a participant is subsequently able to do. Recognition of the inviter's communicative intention may be relatively secure even where the recipient does nothing further. A spontaneous appropriation can also create a new generative trajectory when the recipient recognizes a possibility but remains unaware that anyone intended to invite them. The conceptual extension is proposed for analytic use; Austin's work supplies a distinction to inherit critically, rather than historical authority for the entire GR account.

The relation between *inviter intention* and *recipient interpretation* deserves further care. Social intentions are rarely transparent, and the classification of an encounter may be contested. An organizer might describe a community workshop as an open invitation while participants experience it as a request to legitimate a project already decided elsewhere. A participant may take an apparently neutral question to carry an implicit assessment of competence. A child might experience a well-intentioned suggestion as compulsory because the person making it holds substantial authority. In each case, the inviter's self-description provides one source of evidence, while institutional structures, the recipient's account, and the consequences of declining provide others. Calling an act an invitation should therefore express an assessable relational claim rather than confer a presumption of respect or ethical legitimacy.

This concern also bears on invitations created through design rather than direct interpersonal address. A museum installation can make a particular sequence of interactions salient; an online learning environment can stage a set of prompts; an open-source repository can enable unanticipated forms of collaborative work. The developer or curator may intend to invite exploration, yet some recipients may engage only with what the arrangement makes readily visible. Lucy Suchman's situated study of human-machine interaction is instructive here: accounts of action that begin from a prior plan can obscure the contingent, materially organized work through which people and technologies are actually brought into interaction [39]. A GR interpretation should accordingly follow the locally realized encounter rather than infer its organization entirely from the intentions of the designer. The practical invitation takes shape through access, interpretation, action, and the continuing relations in which these occur.

The diversity of uptake suggests a distinction between several *possible responses* without making them mutually exclusive or exhaustive. A recipient can notice an offering yet leave it unexplored; accept an intended task and reproduce a conventional solution; reinterpret the offering to address a different concern; reject its framing while forming a new question from the encounter; or exercise a genuine option to decline altogether. An episode may combine these responses, and subsequent history may alter its significance. Refusal can itself be an exercise of judgment or self-determination, although its mere occurrence is insufficient to prove that the broader relation was free from coercion. Likewise, a participant's outward enthusiasm provides limited evidence about whether the invitation was understood as voluntary. Studying uptake requires the analyst to keep these variations visible rather than measuring success solely by compliance or by the quantity of subsequent output.

One particularly useful distinction concerns *generative reinterpretation*. A recipient may preserve some structural aspects of an offering while developing an inquiry beyond the originator's aims. For instance, a question initially posed to elicit a calculation can lead a learner to examine the assumptions underlying the measurement itself. The learner's contribution consists partly in changing the problem that is being pursued. Whether this constitutes an appropriate development depends on the practice: in an open inquiry it may be an important accomplishment; in a safety-critical procedure it may represent a divergence requiring correction before further action. An analysis of generativity should therefore describe the trajectory and its practical setting before attaching evaluative significance. Greater deviation from an inviter's expectation is neither a general measure of creativity nor a sufficient criterion of emancipatory learning.

The same distinction applies to artistic collaboration. A composer can provide a pattern whose timing and interval relations leave several possible continuations. Another performer may elaborate the pattern through their embodied musical history and current interaction with other players. Even if the resulting performance is judged aesthetically successful by some participants, this judgment involves considerations beyond the fact that a continuation occurred. The offered structure supplies constraints and possibilities;

the recipient's activity supplies a situated realization; the evaluation of that realization requires attention to experience, practice, and relevant standards. The preceding aesthetic paper examined these questions in the specific setting of poetic form. The present argument draws from that case only the more general structure of offering and uptake. It does not make beauty the purpose or necessary outcome of generative invitation.

A constructed example can clarify the practical relations without presupposing an empirical finding. Consider a coastal research team working with a community that maintains knowledge of seasonal shoreline changes. The team initially intends to share a standardized visualization of tidal measurements. As an environmental configuration, the visualization affords certain comparisons to those with the requisite skills and access. Displaying it at a meeting constitutes an offering. A researcher who asks participants to compare the graph with their own records and formulate questions may be making an invitation. A participant might then observe that the graph conceals a locally significant distinction between two kinds of shoreline access, propose a new classification, and develop a question about measurements that had seemed adequate to the researchers. Each moment carries a different explanatory role, and the participant's contribution remains distinguishable from the team's initial provision.

The constructed example becomes more instructive when an alternative response is considered. A community member may decline to disclose precise locations because of concerns about cultural sensitivity or resource extraction. Another may question whether the proposed activity addresses the community's priorities. If the research team treats these responses as informative exercises of agency, the interaction may still continue through revised offerings. If it makes access to resources contingent on supplying the desired information, the practical significance of the nominal invitation changes. The hypothetical contrast illustrates how an offering's institutional conditions bear on the classification of an invitation and on the legitimacy of the process. It does not purport to describe an actual coastal research project or establish which response would be proper for a particular community.

The example also separates *intentional invitation* from *unintended affordance*. Suppose the initial graph was distributed without any request for further discussion and a participant independently used it to design an unfamiliar monitoring method. The form could still have helped occasion a novel trajectory. An analyst may trace the connection between the published graph and subsequent practice, subject to the available evidence. Yet an account of intentional invitation would add little unless someone had actually addressed the participant through a recognizable invitation. This boundary is important for the conceptual originality of the proposal. The capacity to occasion valuable activity is widespread among artifacts, events, and shared environments; the further category of invitation concerns a particular kind of relation among participants, their offerings, and their possible responses.

Non-uptake also deserves independent philosophical treatment. A question may remain untouched because it is inaccessible, because its relevance is obscure, because the recipient is engaged elsewhere, or because the recipient judges that further exploration would conflict with important commitments. The same outward result can therefore arise through substantially different conditions. For practical inquiry, relevant evidence may include whether the recipient encountered the material, how the purpose was explained, what alternatives were available, and whether declining carried material or reputational penalties. Attributing failure solely to the recipient's motivation would erase these differences. Conversely, an account that attributes every non-response to oppressive external conditions could overlook the recipient's own priorities. The GR approach should retain both the structure of opportunity and the situated judgment of the addressee.

A further complication is that invitations may be *indirect*, *temporally extended*, or *distributed*. The original proposer can leave an open question whose audience is only formed later. Materials prepared by several participants can become an offering without a single authorial intention controlling its later use. A community archive may support a series of reinterpretations across changing generations, with each generation encountering a different combination of resources, norms, and risks. These cases place pressure on a simple model of an inviter acting at one time upon a fixed recipient. The relational account can still distinguish an available possibility, acts that sustain its accessibility, subsequent interpretations of what is being offered, and the practical responses through which new trajectories arise. Whether it is

useful to call the entire history an invitation will depend on the continuity of address and on the claims made by the participants.

Heterogeneous subjects amplify such uncertainties. Communication may occur across languages, disciplines, perceptual organizations, and institutional roles. A formal expression intelligible to one participant may be received by another as a sound, a visual rhythm, a gesture, or an unrecognized artifact. An invitation can become practicable through local translation, demonstration, joint manipulation of materials, or a sequence of partial correspondences. These procedures need not establish full equivalence between generating systems. Their success can be examined at a more specific level: whether the addressee acquires a workable way to engage the offered structure, whether the interpretation remains answerable to the encounter, and whether alternative responses remain possible. Such partial coordination prepares the inquiry into translation across generative languages in the later investigation of generative-language translation, without requiring that all relevant differences be resolved in advance.

Cases involving current artificial systems require particular restraint. A text-generating model can respond to a prompt, elaborate an unfinished representation, and show observable changes across a conversation or an updated computational state. These facts support analysis of computational affordances, designed offerings, and operational forms of uptake. They do not establish that the system recognizes an invitation as an ethically autonomous addressee or experiences the significance of the offering as a human or animal might. It is nevertheless possible to study how people use such systems in developing questions, and how interface design shapes the range of visible responses. The analysis should distinguish the human user's authorship, the model's computational contribution, the designer's constraints, and any claims about independent agency. Whether future artificial systems warrant stronger descriptions is a question of conceptual criteria and evidence rather than a consequence of verbal fluency alone.

The practical significance of power appears even before any explicit ethical theory of invitation is developed. Those who control access to a platform, select the materials that count as legitimate knowledge, or determine the cost of refusal can shape which possibilities become visible and practicable. An institution may offer participants an apparently broad range of questions while reserving authority over which responses are recorded, circulated, or rewarded. In that setting, the offering can generate novel activity while reproducing a narrow hierarchy of evaluative authority. The resulting innovations do not by themselves settle whether the relation respects those who produced them. For the purposes of the present section, the point is conceptual: the classification and interpretation of uptake must include its material and institutional conditions. The normative questions of consent, power, and responsibility receive more sustained treatment later in the paper.

The distinctions can now be assembled without collapsing their evidence. A *generative affordance* is a possibility for further activity available in a specified system–environment relation. An *offering* is an event or practice that makes a form or resource accessible to another. An *invitation* additionally involves an intelligible orientation toward the recipient's possible initiative; the sender's expressed intention, the institutional setting, and the range of permitted responses help interpret its standing. *Uptake*, in the extended practical sense proposed here, concerns the recipient's way of engaging with the offering, including critical transformation or refusal. Austin's technical sense of uptake remains a distinct concept concerning recognition of an illocutionary act. An encounter can possess the first two features without the latter two, while a recipient may discover an affordance that no one deliberately offered.

For discriminating particular cases, three records should be kept separate. The *address record* concerns who made a possibility available, to whom, and under which expressed or tacit terms. The *response record* concerns what the recipient recognized and did, including dissent, non-engagement, and counterproposal. The *trajectory record* concerns any subsequent activities and transformations for which a relation to the encounter can be argued. These records can conflict: an intention to educate may accompany practical coercion; a narrow instruction may occasion independent discovery; an invitation recognized as such may lead to no further activity. The separation of address, response, and trajectory makes ethical criticism and empirical or interpretive assessment more precise. It also avoids describing success merely because the offerer's preferred output appeared.

Generative invitation has a specific analytical role within the GR framework: tracing an addressed

possibility through recipient-relative uptake and subsequent activity. It offers a way to describe an addressed possibility whose significance emerges through the receiving participant's historically and materially situated activity. The ecological tradition supplies the relational character of available action; speech-act philosophy sharpens the distinction between communicative recognition and downstream effects; situated action studies caution against treating design intentions as a complete description of actual encounters. The proposed GR extension brings these resources into an inquiry about the course of subsequent generative activity. Its additional explanatory value remains to be tested against those traditions and against simpler accounts of learning, persuasion, and environmental opportunity. Section 4 prepares that test by specifying the encounter itself; the following section examines whether such encounters occasion enduring transformations of capacity and how those transformations might be distinguished from temporary performance.

5 Generative Trajectories and Transformations of Capacity

The philosophical significance of a generative invitation extends beyond the activity immediately elicited by an offering. A recipient may complete a task, interpret a poem, formulate a question, or produce an unfamiliar technique while retaining essentially the same range of future possibilities; another encounter may alter how the recipient identifies, combines, or develops possibilities in subsequent circumstances. The analysis separates immediate achievement from enduring changes in capability and opportunity. Its objective is to clarify the conditions under which a relational encounter might be associated with a transformation of generative capacity, while preserving differences among actual achievements, cultivated dispositions, material opportunity, and changes in collective practice. The argument draws selectively on pragmatist accounts of experience, philosophical analyses of ability, situated learning, and the capability approach. It then develops criteria for assessing trajectories and for resisting unwarranted causal inferences from a single striking outcome. The proposal remains conceptual: an enduring transformation has to be established through relevant evidence rather than inferred from the descriptive attractiveness of the term *generative*.

The concept of a *trajectory* identifies an ordered or otherwise related course of changes in a recipient's activity and its enabling conditions. A trajectory can include an invitation, moments of uptake or refusal, reinterpretation, encounters with new materials, revisions of practical habits, and forms of recognition that emerge through subsequent relations. The order is analytically useful even where one does not privilege a single present moment as the fundamental location of generative reality. A history may contain discontinuities, parallel activities, and reciprocal influences. The initial offering need not remain the dominant explanatory factor throughout the history. A mathematical question that occasions a conversation, for example, may subsequently acquire new significance through independent reading, criticism from peers, unfamiliar data, and the recipient's own revisions. Description of the trajectory should retain those additional contributions rather than retrospectively crediting an initiator with the entire course.

Four kinds of change require separate attribution. An *achievement* is an outcome realized through some available capacity. A change in *effective access* makes a familiar capacity practicable under different conditions. A *repertoire transformation* modifies how a participant can identify, combine, or initiate activities across subsequent encounters. A *collective reorganization* changes the relations, procedures, or resources through which several participants generate further possibilities. These changes often overlap. Access to an archive may enable a publication without teaching a new method; participation in a workshop may cultivate a new method that later becomes unusable when institutional access is withdrawn; a community may create procedures through which different members can pose questions. Distinguishing these cases prevents a single successful output from being treated as evidence of all forms of development.

Gilbert Ryle's distinction between knowing how and the description of isolated mental or behavioral occurrences provides one philosophical point of entry. In *The Concept of Mind*, practical intelligence is examined through the dispositions and capacities implicated in performances, rather than located in a single episode treated as an exhaustive account of ability [36]. For the present argument, this helps distinguish one impressive response to an offering from the capacity to respond appropriately across

relevant variations of circumstance. A participant who receives a carefully composed question might produce a persuasive interpretation because the offering has already supplied most of the steps. The same participant might have developed an independently usable interpretive skill; the immediate product cannot, by itself, settle which explanation applies. The comparison must attend to how the recipient selects, adapts, revises, and justifies procedures under altered conditions. Ryle's analysis provides conceptual discipline here, although it supplies neither a complete account of developmental causation nor a measure of the generative capacities proposed by GR.

The distinction between ability and achievement also bears on the issue of *value*. A recipient can develop a capability whose later exercise is not immediately desirable or publicly recognized. Conversely, a valuable outcome can result from a fortunate configuration of assistance and resources without indicating lasting change in the recipient's own generative repertoire. These are reasons to keep ability, enactment, and valuation separate. An inquiry into the outcome's aesthetic or epistemic worth requires standards suited to the activity; an inquiry into capability requires a defensible account of what the participant can do under specified conditions; an inquiry into justice asks how the conditions were established, sustained, and controlled. A single scale of generative success would obscure these distinctions. Even when a trajectory eventually produces socially recognized value, that recognition provides only indirect evidence about the generative changes that enabled it.

John Dewey's treatment of continuity and interaction in *Experience and Education* offers a second philosophical lineage. Dewey understands the educational significance of an experience through relations between existing dispositions, surrounding conditions, and the way an experience bears on subsequent experience [11]. The relevance of continuity extends beyond a conventional classroom: an encounter can leave behind habits of attention, modes of questioning, commitments, or new expectations that orient further activity. Yet continuity is ethically and intellectually ambivalent. An experience can cultivate fruitful habits while another consolidates avoidance, dependence, or excessive reliance on an authority. A trajectory that yields durable transformation therefore cannot be judged beneficial merely because its effects persist. The nature of the change, its consequences for future freedom, and the participant's own evaluations remain separate matters of philosophical assessment.

Dewey's emphasis on interaction also complicates the attribution of change to a single offering. Experience occurs within transactions involving persons, materials, institutions, and prior habits. In a GR interpretation, an invitation can be understood as one relational intervention that modifies an evolving field of possible encounters. The initial question may be particularly consequential because it connects formerly separated practices or makes a neglected relation salient. The recipient's later activity, however, may depend on subsequent opportunities that the inviter neither provided nor controlled. The proposal of generative invitation gains explanatory force only if it can clarify such relations at a suitable level of detail. A description that treats every subsequent development as the inviter's accomplishment would undermine the recipient's agency and turn a relational explanation into an expanded claim of personal authorship.

The concept of *situated learning* provides a third resource. Jean Lave and Etienne Wenger develop legitimate peripheral participation as a way of investigating changing participation in socially organized practices, including access to artifacts, forms of knowledge, and relations between newcomers and experienced participants [22]. The perspective is valuable because changes in capacity may partly consist of changes in position within a practice. A researcher who gains access to disciplinary discussion may become able to formulate or contest questions that would previously have remained outside an effective field of participation. The relevant transformation occurs through relations among individual skill, recognized participation, material resources, and institutional permission. It would be misleading to assign all of that development to an internal mental property. At the same time, the account of legitimate peripheral participation is an established alternative explanation for many cases that might otherwise be presented as illustrations of a newly discovered GR mechanism. The latter's distinctiveness will depend on what additional relations it makes intelligible.

Lave and Wenger's account also cautions against regarding the teacher or inviter as a necessary central cause of development. A participant can learn through multiple relations, tacit participation, changes of

role, and practical experimentation whose significance is only partly planned. Accordingly, the concept of generative invitation identifies a specific kind of address and opportunity within a larger relational history; it does not claim to encompass the entire process of learning. In some cases, an invitation may reorganize the recipient's effective participation by bringing a local practice into contact with an unfamiliar problem. In others, the decisive change may come from participation already unfolding in a community, while the apparent invitation merely provides an occasion to display a capacity. Recognizing these alternatives allows the philosophical proposal to remain discriminating.

Sen's capability approach, introduced in the preceding discussion of heterogeneous systems, provides a complementary distinction between effective opportunities and realized achievements [37]. One may have a capability without exercising it, and circumstances may permit a particular achievement without establishing a stable increase in effective freedom. The present paper borrows this distinction carefully. Sen's analysis of human well-being and advantage does not automatically extend to a universal theory of generative value or to every possible artificial system. It nonetheless helps ask whether a purported invitation actually enlarges what its recipient can practicably undertake, rather than merely extracting a favored result. A newly accessible repository may alter effective opportunities without teaching the recipient a new method; a newly learned method may remain ineffectual without accessible materials, time, or institutional permission. Both developments matter, and they should be described separately.

The GR account may represent the distinction through a context-indexed set of effective activities. Let S_i denote a provisional description of subject i 's historical, relational, practical, and material conditions, and let c specify a relevant class of situations. Define the set of activities effectively available to that subject in that context by Equation 2.

$$\mathcal{C}_i(S_i; c) := \{a \in \mathcal{A}(c) \mid a \text{ is practicable for } i \text{ under } S_i \text{ in } c\}. \quad (2)$$

Here $\mathcal{A}(c)$ identifies a comparison domain selected for the particular investigation, rather than a universal catalogue of possible actions. The term *practicable* must likewise be specified through the domain's relevant conditions and evidence. The set representation is a heuristic for distinguishing effective availability from realized outcomes; it is neither an empirically calibrated model nor a proof that all generative capacities can be enumerated. Different contexts may involve incompatible descriptions of activity, and newly generated possibilities may require revising the comparison domain itself. These limitations are philosophically relevant because a recipient can change the kinds of questions or activities through which subsequent possibilities are classified.

A transformation of capacity can now be considered with appropriate care. Suppose two configurations, $S_i^{(a)}$ and $S_i^{(b)}$, belong to a related history in which an invitation figures. The comparison between $\mathcal{C}_i(S_i^{(a)}; c)$ and $\mathcal{C}_i(S_i^{(b)}; c)$ may show an enlarged, reduced, or reorganized set of practicable activities. Inclusion of the earlier set within the later one would describe one special case of expansion under a shared comparison domain. It should not become the universal criterion of development. A person who gains a complex scientific skill may relinquish familiar routines, redirect attention, or assume responsibilities that make some earlier activities less accessible. A community may collectively decide to restrict an extractive use of its knowledge while cultivating other capabilities. Such changes can be meaningful transformations without monotonic growth in the number of available actions. The adequacy of the change depends on the relevant historical and normative questions, including whose possibilities are being considered and what costs accompany them.

A claim of *enduring generative transformation* becomes more persuasive when evidence spans situations beyond the originating task. Relevant observations could include independent questions in an unfamiliar setting, modified investigative procedures, reflective accounts of changed practice, and repeated activity under reduced prompting. Such evidence must be interpreted in light of persisting supports. A recipient may have acquired a durable skill while still needing tools or collaborators; another may remain dependent on the inviter's immediate prompts while having gained little transferable initiative. Persistence is therefore a property to investigate across a specified family of relations, rather than a timeless possession attributed to the individual. Assessment should allow transformations in the quality, organization, or direction of capacities even when the total number of available actions does not increase.

Two familiar difficulties arise at this point. The first is the ambiguity of *transfer*. A participant may appear to apply an insight in a novel context when the context actually shares familiar cues, hidden guidance, or an established procedure. The second is the ambiguity of *independence*. A recipient's later invention may draw on the enabling relations of an institution even when the individual works without immediate assistance. These distinctions do not defeat the possibility of meaningful transformation; they specify the evidence required. Comparisons across tasks, changing social settings, and longer periods may help reveal what persists. First-person accounts, records of revisions, material traces of activity, and observations of the conditions under which work proceeds may illuminate different aspects of a trajectory. Each method has limits: retrospective testimony may compress causal histories, while behavioral measures may fail to register changes in interpretation, recognition, or experienced significance.

An illustrative case can make the alternatives more precise. Consider an ocean researcher who presents a coastal community with a visual representation of wave measurements and invites participants to question the structure of the data. One participant uses existing fishing knowledge to propose a relation between local environmental signs and the formal measurements. Three developments are possible. In the first, the participant supplies a useful observation that depended on knowledge already available before the meeting; the meeting changes the setting in which a capacity is exercised. In the second, the participant learns a graphical method and later applies it independently to unfamiliar conditions, indicating a possible change in individual repertoire. In the third, researchers and community members establish an ongoing practice of joint data collection, altering access to instruments, the criteria for questions, and collective opportunities to produce knowledge. These outcomes may coexist, yet they support different claims about individual, collective, and institutional transformation. The example is constructed for analysis and provides no evidence concerning any actual coastal community.

The constructed case also illustrates possible asymmetry in the production and recognition of change. A university laboratory might attribute the resulting innovation to its own initial chart while overlooking the interpretive resources that made the chart significant to community participants. Conversely, the community might supply an original method that the researchers subsequently adopt, thereby altering the researchers' own capacities. A historical account must examine who supplied which possibilities, who transformed them, how the interaction developed, and which conditions permitted the results to persist. The category of invitation may help identify a consequential relation of address and uptake, but authorship and entitlement require additional justification. In particular, the provision of an initial form does not automatically authorize control over later applications, nor does the occurrence of useful knowledge production demonstrate that the participants were treated justly.

A more difficult possibility is that the recipient generates an activity whose form is deeply unfamiliar to the inviter. A novel concept, a new aesthetic practice, or a different organization of collective inquiry may arise from an offered structure without retaining the inviter's original evaluative vocabulary. In such cases, the inviter can often reconstruct only some of the causal and interpretive connections. The recipient's own testimony and practice may be indispensable for explaining what changed, while differences in historical and linguistic background limit what can be translated. A responsible account can identify the offering and trace its practical role without claiming comprehensive access to the recipient's experience. The resulting trajectory might contribute to value co-creation even where participants cannot establish a shared measure of value. Whether that broader description is justified belongs to the later investigation of co-creation and its normative conditions.

The relationship between capacity and trajectory is also complicated by *feedback*. What initially appears as a modest response may transform the inviter's own practices. The laboratory in the constructed example may reformulate its data collection methods after encountering the community's interpretation. Alternatively, an invitation may be declined, yet the refusal may lead an institution to reconsider the terms on which participation is requested. A refusal can therefore be consequential for the ensuing relational history without being reclassified as compliance. The practical agency of the addressee includes the capacity to withhold participation, reshape the offering, or initiate a different inquiry. The status of that agency becomes a central question when the surrounding relations are unequal, and the later discussion of autonomy must examine whether those options were genuinely available.

A causal account must connect the offering to a plausible pathway of change while confronting rival histories. Evidence might trace how the recipient reworked the offered form, which later activities used the resulting distinctions, and when external resources or collaborators became decisive. Alternative accounts include independent maturation, prior preparation, an institutional reform, additional instruction, or selection into the encounter. Controlled comparison can sometimes help; the singularity of historical relations often makes close qualitative reconstruction and explicitly limited counterfactual reasoning more appropriate. Neither a temporal sequence nor a formal trajectory notation settles causal identification. The strongest available inference should identify the invitation's *partial contribution*, indicate competing causes, and acknowledge the evidential limits of attributing a durable change.

The test of philosophical originality is correspondingly demanding. Ryle's dispositional analysis, Dewey's continuity of experience, Lave and Wenger's situated learning, and Sen's capability approach already account for substantial aspects of the distinction between an achievement and a changed possibility. The GR proposal offers additional explanatory value only if joining the address–response mechanism to heterogeneous receiving conditions and later trajectories reveals distinctions that these established accounts leave comparatively unclear. A discriminating case would involve two recipients receiving similar offerings, developing different subsequent capacities through historically specific relations, and being able to contest the giver's account of their development. Where the same case is adequately explained through scaffolding, situated learning, or ordinary changes of access, conceptual parsimony favors those explanations. The GR claim therefore remains an accountable comparative proposal rather than a terminological assertion of novelty.

The scope of application also requires differentiated evidential standards. Among human participants, descriptions of durable change may draw on reported experience, demonstrated capacities, social histories, and records of independent practice. For nonhuman animals, relevant capacities may require species-sensitive observation and experimental designs that avoid projecting familiar human intentions. For current artificial systems, a long conversation can exhibit adaptation to context, and technical changes may alter subsequent behavior; these observations do not establish subjective learning, practical self-legislation, or independent ethical status. A change to stored memory, model parameters, available tools, or external workflow also has a different persistence profile from a transient change within one context window. Researchers should distinguish system updates, human-directed modifications, and context-dependent outputs before drawing analogies to the developmental trajectories of living subjects. Heterogeneous comparison becomes informative through such distinctions rather than through a demand for one universal measure of generative capacity.

The analysis identifies four possible consequences of an invitation: immediate accomplishment, enlarged effective opportunities, durable changes in a participant's repertoire, and reorganization of collective enabling conditions. These outcomes should be identified independently, investigated through the appropriate histories and evidence, and evaluated under normative standards whose legitimacy remains open to examination. The philosophical proposal concerns a relational mechanism by which an offering can enter another system's activity and contribute to a subsequent development whose form is not fixed by the proposer. That contribution can be real yet partial, and its recognition need not imply ownership of another's discoveries. Having clarified the range of possible transformations, the next inquiry can examine how such an offering becomes intelligible across heterogeneous generative languages and what forms of partial translation can support an invitation without requiring identity between the participating systems.

6 Partial Translation and Correspondence Across Generative Languages

Generative invitation across heterogeneous participants raises a problem of practical intelligibility. An offering takes shape within the history, conventions, material practices, and capacities of one participant, while its possible uptake depends on the receiving participant's distinct conditions. This section examines how relations of correspondence can be established across those conditions, what can be learned from philosophical disputes about translation, and how formal comparisons might clarify the limits of

equivalence. Its central proposal is that an invitation can become practically consequential through a local, revisable correspondence even where the participants retain different interpretations, experiences, and standards of value. This proposal concerns a possible relational mechanism. Whether a given encounter exhibits it requires historical description and evidence of uptake, rather than the assumption that intelligibility arises automatically from shared interaction.

The term *generative language* requires care. In the present inquiry it designates a provisional analytical description of the distinctions, practices, representations, material arrangements, and transformations through which a participant produces and revises responses. Human verbal languages are prominent examples, yet a person's operative repertoire also includes bodily know-how, tacit disciplinary routines, tools, memories, and collaborative procedures. Certain nonhuman organisms respond to meaningful differences through species-specific perceptual and action capacities. An artificial system may transform prompts, intermediate representations, and external states according to engineered architectures and learned parameters. These cases invite comparison at the level of specific operations; they do not establish a universal language shared by living beings and machines, or imply that every computational response belongs to a subjectively experienced world. The conceptual utility of *language* lies here in making the possibility and limitation of translation a question for examination, while the diversity of the underlying mechanisms remains visible.

Translation within this broader setting has several distinguishable objects. A proposition can be paraphrased in another vocabulary; a technical instruction can be reconstructed in a different procedure; a practical distinction can become recognizable through demonstration; and a situated question can be made discussable without preserving every association that accompanied its first formulation. A partial translation may therefore preserve a distinction, a functional possibility, or a relation of relevance while transforming the form through which it is encountered. The distinction is particularly consequential for generative invitation: the recipient may respond to a question because it becomes newly significant in the recipient's own practice, even though the inviter's conceptual pathway and the recipient's unfolding differ. Success at one level of translation leaves the status of other levels open. Agreement on a task, for example, offers limited grounds for concluding that participants share its historical significance or ethical interpretation.

The philosophical genealogy of this difficulty includes W. V. O. Quine's analysis of radical translation. In *Word and Object*, Quine examines how translation is constrained by publicly accessible evidence while remaining open to divergent manuals of translation and referential assignments [30]. The question concerns the grounds for assigning meanings across languages, including the underdetermination introduced when the available patterns of response support more than one interpretation. This remains relevant when the encounter extends beyond vocabulary into practice. A participant's observed agreement, gesture, or successful task performance may be compatible with several accounts of what was understood. Yet the GR extension requires a narrower conclusion than an unrestricted skepticism about communication. Translation and coordinated action plainly occur; their occurrence does not by itself establish a uniquely determined correspondence of internal histories, concepts, or valuations. The philosophical task is to describe which correspondences a particular encounter warrants.

Donald Davidson's critique of the very idea of a conceptual scheme introduces an important counterpressure. Davidson challenges the intelligibility of sharply separated conceptual schemes that are supposed to organize otherwise uninterpreted content and resist translation in principle [8]. An appeal to completely incomparable systems would risk reinstating precisely the scheme-content picture he contests. The present account therefore uses *heterogeneity* as an indexed claim about demonstrable differences in capacities, histories, perceptual organizations, relational dependencies, and available modes of interpretation. Heterogeneity need not amount to a metaphysical assertion of mutually inaccessible conceptual worlds. A comparison may succeed with respect to operational constraints and fail with respect to phenomenological attribution; it may succeed in reconstructing a procedure and remain undecided regarding normative significance. These qualified results can be described without positing either total translation or total untranslatability. Davidson's objection consequently serves as a discipline on GR terminology, especially where the expression *different generative languages* might otherwise become an

unearned claim of radical incommensurability.

Roman Jakobson’s distinction among intralingual, interlingual, and intersemiotic translation expands the range of mediation under consideration [19]. The distinction makes clear that the movement between sign systems has a different structure from rewriting within one verbal language. A poem may be reworked through another language, a dance, or a visual form; a technical explanation may be reconstructed through diagrams and skilled demonstration. Jakobson’s treatment of poetic translation is especially pertinent because the arrangement of signs, sounds, and grammatical relations can itself participate in what the receiving participant finds significant. Transformations between forms may carry forward a possibility for further interpretation while altering the conditions of realization. The present argument inherits the importance of such transformations, but extends its question beyond semiotic recoding to changes in the recipient’s ensuing activity. A translation can be well formed yet unused; conversely, a partial practical correspondence may sustain inquiry before the participants agree upon a stable verbal account of it.

Kwame Anthony Appiah’s proposal of *thick translation* adds an indispensable historical and ethical consideration. In discussing culturally situated texts and proverbs, Appiah emphasizes a form of translation attentive to contextual explanation and the reader’s encounter with another cultural world [1]. The conceptual relevance is substantial: translating a token or abstract pattern may conceal the historical arrangements through which it acquires force. The GR framework should neither assume that contextual supplementation exhausts a participant’s significance nor equate linguistic unfamiliarity with a lack of understanding. It may, however, ask whose contextual knowledge determines the correspondence, what a receiving participant is authorized to revise, and which dimensions of another practice remain opaque. Context-rich translation offers a possible resource for invitation. It is also vulnerable to asymmetries in who decides which contexts count, whose testimony is credible, and whether the translated practice is returned to its community as a usable resource.

These lineages illuminate an analytical distinction between *translation of content* and *correspondence of generative activity*. Content translation seeks a suitably defensible relation among expressions or their interpretations. Generative correspondence concerns the more limited proposition that participants can recognize, reproduce, or transform some relevant operation across their different repertoires. A medical researcher might present a population-level time series, while a coastal resident identifies a seasonal pattern connected to local harvesting practice. The time series and the situated narrative need not encode the same categories. A correspondence may nonetheless emerge around an observable change, a question about causal timing, or the practical opportunity to gather additional evidence. What matters for this inquiry is the existence of a situated path through which each contribution can become consequential for the other. Claims of mutual understanding should be evaluated relative to that path, with attention to differences between prediction, explanation, lived familiarity, and authority over practice.

A local relation can make this qualified correspondence more explicit. Let P_A^c and P_B^c denote finite or otherwise specified sets of relevant distinctions or practices made available by participants A and B in an encounter context c . The proposed relation is given in Equation 3.

$$R_{AB}^c \subseteq P_A^c \times P_B^c. \quad (3)$$

A pair belongs to R_{AB}^c when a stated interpretive or practical criterion supports treating those two elements as corresponding for the purpose at issue. The criterion may concern functional coordination, shared attention to an environmental pattern, or the ability of one formulation to guide a useful action in the other system. The relation is deliberately weaker than an isomorphism or a one-to-one translation function. A single practice of A may correspond to several practices of B , and some practices may remain unmatched. A valid correspondence may also be limited to the material apparatus, interlocutors, and purposes present in c . Equation 3 is a structural representation, not a measurement of mutual understanding; specifying its elements and evaluating its pairs remain substantive empirical or interpretive tasks.

A correspondence requires a stated unit of comparison. In a scientific collaboration the relevant unit might be a calibration procedure, a pattern of observations, or the conditions under which a forecast would guide action. In an artistic exchange it might be a repeatable formal feature or a participant’s explanation of an interpretive choice. In a community practice it might involve access to places, relations

of stewardship, or the authority to decide when a technique is appropriate. A correspondence adequate for reproducing a sensor reading may have little explanatory power for the social meaning of the activity in which the sensor is used. A translation study that reports success should consequently record what counted as success, whose activities supplied the evidence, and which unexamined relations were excluded by its chosen unit. A result can be both useful and sharply limited; such precision makes its claims more open to criticism and revision.

A useful translation claim can therefore be specified through three separate records. The *proposed correspondence* states what the two practices are said to share and for which task; the *warrant* identifies the evidence, testimony, demonstration, or successful coordination supporting that proposal; and the *revision condition* states what kind of disagreement or subsequent outcome would require changing it. For example, two observers may agree that an instrument reading and a locally recognized seasonal change concern the same interval. Such agreement can warrant collaboration on timing while leaving the causal account, the allocation of authority, and the practical significance of the change unresolved. Keeping these records separate protects a provisional bridge from being presented as a comprehensive translation. It also gives the receiving participant a concrete basis for contesting the bridge without first accepting the inviter's entire descriptive scheme.

The same representation permits a sharper examination of a claim often expressed too loosely: that some aspects of another system can be understood even when the system's historical totality cannot be reproduced. A recipient may learn how a procedure works, how its results are checked, or how a question can be productively reformulated. These achievements support a limited comparison of practices. They leave many features of the participants' histories unrepresented, including the risks attached to their actions, remembered associations, and unspoken normative expectations. This remainder need not be described as a defect that a more elaborate translation must eventually eliminate. In some encounters the remainder is constitutive of the participants' different positions; in others it reflects incomplete investigation or remediable exclusion. Philosophical care consists in distinguishing those possibilities rather than turning the mere existence of a remainder into proof of essential unknowability.

A related mathematical resource is the construction of a quotient, provided the relevant algebraic structure has been established. Suppose that a particular model represents a class of transformations by a group G , and that a homomorphism ρ_c maps these transformations to the automorphisms of a specified set of context-relevant observable distinctions O_c . The kernel of ρ_c then contains the transformations invisible under that representation. Under these explicit assumptions, the first isomorphism theorem gives Equation 4.

$$G / \ker(\rho_c) \cong \text{im}(\rho_c), \quad \rho_c : G \longrightarrow \text{Aut}(O_c). \quad (4)$$

The quotient identifies transformations that produce the same represented effect at the chosen level of observation. If ρ_c is faithful, its kernel is the identity subgroup and the quotient has the original group's structure. If the kernel is nontrivial, the quotient forgets differences that the chosen observations do not detect. Equation 4 is an algebraic fact conditional on the stated construction. It provides no evidence that historically situated GR systems themselves form groups, that relevant dynamics are reversible, or that equality of observed effects preserves aesthetic, ethical, or experiential significance. The mathematical usefulness lies in marking precisely which distinctions a particular comparison has elected to discard.

This qualification has a direct bearing on the earlier problem of aesthetic equivalence. Historically singular encounters may become indistinguishable under a coarse description of rhythm, arrangement, or reported preference, even while their aesthetic significance differs for particular participants. The claim that an exhaustive aesthetic quotient would approach the identity relation is therefore a hypothesis about the richness of the distinctions that must be preserved, rather than a theorem derived from historical uniqueness alone. For the present paper, the more immediate result is practical. An invitation may succeed with a much coarser correspondence than would be adequate to establish identity of aesthetic experience or value. The distinction between *sufficient correspondence for a task* and *exhaustive equivalence of participants* allows inquiry to proceed without forcing it into either a universal common metric or the denial of cross-system understanding.

There is an additional limitation to the quotient analogy. A representation can retain every distinction

relevant to a chosen observation and still omit distinctions that become consequential through later interactions. A quotient's adequacy is therefore indexed to a specified observational purpose and a period of inquiry. When participants revise the question itself, the represented observables and the homomorphism used to define the quotient may also need revision. The first isomorphism theorem remains valid for each properly specified homomorphism; it supplies no canonical selection of observables across the changing histories of the participants. This is why the mathematics clarifies a locally declared loss of distinctions while leaving open the philosophical question of which losses matter. In particular, similarity of operational output provides no general warrant for identity of value, meaning, or aesthetic experience.

Three types of failure help delimit the mechanism. In a *false correspondence*, participants use familiar terms or similar gestures while pursuing practically divergent objectives; apparent agreement masks the difference until later action exposes it. In an *underdeveloped correspondence*, the proposed link is broadly defensible but lacks the material or linguistic support needed for independent uptake. In a *contested correspondence*, participants understand the proposed connection yet disagree about which operations should count as relevant or authorized. These cases have different implications for an invitation. The first calls for renewed investigation of meaning and consequences; the second may call for accessible demonstrations, resources, or time; the third invites an examination of authority, ownership, and the recipient's ability to decline. Describing them separately helps prevent an investigator from counting every failure to cooperate as a failure of comprehension, or every successful act of coordination as proof of equal participation.

Correspondence is also transformed by use. A translation initially justified through shared examples may become inadequate as an encounter changes. The coastal resident might reinterpret an instrument's anomaly as evidence of a localized ecological process; the researcher might then revise both a model and the next question posed to the community. Later interactions may expose that the original pairing grouped together phenomena that matter differently for the two practices. An explicit record of such revisions would show how the practical relation R_{AB}^c changes with context and history. Describing that change calls for more than identifying a common sign. It involves recognizing the activity through which participants correct, extend, contest, or abandon a proposed correspondence. This provides one route by which partial translation participates in generative invitation: the correspondence is a provisional resource for further activity, and its limitations can themselves prompt new inquiry.

The inviter's control over the terms of translation remains ethically significant in this development. In an asymmetrical encounter, one participant may control the instruments, terminology, funding, and channels through which a translation becomes institutionally recognized. If that participant alone determines the success criteria, apparent correspondence may record compliance with a dominant vocabulary rather than genuine mutual intelligibility. A translated contribution may then circulate under the institution's authority while the originating participant loses influence over its use. Conversely, an effort to preserve contextual differences can become paternalistic if a community is denied the right to adapt and transform its own practices. Appiah's sensitivity to cultural context, together with the relational considerations examined earlier in this paper, invites an account of translation attentive to consent, revision rights, attribution, and the continued agency of the people whose practices are being described. These are relevant ethical questions; they do not define the adequacy of translation by themselves.

The authority to contest a proposed correspondence is important to its continuing use. A participant may understand an offered classification yet reject its practical or normative implications. Refusal can signal that a proposed map erases a relevant distinction, makes an unwanted demand, or grants authority to the wrong party. It can also reflect an independent preference or a lack of available time and resources. Each possibility warrants a different interpretation. Researchers should therefore resist treating successful uptake as the sole evidence that translation has occurred. Recognition followed by principled refusal may demonstrate that the offering became intelligible while leaving the proposed collaboration unrealized. This reinforces the distinction developed in the preceding section between an invitation's immediate effects, its durable consequences, and the legitimacy of the conditions under which a response becomes possible.

Cross-system comparison becomes more demanding when one or more participants are nonhuman

or artificial. For an animal, a meaningful correspondence may concern action possibilities identified through species-sensitive observation and careful experimental controls. An anthropocentric description might mistake an investigator's categories for the animal's own saliences. With an artificial model, an apparently apt reformulation may arise from learned statistical regularities, in-context computation, or human-designed retrieval and tool use. Its performance can be examined for reliability under altered tasks, while claims of subjective participation, autonomous practical identity, or intrinsic valuation require independent justification. Quine's emphasis on publicly accessible evidence and Davidson's interpretive challenge both counsel against claims that behavior reveals a unique internal scheme. They do not prevent useful, rigorously bounded analysis of what different systems can coordinate through particular interfaces.

The scope of the proposed contribution should therefore remain modest and discriminating. Jakobson already addresses movement across sign systems; Quine and Davidson pose deep questions about cross-language intelligibility; Appiah foregrounds the historical and cultural thickness of translation; studies of situated action and ecological affordances show why activity cannot be exhausted by abstract symbols [39, 7]. The GR proposal would add explanatory value where it identifies how a revisable local correspondence enables a recipient to enter a new generative trajectory, and especially where that trajectory changes the participant's later capacities or the shared conditions of practice. It would add little where existing theories already account for the observed translation and uptake with comparable specificity. The claim is thus offered as a research hypothesis whose distinctiveness depends on comparative argument and, where possible, evidence of changes extending beyond the immediate encounter.

Partial translation can facilitate invitation through context-bound correspondences that remain useful without requiring equivalent interpretations or histories. Such relations may be provisional, asymmetric, and subject to revision. They can assist inquiry without conferring authority to determine another participant's experience or value. Formal relations and quotients specify the level of an asserted correspondence; the warrant for that assertion depends on contextual evidence and philosophical interpretation. The question then shifts from the availability of a bridge to the conditions under which a participant remains free to cross it, alter it, or decline its use. The following discussion of recipient autonomy and meaningful refusal develops that question as a problem of relational praxis.

7 Recipient Autonomy and the Meaningful Possibility of Refusal

Generative invitation proposes a distinctive relation between an offering and another participant's capacity for independent development. The philosophical status of that relation depends partly on how the recipient can determine its course. The present section examines recipient autonomy within unequal historical, material, and institutional conditions, with particular attention to the practical meaning of refusal. It first distinguishes recognition, agreement, uptake, and consent; then compares relational autonomy, freedom as non-domination, educational emancipation, and criticism of manipulative influence. Finally, it considers constructed cases and the limits of applying the proposed distinctions to nonhuman and artificial systems. The methodological objective is to specify conditions under which an encounter can intelligibly be called an invitation, while keeping its ethical assessment distinct from its generative consequences. The resulting account is provisional and context-sensitive: autonomy is neither a single observable response nor a universal property inferable from the occurrence of a creative result.

An offering becomes intelligible to a recipient through a situated encounter, as the previous discussion of uptake and partial translation has shown. Its recognition, however, is only one part of the practical relationship. A participant may recognize a question as an invitation, understand its intended purpose, and decide to leave it unanswered. Another may accept a proposed exercise while disputing the interpretation assigned to the resulting work. A third may respond provisionally while asking to revise the terms under which the result can be used. These cases distinguish *comprehension of an address*, *agreement with its purpose*, *undertaking an activity*, and *authorization of the activity's conditions and subsequent uses*. Each distinction matters for an inquiry into generative relations. Recognition does not establish agreement; activity does not settle consent to every downstream application; and apparent agreement does not establish whether relevant alternatives were available. An account that collapses these moments

into a unitary measure of uptake will systematically overlook the recipient's participation in determining the relation itself.

The concept of autonomy should likewise be specified in relation to the kind of freedom under consideration. Autonomy might concern the ability to form and revise reasons, the practical opportunity to pursue or refuse an activity, authority over the interpretation of one's contribution, or independence from another's discretionary control. These dimensions interact while retaining differences. A participant can possess reflective skill yet depend on an institution for essential resources; another can obtain formal permission to decline while lacking sufficient information to evaluate the alternatives. The relational conception of autonomy developed in the collection edited by Catriona Mackenzie and Natalie Stoljar is pertinent here. Its contributors examine the social conditions of agency, self-conception, self-worth, and responsibility, including the ways oppressive relations can impair autonomous action [24]. This body of work furnishes a challenge to an ideal in which agency is understood principally through an isolated individual's power of choice. It also cautions against reducing relational autonomy to compliance with a benevolent facilitator. A supportive relation can enlarge another's options, while its structure must remain open to criticism by the person whose autonomy it purports to sustain.

A generative invitation can therefore be assessed through the conditions in which the recipient's judgment is exercised. When a teacher presents a question to a student, the intelligibility and attractiveness of the question may depend on the teacher's understanding of the student's language and experience. That same understanding gives the teacher considerable power to direct attention, emphasize certain features of the problem, and conceal alternative approaches. Sensitive engagement with the learner's context is pedagogically valuable when it enables the learner to formulate, revise, and pursue questions. It can become intrusive when the teacher uses the learner's history as a means of securing a predetermined conclusion. The same relation that makes an offering generatively effective may thus create opportunities for disproportionate influence. The distinction concerns how capacities and choices are organized across the encounter, including the recipient's opportunities to dispute the framing and develop an independent interpretation.

Paulo Freire's critique of the banking model of education provides a significant precedent. In *Pedagogy of the Oppressed*, dialogue and problem-posing education are developed in opposition to educational relations that treat students as passive recipients of deposited contents [13]. The affinity with generative invitation is substantial: an educator can pose a problem through which learners become participants in inquiry. Freire's political account, however, also frames education through relations of oppression and liberation; the present proposal has no reason to absorb those commitments into a domain-general definition of generation. Jacques Rancière's *The Ignorant Schoolmaster* offers a differently structured challenge to pedagogical hierarchy, emphasizing intellectual emancipation and questioning the authority implied by the expert's explanatory position [31]. These approaches should be allowed to challenge the GR proposal, especially whenever the proposed "generative" teacher remains the privileged interpreter of what the student has learned. An invitation whose success is defined solely by the inviter's judgment may reproduce the dependence it claims to overcome.

The possibility of refusal is particularly revealing because agreement can arise from many causes. A recipient might comply through enthusiasm, habit, obligation, fear of losing a benefit, respect for a valued teacher, or the absence of a credible alternative. The outward act of participation is compatible with all of these. Refusal, by contrast, can disclose whether disagreement is institutionally and relationally accommodated. Yet an isolated act of refusal is also ambiguous. It may express considered judgment, protest, exhaustion, uncertainty, strategic caution, or incomplete understanding of the proposed opportunity. Refusal should thus be regarded as an exercise of practical agency whose meaning requires contextual inquiry. An invitation need not be refused to demonstrate that refusal was possible; the relevant philosophical question concerns whether declining, revising, or counterproposing were genuine options within the relationship. This is a claim about the conditions of agency rather than an empirical rule that the most autonomous participant is the one who refuses most often.

The term *meaningful refusal* can be given an initial practical interpretation. Refusal is meaningful when the recipient can identify the relevant choice, express or otherwise enact a declining response

through an accessible means, and do so without being subjected to penalties that would make the supposed choice largely nominal. Its meaning also depends on whether the response is recognized by others and whether the participant retains an intelligible path to continued relations or future participation, where such a path is appropriate. These dimensions should be assessed comparatively. A refusal that is honored by a teacher but punished through exclusion from the next learning opportunity is formally recorded yet practically costly. A participant who declines a particular research protocol and proposes a different protocol may exercise a more substantial form of agency than one whose only permitted responses are acceptance or departure. At the same time, no institutional arrangement can remove every cost associated with a decision, and some activities have justified participation requirements. The philosophical standard therefore concerns the proportionality, transparency, and contestability of consequences, considered in their particular circumstances.

Meaningfulness can be evaluated along four dimensions that should remain analytically distinct: intelligibility of what is being offered, accessibility of a responsive channel, the material and relational costs of declining, and the durability of the response's recognition. A participant might understand a proposal and possess a formal channel for objection yet reasonably fear losing access to indispensable resources. Another might be able to decline the immediate task while being unable to restrict subsequent reuse of their contribution. In such cases, the initial refusal and the later governance of what was produced require different investigations. The dimensions are neither a universal metric of autonomy nor an exhaustive theory of consent; they identify evidence that an investigator can seek and that affected participants may dispute.

A second lineage clarifies why absence of overt coercion provides an incomplete account of freedom. Philip Pettit's republican account of liberty as non-domination draws attention to the power of another party to interfere arbitrarily in one's choices, including situations where that power is held in reserve [29]. For generative invitation, the relevant insight is that a recipient may appear entirely free to engage while depending on an inviter's discretionary control over funding, recognition, access, or future participation. A community may accept a research collaboration because an institution controls the only available equipment and dissemination channel. An employee may freely propose new ideas within a project while understanding that critical disagreement could jeopardize employment. Such relations raise questions about domination even if a particular encounter includes friendly language and an apparently voluntary agreement. Pettit's account supplies a political standard for assessing the structure of power; it should not be treated as a definition of every autonomy condition or as proof that all unequal collaborations are illegitimate.

Institutional asymmetry is especially significant when the recipient's generative language differs from that of the inviter. The offering may be formulated in terms chosen by a university, a platform, a government agency, or an expert, while the recipient's own practices lack equivalent channels of recognition. Even when a local translation is workable, an authority may determine which parts of the recipient's response count as evidence, which products receive attribution, and which revisions are accepted. Miranda Fricker's account of epistemic injustice offers an independent vocabulary for evaluating some such conditions. Testimonial injustice concerns credibility deficits linked to prejudice, while hermeneutical injustice concerns disadvantages arising from gaps and distortions in shared interpretive resources [14]. An invitation that ignores these asymmetries might solicit another's contribution while denying that participant standing as an interpreter of its meaning. Here the ethical assessment of recognition and the epistemic assessment of understanding overlap without becoming identical: an interpreted answer can be accurate while the procedure of soliciting it remains unfair, and a respectful exchange may still misunderstand the participant's intended contribution.

Practical alternatives are also affected by historically formed preferences. Amartya Sen's distinction between effective capabilities and actual achievements, considered earlier in this paper, is useful because the option to choose an activity differs from the activity eventually undertaken [37]. Martha Nussbaum's discussion of adaptive preferences adds a further complication: desires and expressed preferences can be shaped by enduring conditions of deprivation and unequal power [28]. Consequently, an enthusiastic response cannot serve as a complete ethical warrant for an invitation. A student who has learned that

disagreement is unwelcome may sincerely prefer a highly guided exercise. A community familiar with exclusion from technical institutions may ask for only those forms of participation it believes attainable. Such preferences deserve serious attention as expressions of situated agency, while the conditions of their formation remain relevant to critical evaluation. This tension also constrains well-intentioned interventions. An outsider who dismisses participants' expressed preferences as insufficiently autonomous can reproduce paternalism by claiming superior authority over their interests.

Meaningful refusal must therefore be accompanied by the possibility of *revision* and *counter-invitation*. A recipient may alter the problem offered, select a different medium, demand access to its underlying assumptions, or introduce an inquiry that the inviter had not anticipated. These responses need not be regarded as deviations from an intended answer. They can be central manifestations of recipient initiative and sometimes alter the inviter's own generative trajectory. Such counterproposals, however, also require conditions for being heard and pursued. If a teacher welcomes unusual answers but evaluates every submission solely against a fixed hidden rubric, the procedural opening is narrower than the language of invitation suggests. If a research institution solicits community observations but reserves all decisions about interpretation and publication, the recipient's contribution may remain confined to a subordinate stage of production. The question is not simply whether the invited activity generated value; it is how participants could contest the arrangement in which value was generated.

Counter-invitation also has a temporal and institutional dimension. A revised question becomes consequential only if the recipient can secure some effective uptake of the counterproposal, or maintain it as an independent line of inquiry where an inviter declines to respond. The ability to voice an alternative, the ability to act on it, and the authority to change shared rules are distinct achievements. A school might allow students to propose different research questions yet restrict credit to prescribed answers. A collaborative institution might accept locally revised research protocols while retaining unilateral power to publish findings. These differences show why reciprocal creativity can coexist with constrained autonomy, and why an offerer's willingness to listen is an incomplete proxy for the recipient's practical authority.

A third philosophical issue concerns the distinction between invitation, persuasion, and manipulation. Persuasion can legitimately provide reasons or perspectives that alter another's judgment. An invitation may also be persuasive when an attractive question makes a new line of inquiry salient. Manipulation becomes a concern where influence exploits vulnerabilities or operates through means that compromise the recipient's ability to deliberate about the relevant choice. Daniel Susser, Beate Roessler, and Helen Nissenbaum's analysis of online manipulation examines how information-rich digital environments enable hidden forms of influence over decision-making [40]. Its relevance to the present proposal is direct: personalized generative offerings can be designed through detailed models of a recipient's history and behavior. The better an inviter predicts what will draw a recipient into activity, the more important it becomes to ask whether that expertise supports the recipient's reflective agency or bypasses it. Personalization, openness, and creative output provide insufficient evidence of ethical legitimacy when considered separately from these mechanisms of influence.

A distinction between transparency and complete disclosure is needed here. A teacher need not reveal the answer to a problem before posing it, and an artistic encounter may depend on surprise. Ethical transparency concerns those features of the situation that materially affect the recipient's authority to engage: who is making the invitation, whether participation is evaluated or recorded, which constraints are operative, and how subsequent contributions may be used. Surprise within the offered activity is compatible with fair agency when participants retain appropriate control over the conditions of participation. Concealed exploitation of psychological dependence, unannounced extraction of personal information, or misleading representations of available choices provide different cases. The limits are context-sensitive; disclosure standards suitable for research with vulnerable populations will differ from those of informal artistic exchange. Nevertheless, the general philosophical concern is stable: influence can be valuable while its legitimacy depends on how it is exercised.

The relation between invitation and consent also requires differentiated treatment. Consent may authorize a particular activity under described conditions without extending to unrestricted downstream uses of its outcomes. In a collaborative inquiry, the right to circulate material, attribute authorship,

or commercialize results can require separate arrangements. Some activities also involve collective stakeholders whose interests cannot be fully represented by an individual's agreement. A participant may welcome an invitation to document local knowledge, while other community members contest public dissemination of the documentation. Such disagreement is not adequately resolved by asking which actor supplied the original prompt. The ethical standing of participation requires examination of relevant rights, responsibilities, institutional procedures, and affected relationships. These issues establish a connection to the later political economy of heterogeneous value co-creation, though a complete account of entitlement lies beyond the scope of the present section.

An illustrative educational case can make the alternatives concrete. A teacher notices that a student uses images from a local craft tradition to organize mathematical ideas. The teacher offers an unfamiliar pattern and invites the student to develop a mathematical account through that tradition's visual language. In one version, the student reinterprets the pattern, challenges the teacher's implicit classification, and develops a distinct conjecture. The teacher takes the new question seriously and permits it to guide subsequent work. In a second version, the teacher silently expects a prescribed theorem and rewards only the responses leading to that theorem. In a third, the teacher records the student's culturally situated explanation as evidence of institutional innovation while omitting the student's contribution from public attribution. The offering is superficially similar across the three versions. The practical relation differs in each: an open inquiry, an instrumentally constrained exercise, and an inequitable appropriation. These are constructed philosophical cases, designed to discriminate concepts rather than to report observations of an actual classroom.

The example also indicates why a result-centered test of generativity would be ethically insufficient. The student might produce a mathematically impressive conjecture in each version. Its quality provides evidence about the work, and the student's subsequent performance could help establish durable learning. Neither fact by itself establishes that the invitation respected the student's autonomy. Conversely, a student may decline the proposed pattern and explain that the craft tradition should not be extracted from its communal context. Such a refusal could reveal a relevant ethical condition for collaboration, while leaving the immediate mathematical exercise unrealized. A serious account of generative invitation can register the refusal as an important event in the relational trajectory without redescribing it as a successful completion of the inviter's project. It may also recognize that the refusal imposes a demand on the inviter to revise the proposal or accept its termination.

A related case arises in interaction with artificial systems. An AI model can produce a refusal message, propose alternative tasks, or adapt its generated responses according to instructions, reinforcement, and system-level constraints. These are observable behavioral and computational phenomena. Their interpretation as self-legislation, voluntary dissent, or an expression of an artificial subject's independent welfare requires further justification. At present, an analysis can examine whether a system's rules allow particular outputs, whether authorized users can contest those rules, and how training and deployment institutions distribute control over interaction. It should avoid inferring a moral subject merely because the model uses language of autonomy. Conversely, humans who rely on an AI system may encounter manipulative interface design or restrictions that impede their own meaningful refusal. The relevant ethical relations include developers, deployers, users, affected third parties, and the broader institutional setting. The concept of heterogeneous invitation can organize these distinct positions without prematurely treating them as equivalent kinds of subjects.

Nonhuman animal encounters present another form of evidential restraint. An animal's avoidance, disengagement, altered movement, or approach behavior may indicate preferences or practical boundaries under particular ecological conditions. Interpreting such behavior as accepting or refusing an invitation demands species-sensitive evidence, attention to alternative explanations, and caution about projecting human forms of deliberation. The prospect of cross-species generative encounter therefore expands the questions of autonomy and recognition without settling a uniform theory of consent across all life forms. Material vulnerability and the possibility of harm can generate reasons for restraint independently of whether a full account of reflective autonomy is available. The philosophical proposal should allow modes of responsive practice adjusted to the capacities of the particular beings involved.

A further objection deserves consideration. If a meaningful possibility of refusal were made an absolute prerequisite for every generative influence, much ordinary learning and ecological interaction would fall outside the concept. Children encounter formative practices before developing the full repertoire of reflective choice; animals may learn through altered environments; and an accidental affordance is often available before any offerer could establish consent. The present account can respond by distinguishing *generative causation*, *intentional invitation*, and *ethically legitimate invited participation*. An encounter can alter capacities without being intentionally addressed to an autonomous recipient. An intentional offering can be understood as an invitation in ordinary communicative practice even when its legitimacy is contested. The stronger normative ideal of meaningful refusal applies according to the recipient's capacities, institutional relationships, and the stakes of the activity. This differentiated analysis keeps the proposed mechanism descriptively useful while leaving its ethical standing open to reasoned assessment.

Where participants cannot exercise ordinary verbal refusal, the evidential and ethical questions become more difficult. An interpreter, guardian, caregiver, or institutional representative may sometimes help communicate a preference or safeguard an interest. Such mediation should be assessed through its accuracy, accountability, and susceptibility to correction; it does not automatically become a substitute for another being's own evaluative standpoint. An animal's withdrawal may be meaningful evidence of avoidance within a specific context without authorizing a detailed reconstruction of its reasons. For present artificial systems, generated refusals can be evaluated as outputs of a designed interaction policy, while claims of independent normative authority require further grounds. The standards of consent and the applicable duties of care vary across these cases and should be argued rather than inferred from a shared vocabulary of invitation.

The opposite objection also has force: emphasizing autonomy may obscure the extent to which generative activities are constitutively relational. Every participant learns within conditions they did not choose and relies on shared languages, institutions, tools, and histories. Autonomy understood as complete independence would therefore be inadequate to the present framework. Relational autonomy and the capability approach suggest a more useful orientation. A participant can be supported through dependence on others, provided the dependence is organized so that their judgment, access to alternatives, and ability to contest relevant decisions can develop. Some asymmetries are justified by responsibility or expertise; their legitimacy depends on their scope and revisability. A teacher may properly restrict a dangerous experiment, while remaining answerable for the restriction and offering other routes of inquiry. Autonomy within generative relations can be cultivated through accountable structures of support, even where the parties possess different capacities and obligations.

Several practical criteria follow from the foregoing analysis. Investigating an invitation requires evidence about the recipient's comprehension of its terms; their accessible options for acceptance, revision, or refusal; the material and relational costs attached to those options; and the institutional arrangements through which the response is recognized. It also calls for examination of the inviter's control over information, evaluation, attribution, and future access, together with the recipient's possibility of contesting that control. These criteria guide context-specific investigation; reducing them to a universal numerical indicator would obscure differences of dependence and authority. Interview testimony, documentary records, institutional analysis, and observation of practice may support different parts of the assessment. Their limitations must remain visible, particularly where public agreement conceals dependency or where an observer cannot reliably infer the participant's experience. The same event may be generatively consequential, interpretively productive, and ethically deficient; these judgments address different aspects of the relation.

Recipient autonomy concerns the effective ability to shape, redirect, or decline an offered activity. Its relevance lies in a participant's capacity and practical opportunity to determine the terms of engagement, not merely in the production of an unexpected result. Meaningful refusal makes visible the possibility of withholding, revising, or counterproposing, while relational theories of autonomy, republican non-domination, educational emancipation, and criticism of manipulation each expose different vulnerabilities in the conditions of participation. The proposed GR account gains philosophical precision by recognizing those vulnerabilities without reducing generative transformation to ethical success. This leaves a further

question: once participants exercise their different capacities through responses, counter-invitations, and changes of practice, how should the resulting relational co-unfolding be described when participation is reciprocal in some respects and deeply asymmetric in others? The next section examines those forms of co-unfolding as distinct configurations of generative praxis.

8 Reciprocal and Asymmetrical Modes of Relational Co-Unfolding

Generative invitation can take part in an extended relational process in which the participants' capacities, practices, and enabling conditions develop through further encounters. This section examines the structure of such *relational co-unfolding*, with special attention to reciprocity and asymmetry. It distinguishes reciprocal responsiveness from equality of contribution, separates unilateral enablement from reciprocal co-unfolding, and addresses the difference between a generative consequence and an ethically justified relation. The analysis draws on dialogical philosophy, theories of care, the anthropology of exchange, and accounts of structural responsibility. Its objective is to clarify which kinds of relational change the GR framework proposes to describe, and which additional judgments require normative, evidential, or institutional grounds. The examples are constructed conceptual cases rather than reports of observed interaction.

The term *relational unfolding* broadly designates processes in which the development of a participant is conditioned by an encounter with another. The narrower term *co-unfolding* is reserved here for cases in which the participants' activities or their shared conditions undergo mutually consequential adjustment, whether directly or through identifiable intermediaries. This vocabulary distinguishes diverse trajectories. The relevant participants may alter their interpretive repertoires, available practices, material environments, or modes of mutual address. Some trajectories involve an evident exchange of proposals. Other cases involve a single intervention whose consequences are taken up elsewhere, sometimes by participants whom the originator never meets; these count as relational unfolding while stronger claims of co-unfolding require evidence of consequential feedback. A shared process may thus be relationally constituted even when participants do not arrive at a common interpretation, produce a jointly owned artifact, or experience an equivalent transformation. These differences matter when deciding whether an encounter deserves the more demanding description of *co-creation*.

Reciprocity is often introduced through the expectation that a contribution is returned. Yet several philosophically different ideas can be expressed by the same term. Exchange reciprocity concerns a return of goods, services, or obligations. Dialogical reciprocity concerns a participant's capacity to answer an address and affect how the other proceeds. Epistemic reciprocity concerns the willingness to expose one's claims to another's correction. Practical reciprocity concerns the possibility that subsequent actions are responsive to earlier actions. These modes may coexist, but their presence and extent vary. An attentive response can be reciprocal in a dialogical sense without matching the original contribution in quantity, labor, risk, or market value. An exchange of equal monetary value may proceed with minimal openness to the other participant's distinctive interpretation. Treating these modes separately avoids attributing moral success or generative depth to a relation simply because something has been returned.

Martin Buber's dialogical philosophy provides a demanding background for examining reciprocity as an encounter rather than as a balanced account of transactions. His distinction between forms of relation foregrounds the way an interlocutor is addressed and encountered [6]. A generative invitation may be dialogical when the recipient is recognized as capable of transforming the meaning and direction of a proposal. Yet the philosophical vocabularies are not equivalent. Buber's account concerns a mode of relation whose significance extends beyond a proposed model of capacity change, whereas the present inquiry seeks distinctions usable across educational, ecological, institutional, and technical encounters. An apparently reciprocal conversation may leave material dependence untouched. Conversely, a consequential enablement of another's activity may occur without the dialogical qualities that Buber explores. These observations support the analytical value of keeping the relation's generative effects separate from its existential or ethical appraisal.

Emmanuel Levinas makes the problem of symmetry more acute. His account of responsibility gives

priority to the ethical demand presented by the other, rather than deriving an obligation simply from the prospect of equivalent return [23]. The philosophical significance for generative invitation is a caution against making reciprocity a condition of taking another's vulnerability seriously. A recipient may require assistance that cannot presently be reciprocated, and an inviter may bear duties arising from asymmetrical power, expertise, or control over indispensable resources. Levinas's ethical account should not be recast as a theory of generative optimization; its challenge is precisely that responsiveness to the other cannot be adequately measured by the resulting productive gain. The GR proposal can register an asymmetrical enablement while leaving open the ethical grounds and limits of the responsibilities involved.

Paul Ricoeur's account of the capable person and the relations among selfhood, solicitude, and recognition offers a further philosophical orientation [32, 33]. Capacity involves both the possibility of undertaking an action and the attribution or acknowledgment of that undertaking within relationships. The person assisted is neither exhausted by vulnerability nor adequately represented by an isolated inventory of abilities. At the same time, recognition may occur through a response whose form the initial actor did not anticipate. In an educational or research exchange, the recipient's most consequential contribution might be to contest the terms of the original question. Such a response can disclose capacities obscured by the inviter's description of the situation. In this sense, the possibility of a *counter-invitation* is theoretically important: the addressed participant can become an initiator who alters subsequent conditions of encounter.

An asymmetrical relation can accordingly contain meaningful reciprocity without ceasing to be asymmetrical. A teacher may offer access to specialized methods while the student develops a question that changes the teacher's own research direction. The participants continue to differ in institutional authority, access to facilities, and responsibility for the educational setting. What becomes reciprocal is their ability to affect inquiry, together with some willingness to treat the other's response as consequential. The appearance of mutual learning, however, does not establish an equal distribution of risk, credit, or control. A school may praise the originality of students while reserving unilateral power to determine whether their work circulates publicly. The same encounter can therefore exhibit reciprocal epistemic engagement and persistent institutional domination. Such configurations are more accurately described through several relational dimensions than through a unitary classification of the encounter as either reciprocal or hierarchical.

Theories of care make the diversity of reciprocity particularly visible. Nel Noddings develops an account of ethical relations grounded in receptivity, relatedness, and responsiveness, including the role of educational practice [27]. Joan Tronto's political account of care differentiates attention to needs, taking responsibility, the work of provision, and the response of the cared-for; her analysis also associates these moments with attentiveness, responsibility, competence, and responsiveness [41]. Their respective approaches offer a powerful caution to any model that identifies co-unfolding merely with the mutual exchange of productive outputs. A child's reply, an injured person's expressed discomfort, or a community's objection to a proposed intervention may alter the caregiver's or institution's practice while placing no equivalent obligation of productive return on the recipient. The fact of responsive influence does not make these situations identical to voluntary collaboration between equally positioned adults. It calls for an account sensitive to dependency, vulnerability, and the conditions under which a response can be registered.

Care also illustrates why a relation can appear generous while remaining organized around the provider's preferences. The provider may use their authority to specify which capacities the recipient ought to develop, which interpretations count as improvement, or which expressions are legible as gratitude. A recipient's distinctive needs may then be displaced by a standardized ideal of growth. Responsiveness in this context involves more than observing changes in performance. It requires attention to whether the recipient's reaction can alter the practice and to how the institutional environment processes complaints, disagreement, silence, or withdrawal. Tronto's treatment of care as a politically organized activity is especially pertinent here. Its implication for the present proposal is methodological: a description of relational generativity must identify who can revise the conditions of the relation, even where the initial offering appears beneficial.

Marcel Mauss provides a different lineage through his analysis of gifts, exchange, and obligations [25].

The historical settings he examines demonstrate that an apparently voluntary offering may participate in social structures that attach expectations of acceptance and return. The analogy to generative invitation is limited yet instructive. A question, technical resource, or public recognition may function as an invitation while also creating pressure to reciprocate through labor, loyalty, data, or public endorsement. The recipient's production of an unforeseen result does not dissolve the social obligations surrounding the exchange. At the same time, Mauss's historical account should not be translated into a general law that every invitation creates an obligation to return value. Whether a return is expected, enforceable, contested, or legitimately owed depends on the relevant normative and institutional setting. The later study of value circulation will require a separate analysis of those questions.

For the purposes of this paper, a useful distinction can be drawn among *responsive reciprocity*, *productive reciprocity*, and *obligatory reciprocity*. Responsive reciprocity is present when one participant's response can alter the other's understanding or subsequent conduct. Productive reciprocity involves contributions by multiple participants to some activity or outcome. Obligatory reciprocity concerns an asserted expectation that one participant owes the other a return. Responsive reciprocity does not establish productive reciprocity: a recipient can thoughtfully decline an invitation and thereby affect the inviter's future practice. Productive reciprocity does not entail an obligation to repay a contribution in the form demanded by the contributor. Obligatory reciprocity, in turn, can arise within relations whose productive achievements are slight or ethically troubling. These distinctions allow the proposal to describe generative relations without importing a complete theory of exchange or distributive justice into their definition.

Unilateral generative enablement poses a terminological challenge. Suppose an expert leaves an annotated notebook that later enables an unknown researcher to develop a new method. The author may remain unaware of the later work, and the later researcher may never communicate a response. There is an intelligible historical relation of enablement, and an ensuing trajectory of knowledge creation, but no established interpersonal reciprocity. One could call the episode an *asymmetrical generative influence* or an *indirectly mediated unfolding*. Calling it co-unfolding requires a deliberately broader unit of analysis, such as the evolving network of practices, artifacts, and institutions through which the notebook continues to act as a resource. This terminological choice should be made explicit. A broad relational description may illuminate cumulative conditions of creation, while an unqualified use of co-creation would risk attributing an intentional partnership that never existed.

This terminological distinction matters for causal and normative analysis. A later creator's dependence on an earlier artifact establishes a historical relation of enablement, while reciprocal co-unfolding requires evidence of response or of changes within a shared practice that become consequential for more than the recipient alone. The latter can occur through institutions rather than a face-to-face return: an annotated archive might be revised by later users, and the revised archive could change how the originating community conducts further work. Such a feedback circuit would support a claim about mediated co-unfolding. Without evidence of this circuit, *indirect influence* is a more precise description. The distinction also prevents subsequent benefit from retroactively turning an unaddressed artifact into an intentional invitation.

Unintentional enablement forms a related but distinct case. A community may develop a tool for an immediate local purpose, and an outsider may later discover a possibility in its design that the community never sought to offer. The outsider's innovation can depend on that prior practice while remaining outside the community's intended activity. Such a process illustrates the distinction between *generative affordance* and *intentional invitation* established earlier. The community's practice may participate in another trajectory without becoming an invitation by retrospective description. Conversely, an outsider who discovers an affordance cannot infer unlimited permission to reproduce, publish, or commercialize the originating practice. Recognition of generative dependence introduces questions of consultation and legitimacy; the relevant standards must be established through law, ethics, community institutions, and the particular histories of the practice rather than through generativity alone.

Indirect participation can also pass through several intermediary systems. A poet's work may shape a teacher's practice, which becomes an occasion for a student's independent inquiry; a technical design may be adapted by a local group, which in turn produces new questions for a distant research community.

The original contributor may have neither access to the eventual results nor a stable understanding of their significance. This layered structure invites a distinction between *causal ancestry*, *active collaboration*, and *normatively recognized contribution*. An act can belong to the causal ancestry of a later development without constituting active collaboration in it. An institution may formally recognize one contributor while neglecting others whose practices supplied enabling conditions. The complete history of such mediation is generally open-ended, and an inquiry must specify a tractable scope rather than promise exhaustive attribution across the network.

Iris Marion Young's social-connection account of responsibility provides an important perspective on such extended arrangements [44]. Young considers how many participants may become implicated in structural processes, and why addressing structural injustice calls for a forward-looking form of shared political responsibility that differs from individual fault. The present analysis does not derive a universal duty of creative reciprocity from this argument. It takes from Young a methodological warning: a network of interdependent actions may distribute responsibility in ways that cannot be settled by locating a single initiator. If an institution repeatedly solicits creative knowledge from a population while monopolizing the infrastructures that determine its use, the ethical problem concerns the organization of an ongoing process as well as the intention of any particular inviter. The explanation of generative co-unfolding can help identify the process; Young's political theory addresses a distinct question concerning its just transformation.

Relational processes also possess different tempos. A short exchange may produce an immediate clarification, whereas a later change in practice may depend on repeated encounters, accumulated confidence, technical infrastructure, or the emergence of another generation of participants. Some enabling conditions persist as archived texts or artifacts; others are maintained through fragile social relations that dissolve when institutional support is withdrawn. An observer who assesses only an immediate result may therefore mistake an early response for the complete trajectory. Another observer may infer enduring capacity change from a distant success without identifying alternative causes. Temporal extension increases the need for careful causal interpretation. Within the GR framework, the relevant unit can be a history-dependent relation whose configuration evolves; the analysis does not require an ontologically privileged present, or a metaphysical division between past and future.

A further feature of iteration is that participants may alter the *rules of engagement* through which later invitations are made. A recurring seminar can begin with an instructor posing most questions and gradually develop into a practice in which students initiate topics, revise the criteria of discussion, and organize exchanges with others. The change involves more than producing new answers. It concerns access to the role of initiating inquiry, the legitimacy accorded to different contributions, and the way future encounters become possible. Such changes can be described as transformations of the relation's generative conditions. Yet these transformations are not automatically emancipatory. A group might develop a highly efficient collaborative routine while narrowing the range of permissible questions or shifting hidden labor onto less powerful members. Evaluating the change requires attention to autonomy, contestability, and affected participants' perspectives, in addition to its productive yield.

Reciprocal unfolding may also involve persistent disagreement. Two researchers can challenge one another's conceptual premises, develop partly incompatible methods, and still enable new questions within their respective systems. Their relation can be productive through criticism without becoming a shared theoretical identity. A community and a public institution may remain divided over the proper interpretation of a heritage practice while nevertheless revising their modes of consultation. Here the important reciprocal element may be the growing ability to recognize disagreement as consequential rather than a convergence of beliefs. Practical cooperation could persist through a local correspondence of purposes, even while the participants retain different moral, aesthetic, or epistemic standards. The discussion of partial translation in Section 6 is relevant: limited interoperability of practices can be sufficient for some forms of joint inquiry, whereas identity of interpretation would be an unnecessarily strong condition.

The role of material infrastructure becomes clearer in relations among differently situated participants. A researcher can invite a coastal community to develop observations through locally maintained practices,

while providing access to sensors, archival tools, and publication facilities. The community's knowledge may, in turn, reveal shortcomings in the researcher's categories and suggest new research questions. These movements may be reciprocal epistemically. Yet if the institution retains the ability to withdraw equipment, restrict data access, or determine authorship unilaterally, the underlying dependency remains asymmetric. Conversely, the community may possess knowledge and practices whose use requires its own authorization, and the researcher may be dependent on its continued participation. Rather than assigning each participant a single rank of power, the analysis should identify which party controls which enabling condition and which possibilities for contestation remain available.

Consider three variations of this constructed coastal encounter. In the first, the researchers provide equipment and a predetermined protocol; local participants collect data, and the researchers alone interpret and circulate the results. The activity may involve productive contributions by both parties, yet opportunities for reciprocal interpretive influence are limited. In the second, community members reject part of the protocol, introduce locally meaningful categories of observation, and obtain a jointly governed procedure for subsequent inquiry. Reciprocal influence becomes visible in the changing research design, while differences in material resources persist. In the third, a locally developed observation practice stimulates a researcher's independent work years later, without an ongoing relationship or agreed collaborative role. This last variation belongs primarily to the causal genealogy of a discovery, and its ethical appraisal requires scrutiny of authorization and acknowledgment. These conceptual comparisons prevent the bare presence of multiple contributors from becoming an undifferentiated criterion of co-creation.

Interspecies encounters complicate the terminology further. Human participation in an animal's environment may alter the animal's opportunities for movement, exploration, or social activity; the animal's responses may then change the caretaker's behavior or the design of its environment. Donna Haraway's account of situated relations and response among species provides a relevant philosophical resource [17]. Yet reciprocal adjustment of behavior does not establish identical kinds of intention, choice, aesthetic experience, or moral authority. A carefully interpreted animal response may support an assessment of practical accommodation under species-specific conditions. The stronger claim that the animal intentionally issued or accepted a generative invitation requires independent behavioral and ecological evidence. The proposed framework is most useful where it keeps visible both the possibility of responsive interaction and the limits of translating human concepts into other forms of life.

Artificial systems pose a distinct asymmetry of evidential and institutional status. A deployed AI model can revise its outputs in response to feedback, generate suggestions that alter a user's inquiry, and participate in iterative cycles of design and correction. At the level of observable interaction, the human user's activity and the system's computational states can be coupled in a practically important way. This permits analysis of reciprocal *effects* without prematurely ascribing a reciprocal relationship between two morally equivalent subjects. The training regime, deployment policies, user permissions, model architecture, and provider's control over continuity may govern what kinds of feedback can persist. A user's long-term development should also be distinguished from a model's ephemeral within-session adaptation. Whether a future artificial system can form independent practical commitments, aesthetic judgments, or subjective experience remains a further philosophical and empirical question.

In some situations, the decisive transformation concerns a wider shared environment. A community's collectively maintained database, a revised school curriculum, or an open technical standard can enable participants who were absent from the originating encounter. The original invitation may become incorporated into institutional routines and material artifacts, while later users develop possibilities of their own. This is a reason to distinguish *interpersonal co-unfolding* from *infrastructurally mediated co-unfolding*. The latter brings governance and access into view. It also raises the risk that an institution will claim exclusive ownership of a process whose generative conditions were collectively assembled. Eglash's work on culturally situated design offers a concrete precedent for asking how locally grounded knowledge and technical tools can support participants' own generative activity [12]. The broader issue of value return and appropriation will be developed in a separate political-economic inquiry.

These distinctions place a limit on the term *co-creation*. It may refer to a jointly produced object, a shared practice, reciprocal changes in capacity, or an emergent relational infrastructure. These uses are

related, but they have different criteria of attribution and responsibility. In the present paper, *relational co-unfolding* functions as the broader descriptive category. A narrower attribution of co-creation is warranted when the participants' substantive contributions and modes of participation in an identified generative activity can be established. Whether the resulting value is jointly recognized or distributed justly is a further question. This separation keeps open the possibility that a relation generates valuable knowledge for one participant while remaining harmful, alienating, or meaningless to another. It also allows inquiry into relationships whose significance is discovered only through subsequent practices.

A further distinction concerns the level at which co-creation is attributed. The production of an artifact, the development of a repertoire, and the maintenance of a common infrastructure may involve different contributors and different evidential records. A collaborative poem, for example, may have identifiable co-authors, while the readers whose interpretations sustain its cultural life participate in a broader generative history. Their participation can be real without making every reader a co-author of the same text. Likewise, institutional infrastructure can sustain distributed production without giving an operator sole entitlement to products made possible by that infrastructure. The present framework therefore recommends specifying the object of alleged co-creation and the relation of contribution before raising the further questions of credit, rights, or distributive justice.

A methodological programme follows. One may reconstruct the sequence of offers, responses, revisions, and subsequent opportunities; examine how participants' access to initiating, interpreting, and contesting activity changes; trace the movement of artifacts and institutional rules; and compare alternative explanations of later capability development. Interviews, documentary evidence, observation, and limited computational models can illuminate different parts of the trajectory. Their evidential capacities are unequal. Observed behavioral coordination establishes that a practical relation exists in some describable sense, while the attribution of felt reciprocity, ethical recognition, or subjective experience requires additional grounds. Analysts should specify whose perspective informs each interpretation, whose contribution remains difficult to observe, and what changes would count against the proposed description. Historical and relational richness makes exhaustive measurement difficult; it does not eliminate the possibility of disciplined, partial inquiry.

Relational unfolding may remain unilateral; co-unfolding requires feedback that becomes consequential for the continuing activities or conditions of more than one participant. Reciprocity can concern responsiveness, productive participation, or socially asserted obligations; asymmetry can concern capabilities, vulnerabilities, access, authority, or the distribution of effects. These characteristics may coexist and shift as participants revise their activities and the conditions of continued engagement. Generative invitation is one possible initiation of such a process. Other trajectories arise through unintentional affordances, indirect mediation, or collective infrastructural change. The GR proposal is most defensible when it describes those relations with explicit limits on the inference from observed effect to co-creation, from co-creation to shared value, and from shared value to ethical legitimacy. The next stage of the argument examines how inherited, reflective, and interactionally formed norms participate in these relations, while the ethical standing of the praxis remains an independently argued matter.

9 Norm Formation and the Ethical Standing of Relational Praxis

Generative invitation takes place within relations already shaped by expectations, prohibitions, competencies, and institutional authority. Invitations can also change those relations by making new conduct intelligible, acceptable, or contestable. This section examines how norms enter the formation and continuation of relational praxis, and how the ethical standing of that praxis can be evaluated without equating its generative effects with its justification. The analysis first distinguishes several senses of normativity; then considers inherited, reflective, and interactionally emergent normative formations. It brings these dimensions into conversation with philosophical accounts of social norms, reflective endorsement, discursive commitments, and moral justification. It subsequently examines ethical appraisal in situations of heterogeneous language, unequal power, and disputed authority, including constructed educational and human–AI encounters. The aim is a framework of questions and distinctions, rather than a universal

procedure that could determine the ethical legitimacy of every invitation.

A norm can concern what members of a practice typically do, what others expect them to do, which performances count as competent, or what they have reason or obligation to do. These senses may overlap while preserving different forms of authority. A classroom may routinely reward brief answers; its students may consequently expect brevity, while the school's official learning aims encourage sustained independent inquiry. A platform may recommend forms of expression that its users adopt without regarding them as morally binding. In a research partnership, a community's customary rules of consultation may have practical authority independently of a university's publication protocols. Each situation involves norm-related structures, yet the relevant standards can be empirical regularities, social expectations, constitutive requirements of an activity, institutional rules, or claims requiring ethical justification. An explanation of their historical formation is accordingly distinct from a demonstration that those who are affected ought to accept them.

Cristina Bicchieri's analysis of social norms provides an instructive starting point. *The Grammar of Society* examines the role of expectations and circumstances in norm-following and distinguishes different forms of rule-guided conduct [4]. This approach helps identify the social conditions under which a prospective invitation is recognizable as appropriate, presumptuous, compulsory, or welcome. A researcher who proposes a joint inquiry in a community may inadvertently invoke an expectation that visitors should receive hospitable responses. The subsequent agreement has a social meaning that depends partly on those expectations. Nevertheless, even a historically stable norm cannot be treated as an ethical verdict simply because participants generally conform to it. A norm may help sustain cooperation, conceal unequal burdens, or make alternatives difficult to imagine. Its explanatory function in coordinating expectations and its justificatory standing remain two different subjects of inquiry.

This distinction is particularly important for the three-mode account developed below. The presence of a behavioral regularity, a person's belief that others expect compliance, and a reason that justifies a requirement can support different descriptions of the same encounter. Bicchieri's attention to empirical and normative expectations supplies an analytical vocabulary for some forms of social norm compliance; it does not identify every technical constraint or personal preference as a social norm. In a model-mediated encounter, for instance, a software access restriction can govern the feasible action space without thereby functioning as a collectively endorsed obligation. The inquiry should record whether a given standard is a social expectation, a procedural rule, a technical limitation, or a purported moral reason before tracing how it is inherited, reconsidered, or renegotiated.

The present GR proposal distinguishes three analytically useful *modes of normative formation*. One concerns standards furnished through a subject's prior formation and surrounding institutions: education, socialization, training, technical design, and established practices. A second concerns the subject's capacity, where such a capacity is warranted, to examine, adopt, contest, and revise standards from within its own practical organization. A third concerns standards emerging through encounters, negotiation, repeated adjustment, and the reconfiguration of shared practices. These modes describe *provenance and transformation*, rather than three exhaustive kinds of norm or a fixed temporal sequence. A rule acquired from an institution may later become reflectively endorsed, disputed in dialogue, and reformulated by a collective. Conversely, a locally created rule may become sedimented in educational material or technical systems and subsequently appear to a new participant as an external standard. Histories of norm formation thus involve recursive movements between personal capacities, shared relationships, and organized infrastructures.

The first mode, inherited or externally organized normativity, deserves a richer interpretation than mere obedience to commands. Earlier relationships can leave enduring traces in perception, attention, habits of appraisal, and the practical vocabulary through which offers are recognized. A student may experience a teacher's open-ended question as a test requiring the teacher's preferred answer, even when the teacher intends to invite exploration. A participant accustomed to competitive research settings may regard an invitation to disclose unfinished ideas as a demand to surrender intellectual priority. These reactions can be intelligible within the participant's history; they may also become available to reflection and change. The inherited conditions belong to a causal and interpretive explanation of uptake. They do

not by themselves settle which response is warranted, or whether the institutional expectations deserve preservation.

Sally Haslanger's work on social construction and ideology supplies a significant challenge to accounts of norms that focus primarily on explicit instruction. Her discussions of how shared dispositions, practices, and social relations make historically constructed arrangements appear natural indicate that the background against which participants evaluate an invitation is partly constituted by its own material and social conditions [18]. This is especially pertinent when one party has the resources to decide which language, evidence, or professional behavior is treated as normal. The GR vocabulary of historical relations can make those dependencies visible; it adds little if it merely redescribes established insights as "generative." Its potential use lies in specifying how an intervention alters the available forms of response, the durability of those alterations, and the distribution of authority over further transformation. Ideology critique also warns against celebrating a recipient's apparent creativity while leaving the structures that shape possible recognition and reward untouched.

The second mode, reflective formation, concerns the possibility of taking a normative stance toward one's own operative standards. Christine Korsgaard's *The Sources of Normativity* analyzes the problem of why a consideration has authority for a reflective agent, and develops a Kantian account through reflection, autonomy, and practical identity [21]. Her project challenges any framework that identifies self-legislation simply with a new pattern of behavior. Reflective endorsement involves a question of reason-giving authority: the subject can consider whether an impulse, requirement, or inherited commitment deserves to guide action. In the present account, reflective revision is a possible mode of norm formation for beings whose practical capacities support it. Its presence must be established at a level appropriate to the subject being discussed. Practical flexibility, behavioral novelty, and resistance to an instruction provide evidence about control and adaptation, while stronger attributions of autonomous norm legislation require an account of what such legislation amounts to and how its exercise is known.

The distinction becomes important for the familiar case of a generative artificial system. A deployed model may operate under training-derived behavioral standards, explicit developer restrictions, and rules embedded in its deployment environment. Its outputs may also vary across conversations, with local conventions emerging between a user and the system. The three modes identify distinguishable sources of the behavior's apparent normativity, but they do not by themselves establish three independent sources of moral authority. In particular, a system that produces a sophisticated critique of its training instructions or adapts to a user's preferences has exhibited an observable form of evaluation or adjustment; such performance does not yet demonstrate self-legislation in Korsgaard's demanding sense. Persistent weight changes, internal goal revision, reasons responsive to challenge, and institutional control over what the system can retain are separate questions. The phrase *self-legislation* should therefore remain a conditional philosophical hypothesis when applied to artificial systems, rather than a descriptive label attached to any fluent self-reference.

The difference between the system's observable functional revision and normative self-legislation is especially significant in a three-layer model. A computational process may evaluate candidate outputs against criteria, revise priorities, or adapt to user interaction in ways that merit a functional description of internally organized regulation. Korsgaard's account of autonomy, however, raises a stronger question about whether standards can claim authority for a reflective agent through the agent's own practical reasons. Any extension of that claim to an artificial system requires a defended account of agency and reason-giving, along with evidence appropriate to the system. Referring to the first layer as an externally supplied "big Other" may sometimes serve as a psychoanalytic analogy for inherited authority; such an analogy should remain distinct from an empirical description of the optimization and governance mechanisms through which deployed models operate.

The third mode concerns interactional formation. Participants may introduce a provisional rule to coordinate joint exploration, modify it after an unexpected response, or abandon it when an unforeseen dependency becomes visible. Repeated encounters can produce local expectations about turn-taking, acknowledgment, the handling of tentative ideas, or the right to withdraw a contribution. Some such expectations are codified as agreements; others remain implicit and fragile. Robert Brandom's normative

pragmatics offers a sophisticated precedent for examining how commitments and entitlements can be attributed and assessed within discursive practices [5]. The relevance of that account is the way participants keep track of what follows from claims and what commitments speakers undertake through their participation. Its application to a broader GR inquiry has limits: competent discursive scorekeeping is only one mode of relational engagement, and an animal's response, a student's nonverbal exploration, or a computational system's adjustment need not instantiate the same normative structure as linguistic assertion. The analogy is useful precisely when the differences in practical commitments and attribution can remain visible.

Interactional norm formation can be collaborative without being symmetric. Consider a community-led observation exercise in which a university initially requests data in predefined categories. Community members may recognize the intended project yet reject its terms because local distinctions relevant to ecological knowledge are missing. The ensuing negotiation can create procedures for choosing observation sites, recording disagreements, and authorizing public release. Such procedures are new norms of joint practice. Their adoption may enlarge the contributors' effective agency and enhance the quality of the inquiry. The history of the arrangement does not yet establish that its final allocation of rights or burdens is just. One participant may have accepted a revised protocol under pressure to retain access to equipment; another may be excluded from decisions because only officially recognized representatives were consulted. A defensible ethical appraisal therefore asks about the standing of affected participants, the contestability of the newly formed rules, and the consequences for those whose contributions are hardest to document.

The relationship between norm emergence and ethical validity becomes clearer through Jürgen Habermas's discourse ethics. In *Moral Consciousness and Communicative Action*, Habermas reconstructs a moral standpoint through discursive conditions of justification, rather than treating the factual existence of agreement as proof of validity [16]. This offers the present framework a challenge: an interaction may produce shared norms and still leave unanswered whether those affected could reasonably accept the norms under fair conditions of participation. Habermas's own distinction between moral and ethical discourse developed across his work, and his model relies on demanding assumptions about argumentation, communicative competence, and inclusion. A generalized GR framework should neither present those assumptions as already satisfied among heterogeneous beings nor dismiss the justificatory problem because their expressive capacities differ. The practical challenge is to investigate accessible procedures through which affected parties can express, resist, or contest relevant arrangements, including mediated forms of participation where ordinary discursive ideals are inapplicable.

The term *ethical standing* is used here to identify the justificatory status of an activity and of the relations through which it is conducted. It may involve respect for agency, attention to vulnerability, protection against domination, fairness in the control of conditions, acknowledgment of contribution, and responsibilities for foreseeable consequences. These concerns are influenced by normative practices yet can also serve as grounds for criticizing existing norms. A widely accepted expectation of returning gifts, for example, may create pressures of indebtedness which are inappropriate in a relation represented as an open educational invitation. A well-established institutional protocol may be efficient while denying a participant the possibility of meaningful refusal. Conversely, a spontaneous practice of counter-invitation may be ethically valuable even while it conflicts with an inherited norm of deference. Normative departure is therefore neither sufficient evidence of wrongdoing nor a guarantee of liberation. The ethical question concerns the reasons that can justify the departure and the conditions of its effects.

A possible appeal to natural law, or to more general natural normativity, adds another layer of difficulty. Some philosophical approaches seek norms grounded in features of rational agency, forms of life, vulnerability, or the conditions of continued coexistence. Such arguments may provide common grounds for criticizing exploitation or arbitrary interference across divergent social practices. Yet invoking an alleged common source of norms does not automatically establish that a particular rule follows from it. One must articulate the relevant account of nature, agency, value, and practical reason, and explain how it applies to subjects with substantially different forms of embodiment and dependence. If a proposed norm is derived from human capacities and then exported unchanged to other beings, the universal formulation may conceal a situated origin. If it is made so broad that any generative process satisfies it, its critical

force may disappear. The present proposal thus treats generalized natural normativity as a candidate philosophical resource, not as a settled foundation for the ethical appraisal of all generative encounters.

A proposed common norm for heterogeneous participants may also operate at different levels. A procedural norm might protect opportunities for objection and correction; a substantive norm might prohibit certain forms of appropriation; and a broader natural-law argument might claim that the protection follows from shared conditions of agency or vulnerability. Agreement on the procedure can aid coexistence while leaving the substantive theories of value contested. Conversely, a broad declaration of respect may offer little protection where institutional control makes objection ineffective. The philosophical task is to identify the justificatory bridge from the proposed source of normativity to the specified duties, and then investigate how those duties can be applied and contested under differences of embodiment, communication, and institutional dependence.

The same caution applies to the aesthetic and epistemic significance of relational praxis. An invitation may be ethically justified while eliciting no beauty and producing little knowledge. An ethically objectionable invitation may occasion an experience the recipient later regards as beautiful or insightful; that experience alone does not retrospectively vindicate the inviter's methods. A community can arrive at a useful research discovery under a flawed arrangement of consent and recognition. A teacher can responsibly provide a generative question while the student's response remains confused or inconclusive. In each case, the generative mechanism, the value of its outcome for particular participants, and the legitimacy of the relationship require independent descriptions. Their interactions deserve study, while their evaluative identities remain open to argument. This separation protects the autonomy of aesthetics and inquiry from a theory that would treat normative compliance, productive novelty, and beauty as alternative names for one generalized good.

An especially revealing case arises when an invitation apparently fulfills a recipient's expressed preferences. Suppose a teacher has learned that a student strongly prefers simple, familiar exercises. The teacher can design a question within the student's existing language, inviting them toward a difficult new line of inquiry. The student's enthusiastic engagement supplies evidence that the offer was intelligible and attractive, yet its ethical evaluation also depends on the freedom to disagree, the handling of vulnerability, the visibility of alternative approaches, and the allocation of interpretive authority. If the teacher conceals a predetermined conclusion beneath the appearance of open exploration, the recipient's productive participation may coexist with manipulation. If the student transforms the original exercise and the teacher accommodates an unanticipated result, the relational arrangement may enable greater autonomy. These comparisons extend the analysis of meaningful refusal in Section 7: the legitimacy of a generative offer is examined through the recipient's place in determining what the invitation can become.

A second constructed comparison concerns human–AI interaction. A user may ask a model to propose interpretations of an unfamiliar poem. Training-derived conventions and interface rules affect which outputs the model produces; conversational exchanges can create locally shared expectations concerning nuance, criticism, and explanatory depth. Those observations permit analysis of a history-dependent interaction between a person and an artificial system. They do not establish that the system experiences the poem aesthetically, possesses independently authorized ethical commitments, or can be treated as a legal or moral counterpart on the same grounds as a person. Ethical duties concerning the interaction may attach to the designers, providers, institutions, and human users who control the system's deployment and effects. Hypotheses about future artificial practical agency remain discussable, provided their evidential and ontological premises are explicit. This distinction is important because a vocabulary of relational norm emergence can otherwise obscure the distribution of actual power over a deployed system and over the people affected by it.

A provisional ethical appraisal of generative invitation can therefore proceed through several related inquiries. One may reconstruct which norms were inherited, who had opportunities to reflect on them, and how new expectations arose during interaction. One may investigate whether the recipient could understand, refuse, revise, or counterpropose the offering, and whether the relevant infrastructure supported those options in practice. One may then examine who bore the risks, who controlled the emerging products and the conditions of continued participation, and whether those disadvantaged by an arrangement could

contest it and seek remedy. Each inquiry has an empirical dimension, since actual access and consequences may differ from formal statements of permission. Each also requires philosophical judgment, since observed behavior alone cannot specify a complete account of justice or obligation. These questions should be treated as an organized programme of ethical criticism rather than a numerical score or a test purported to prove legitimacy.

Such an approach also clarifies the limits of causal attribution. A beneficial transformation in generative capacity may be partly attributable to the inviter's question, the recipient's prior history, another participant's later advice, or collectively maintained resources. Attributing causal contribution can inform practices of acknowledgment and governance, subject to independent justification. Ethical entitlement, however, does not follow automatically from causal contribution; an inviter's role in opening a possibility does not by itself confer authority to own the recipient's work, determine its meaning, or demand a return. Conversely, an institution's failure to create the final product does not necessarily extinguish its duties regarding foreseeable harm or structural dependence. The normative assessment must therefore attend both to the process of formation and to the continuing relation through which rights, responsibilities, and remedies are organized. The more detailed political-economic questions of value circulation and appropriation belong to a separate inquiry, while the present account establishes the conceptual interface.

Three modes of normative formation—inheritance, reflective revision, and interaction—help reconstruct a relation's history. Ethical appraisal separately examines reasons, affected parties, authority, vulnerabilities, and consequences. Inherited standards shape what an invitation can mean; reflective capacities may allow subjects to endorse or challenge those standards; and interaction can establish new provisional commitments and shared practices. Their recurrence can transform both the participants and the institutional conditions of future encounters. The adequacy of those justificatory reasons remains open to criticism, including by participants who have experienced unequal opportunities for contestation. A generative invitation may therefore be described accurately even when its justification is contested, and an ethically defensible invitation may remain modest in its immediate creative effects. This distinction provides the basis for comparing aesthetic, educational, interspecies, and artificial encounters in the following comparative section, where each domain places different demands upon the attribution of agency and the identification of responsible actors.

10 Aesthetic, Educational, Interspecies, and Artificial Encounters

The proposed concept of generative invitation acquires philosophical significance through its capacity to distinguish relations that superficially resemble one another while depending on different forms of agency, interpretation, and material organization. This section compares four domains in which a participant or organized system may make a form, question, environment, or practical possibility available to another: aesthetic encounters, education, interspecies encounters, and interaction with artificial systems. The comparison is conceptual and interpretive. Its examples are constructed or carefully qualified illustrations, and its purpose is to test the reach of a provisional relational mechanism. The discussion first examines the recipient's realization of an aesthetic offering, then the educational transformation of generative capacities, followed by the more difficult questions raised by living beings with heterogeneous perceptual worlds and by currently deployed artificial systems. The closing analysis identifies the distinctions that a general account must preserve if it is to illuminate these cases without dissolving their philosophical differences.

The comparison also requires a domain-sensitive evidential rule. A form that occasions an articulate answer, a classroom exercise that yields an original question, an animal that changes its behavior, and a model that produces a novel text can all display observable differences after an encounter. Each observation warrants a different inference. The reader's testimony contributes to an inquiry into aesthetic experience; the learner's subsequent independent activity bears on educational capacity; species-sensitive observation may support an ethological interpretation; computational traces support claims about system behavior. These different evidential routes should remain visible when the same term, *uptake*, is used. A cross-domain vocabulary earns its usefulness through the distinctions it permits, rather than by equalizing the types of subjects under consideration.

Aesthetic Offering and the Independence of Manifestation

A poetic text supplies a useful point of departure because its limited material organization can participate in several historically differentiated realizations. The same sequence of written lines may be encountered by readers whose languages, memories, practices of attention, and acquired aesthetic standards differ considerably. Each encounter depends on conditions that partly exceed the author's anticipation. As argued in the companion aesthetic investigation, the offered structure, the recipient's unfolding interpretation, an experience in which beauty may become manifest, and a subsequent judgment of beauty are analytically distinct. Generative invitation concerns the first two terms and their relational conditions; it supplies no automatic warrant for the third or fourth. A recipient may encounter an unfamiliar poem with curiosity, indifference, distress, or aesthetic pleasure. Different interpretive trajectories indicate a range of possible outcomes; aesthetic significance requires an additional, context-sensitive appraisal.

Louise Rosenblatt's transactional theory already provides an extensive account of how a reader's attention and experience participate in the evocation of a literary work. Her distinction between aesthetic and efferent orientations also shows that the same text can be approached under different purposes and circumstances [35]. Consequently, the claim that a poem is differently realized by different readers cannot serve as the novelty of a GR account. The remaining research question concerns the possibility that certain encounters modify what a reader is subsequently able to notice, formulate, or create, and whether this transformation is specifically attributable to the conditions of the encounter. Such a claim would need to be distinguished from an ordinary interpretive variation within an established repertoire. A reader who discovers a previously inaccessible rhythm might later discern related structures in other poems; another might develop a new practice of writing. These are possible trajectories to investigate, not necessary consequences of poetic reading.

A constructed comparison clarifies the limits of sameness. Suppose two participants receive an identical four-line poem. One relates its imagery to a remembered landscape; the other responds principally to the recurrence of consonants and pauses. Both report an experience of beauty, yet the reports do not establish that their experiences are interchangeable. They may exchange reasons concerning the poem's formal features while preserving differences in personal history and felt significance. If one participant then composes a new piece that changes the other's subsequent reading practice, an iterative invitation has arisen through the exchange. The new composition may be interpreted as a response, a counter-invitation, or an independent appropriation, depending on the participants' actual relationship and the available evidence. None of these descriptions is exhausted by the label *shared aesthetic judgment*.

The example suggests a practical distinction between preserving the identity of an offered form and attempting to reproduce the recipient's aesthetic realization. The former can involve shared access to an inscription, performance, or sequence of constraints; the latter implicates historically situated experiences that resist comprehensive transmission. An inviter can therefore offer an occasion for aesthetic unfolding without prescribing its meaning or guaranteeing its value. The ability to recognize, question, and revise that offer is especially important when the offering crosses linguistic or cultural divisions. Where the inviter claims to know in advance what the recipient ought to experience, a practice ostensibly devoted to aesthetic discovery can become an exercise of interpretive authority. The ethical appraisal of that authority remains distinct from the aesthetics of the encounter, even though power may affect which interpretations can be expressed and circulated.

Educational Questions and the Development of Generative Capacity

In education, the primary philosophical interest of generative invitation concerns how a learner may come to form questions, explanations, and practical capabilities that remain available beyond the immediate lesson. A teacher's offering may take the form of a problem, an unfamiliar example, a partial model, or an activity rooted in the learner's existing language and experience. Freire's problem-posing pedagogy emphasizes dialogue and the learner's active participation in understanding the world; Rancière's account of intellectual emancipation presents a different and sometimes conflicting challenge to pedagogical hierarchies [13, 31]. Their differences matter. A dialogue organized around shared inquiry can still leave

the educator in control of which questions count, whereas an appeal to the equality of intelligence may expose how claims of necessary explanation perpetuate dependency. The GR concept should be assessed in relation to such prior analyses, rather than treating learner initiative as a newly discovered educational principle.

Consider a learner familiar with textile patterns, repetitive movement, and the practical constraints of local craft. A teacher may offer a computational representation of a transformation already encountered through that craft. The learner might recognize a relationship between repetition and algorithmic procedure, experiment with variations, and eventually pose a question that the teacher had not prepared. This scenario is compatible with, and substantially anticipated by, the culturally situated design tools developed and analyzed by Eglash and collaborators. Their published account documents software through which students can simulate cultural arts using mathematical principles; its abstract also identifies negotiations over representations with community members and over pedagogical design with teachers and students [12]. This supports the comparison with culturally situated generative learning, while claims about durable individual capacity gains or the subsequent governance of value require additional evidence. The present example is illustrative; it does not report an additional empirical evaluation of those tools. Its contribution to the current argument is to identify what would have to be established before the episode could reasonably be described as a capacity-transforming invitation.

Three questions would be decisive. First, could the learner interpret the proposed form through their existing practices while retaining room to change the task? Second, did the interaction enable an activity beyond the particular answer expected by the teacher? Third, is there evidence of a durable alteration in what the learner can investigate independently, or of a continuing change in the material and social conditions supporting that investigation? Success on the first two dimensions might show effective uptake and an unanticipated achievement; the third concerns the stronger thesis of persistent generative transformation developed in Section 5. A student's new question is important in its own right, yet it can arise from capacities already present. Attribution therefore remains comparative and fallible, especially where family practices, peers, institutional resources, and later encounters also contribute.

Educational invitation has an additional political dimension because the apparently neutral selection of a *learner's own language* can conceal an authoritative interpretation of that language. A teacher may identify a community practice as a resource for mathematical instruction while excluding the community's own understanding of its significance, history, or appropriate use. Translation into a curriculum may create possibilities for learning and simultaneously reorganize rights over the representation of cultural knowledge. The recipient's capacity to counterpropose and the community's ability to contest the resulting materials are therefore integral to any responsible account. This is where the educational case touches the discussion of meaningful refusal in Section 7. An invitation gains educational legitimacy through more than its capacity to produce a novel performance. It also depends on the learner's practical freedom and the affected community's standing in decisions about knowledge, access, and continued use.

The case also illustrates the reciprocal character of a process that is institutionally asymmetric. The teacher may retain responsibility for safety, educational provision, and fair evaluation, while the learner may change the shared inquiry through an interpretation or question that alters the teacher's understanding. Productive reciprocity need not make their professional roles equal. The critical distinction is between recognizing the learner as a participant in determining how inquiry unfolds and celebrating participation while retaining unilateral power over its meaning. Where a teacher acquires new knowledge from the learner, claims regarding authorship, acknowledgment, and circulation arise, yet a causal contribution to learning does not independently resolve those claims. The fuller political economy of value co-creation belongs to a separate study.

A further educational contrast concerns the authorship of the task itself. A tutor may skillfully structure a problem whose goal is already determined; Wood, Bruner, and Ross provide a sophisticated account of such scaffolding [43]. A learner who subsequently devises another problem has exercised a distinguishable capacity, yet that development can be studied within existing educational traditions. Culturally Situated Design Tools offer a different configuration: participants' cultural arts and practices become resources for mathematical representation and creative simulation, with design negotiated among researchers,

educators, and communities [12]. The GR question concerns who may reshape the representational problem and continue producing knowledge when the initiating institutional support changes. This question supplements an investigation of learning outcomes with an inquiry into the conditions of ongoing epistemic participation. Its originality remains to be judged against the existing accounts of culturally situated and emancipatory education.

Interspecies Encounters and the Interpretation of Response

The interspecies case tests the generality of generative invitation more severely. Living beings may have different sensory access, motivational structures, bodily constraints, temporal rhythms, and relationships to their environments. Von Uexküll's account of organism-specific environments and Haraway's examination of situated human–animal relations offer resources for resisting the unexamined projection of a human world onto other living beings [42, 17]. Despret's philosophical investigations of animal behavior draw attention to how questions, experimental arrangements, and the researcher's expectations participate in what animals are able to show [10]. Kohn's more-than-human anthropology similarly challenges the sufficiency of conceptual tools that organize significant relations exclusively around human forms of meaning [20]. These authors pursue different projects: a theory of species-specific perceptual relations, situated multispecies becoming, an interrogation of ethological questioning, and an anthropological exploration of nonhuman semiosis. A GR account should retain those differences while asking which relational transformations are actually supported by the evidence.

Imagine a human researcher who alters the arrangement of movable objects in an animal's environment. The animal subsequently engages in a pattern of exploration not previously observed under the researcher's available conditions. Several explanations are possible. The new arrangement may have furnished an affordance for a capacity already present. It may have altered opportunities for learning, elicited exploratory behavior, or changed patterns of interaction that persist after the arrangement is removed. The researcher may have intended to invite exploration, but the animal's activity does not by itself establish recognition of an intentional invitation. Even when the animal reliably responds to a human cue, its behavior does not warrant an unrestricted claim about how the cue is experienced. A philosophical account should preserve the distinction between a change in available opportunities, a demonstrated behavioral response, and a stronger interpretation of intentional uptake.

An interspecies invitation, in the fuller sense, becomes a defensible proposal only where adequate grounds exist for treating the recipient as capable of a relevant form of response to another's action. Different cases will support different degrees of specificity. A trained or cooperative animal may learn to associate certain signals with an opportunity to act, but learned signaling, reciprocal play, independent exploration, and deliberate acknowledgment of another's intentions are distinct explanatory claims. The language of invitation can therefore function at more than one level: as the human offerer's description of an action; as a cautious relational interpretation supported by observed animal response; or as a stronger claim concerning the animal's understanding of the offer. These levels should remain explicit. They also prevent a philosophical account of multispecies practice from requiring that the animal possess human linguistic competence or human moral autonomy.

The asymmetry of material power is especially pronounced where humans control food, movement, enclosure, opportunities for interaction, and the conditions of observation. An animal's behavioral participation under deprivation, restriction, or training may be compatible with substantial dependence. Refusal cannot simply be identified with the absence of a behavior that humans have asked the animal to perform; avoidance, withdrawal, and altered engagement may require species- and context-specific interpretation. The evaluative question includes whether the arrangement is responsive to the living being's interests and welfare, and whether the human observer can revise a procedure when the animal's response resists initial expectations. A proposal can therefore be generatively effective while raising serious ethical concerns about control, stress, or the direction of benefit. This analysis invites sustained ethological and welfare expertise rather than an inference from abstract relational vocabulary alone.

The interspecies case also has a boundary that matters for the meaning of *subject*. Some ecological

processes are relationally productive without involving an intentionally responding recipient. Changes in a habitat can open possibilities for many organisms, and nonliving structures can be indispensable enabling conditions of that process. Such relations may be described through generative affordances, ecological mediation, or collective transformation. The more demanding category of interpersonal or intersubjective invitation should be reserved for cases with adequate grounds for the relevant capacities. Interspecies inquiry can thus expand the philosophical imagination of relational praxis while protecting it from a tendency to personify every productive environmental relation.

Artificial Systems, Observable Uptake, and Distributed Responsibility

Interactions involving generative artificial systems present a different form of heterogeneity. Their behavior is shaped by training materials, optimization procedures, deployment restrictions, interface conventions, computational resources, and recurrent exchanges with users. A model may offer a poem, propose an experimental question, revise an explanation, or produce a response that helps a person discover an unanticipated line of inquiry. Such effects can be real for the human recipient even when the artificial system's subjective standing is unresolved. The distinction between efficacy as a component of an encounter and the attribution of an experiencing subject is therefore essential. Situated accounts of human-machine interaction, including Suchman's analysis of the relation between technological configurations and human practices, already provide reasons to reconstruct activity at the level of organized relations rather than isolated outputs [39].

A constructed case illustrates the analytic challenge. A person asks a generative model to identify an unfamiliar connection between two philosophical arguments. The model offers several possible comparisons, one of which the person contests and develops into an independent proposal. The relevant trajectory includes the prompt, the model's generated text, the user's prior understanding, the subsequent critical exchange, and the conditions that make the output accessible. It is possible to describe a useful generative offering and the person's uptake without inferring that the model independently intended to invite a transformation. It is also possible to describe the conversation as a human-AI practice of mutual adjustment while withholding claims about symmetrical moral agency or shared intellectual experience. The human user's response may change persistently even when the deployed model retains no durable update from that encounter.

Different technical arrangements must be distinguished. A stateless or session-bounded model can exhibit context-sensitive adaptation in the course of a conversation, whereas systems with persistent memory, online learning, or adjustable external state can in principle retain information that influences later actions. The mere existence of a retained state does not establish autonomous self-legislation. A system might modify its evaluation criteria under developer constraints, user feedback, or an externally imposed optimization objective. Claims of self-directed normative authority would require additional conceptual and empirical justification, as discussed in Section 9. Likewise, linguistic references to aesthetic feeling, curiosity, or responsibility in generated output should be evaluated as evidence of observable performance rather than treated as direct reports of subjective experience. The present inquiry maintains uncertainty about whether any particular artificial system has such experience.

The model's material and institutional dependencies also complicate the attribution of an offering. Designers determine parts of the architecture and training procedure; providers organize deployment and access; users supply prompts, interpretations, and additional context; affected third parties may contribute data and bear external costs. A generated proposal can thus be the immediate output of a technical system and simultaneously depend on a distributed set of human and infrastructural contributions. A recipient may learn from it while the means of generation remain highly concentrated in an institution. The ethically relevant question extends from conversational politeness to contestability, transparency about uncertainty, access, and responsibility for misleading or harmful outputs. An efficient generative exchange supplies evidence of practical usefulness, while the justification of the system's operation depends on further considerations.

The AI case also permits a reversal of the direction of offering. A human may formulate a question,

supply a counterexample, or introduce a representational structure to which the model produces a new response. Within a technical description, the user's intervention has changed the model's immediate computational trajectory. Calling this a generative invitation to the system may be appropriate as a deliberately limited operational analogy. A stronger interpretation, under which the system recognizes the user as another subject and autonomously endorses a new practice, requires independent evidence and a theory of agency. This distinction allows the general GR account to be applied to productive human-machine interactions without building uncertain metaphysical assumptions into its explanatory vocabulary.

A further asymmetry concerns the evidential status of the inviter. In a human educational encounter, one may investigate intentions through speech, institutional commitments, subsequent actions, and testimony, although declarations alone are insufficient evidence of benevolence. In an encounter with an animal, attribution of intentional address requires observation of the species' communicative and behavioral repertoire. In an artificial exchange, the output may address a user in ordinary language even when the practical organization of that address is explained through design, training, and deployment. These possibilities motivate a graded vocabulary of address: *intentional address* where the supporting evidence permits, *institutionally organized address* where a procedure or interface directs an offering, and *functional presentation* where the observable effect is established but stronger intentional attribution remains open. The grades concern what can presently be warranted, rather than an ontological hierarchy of possible beings.

Comparative Conditions and Limits of a General Mechanism

The four domains reveal both a recurring relation and different standards for establishing its presence. An identifiable offering or accessible structure can encounter a recipient's historically formed capacities; the recipient may respond through a locally meaningful trajectory; and the encounter may alter subsequent opportunities, practices, or capacities. Yet the meaning of *recipient*, *uptake*, and *transformation* varies with the domain. In aesthetic practice, the central caution concerns the difference between interpretation and experienced beauty. In education, it concerns the distinction between completing an assigned task and gaining durable capacity and agency. In interspecies inquiry, it concerns warranted interpretations of behavior and the living being's welfare under unequal control. In artificial interaction, it concerns the difference between effective computational participation and disputed forms of subjective or normative agency. These distinctions provide a stronger basis for comparison than a claim that all four domains instantiate the same fully specified model.

The recurrence of certain relational features can still have explanatory value. Across domains, one may ask who controls the offering, which aspects can be revised, how the recipient's relevant capacities are known, whether alternative interpretations remain available, and what persists beyond an immediate response. The same questions can also expose the limits of the framework. An encounter might be fully explained by an existing affordance, an ordinary instructional effect, or a pre-existing capability under new environmental conditions. Another might produce an apparently inventive result while leaving the recipient more dependent on the inviter. In both cases, the vocabulary of generative invitation can be useful for organizing inquiry, yet its stronger claims about transformation and co-creation would remain unestablished. The tests proposed in Section 5 become especially important when claims of durable change are made.

A final comparison concerns the relation between generative success and value. A poem can occasion a trajectory that the reader finds aesthetically indifferent; an educational invitation can enable a new competency in an inequitable setting; an animal may develop a new behavioral pattern through a stressful arrangement; and an AI-supported conversation can produce useful knowledge under contested conditions of access and authorship. The fact that a trajectory is generative therefore leaves open the aesthetic worth of its experience, the educational quality of its practice, the welfare implications for living beings, and the ethical legitimacy of its institutional conditions. Conversely, modest or unsuccessful exploration can belong to a respectful and worthwhile encounter. A general relational framework gains precision by

allowing these dimensions to diverge.

The cases support a limited cross-domain use of generative invitation where an identifiable offering and a recipient-relative response can be documented. The evidential standards for experience, agency, welfare, and autonomy remain specific to the relevant domain. Other encounters may be better described as affordance formation, environmental mediation, or distributed production. The choice among these descriptions is sensitive to evidence of address, response, capacity, and power. An inclusive ontology of heterogeneous GR systems need not erase the differences through which each system is intelligible. The next section turns to competing explanations and potential failures of the proposed account, asking where the concept genuinely clarifies a phenomenon and where existing theories already supply an adequate explanation.

11 Competing Explanations, Critical Tests, and Epistemic Limits

The philosophical usefulness of *generative invitation* depends on the distinctions it clarifies and whether those distinctions improve explanations of actual relational practices. This section subjects the proposal to comparative criticism rather than treating its conceptual coherence as evidence of originality. Several established traditions already account for the presentation of opportunities, situated response, dialogical understanding, educational development, and the transformation of meaning through interaction. The comparison identifies which claims can be defended, which phenomena rival theories already explain, and what evidence would warrant revision. The argument first examines ecological, dialogical, enactive, educational, and literary explanations; it then constructs discriminating cases and specifies tests concerning attribution, capacity, autonomy, and heterogeneous interpretation. The concluding analysis addresses the epistemic limits of extending a practical relation across human, interspecies, and artificial encounters. The tests proposed here constitute a research design for future inquiry, rather than a report of completed empirical investigation.

Ecological Opportunity and the Limits of Conceptual Addition

Ecological accounts of affordances constitute an immediate rival to the proposed relation. Gibson locates possibilities of action in relations between an organism and its environment, while Chemero develops a relational account capable of treating affordances in terms of abilities and environmental features [15, 7]. The landscape of affordances discussed by Rietveld and Kiverstein further connects practical possibilities to an individual's skills, activities, and sociomaterial practices [34]. These accounts can already explain why a structure encountered by two agents affords different activities. A marked stone might become a navigational cue to one participant, a material for constructing an instrument to another, and a subject of classification to a third. An additional account named *generative invitation* would offer little if it merely redescribed the same differences using a vocabulary of heterogeneous generative systems.

The present proposal locates its more specific object in an addressed relation whose content is open to recipient-directed development. A question posed to another researcher can be an offer of a possibility and an attempt to make room for the addressee's own future inquiry. Its invitation character depends partly on that practical address and the recipient's opportunity to respond, modify, or refuse. A stone that happens to occasion discovery is an affordance within a relational history; its generative significance does not establish that an invitation occurred. Similarly, an intended offer may fail to become an accessible affordance because of linguistic barriers, disability, institutional exclusion, or unavailable resources. The distinction between address and access is therefore consequential, although it has many precedents in theories of action and communication.

The strongest ecological challenge is that affordance theory could incorporate all relevant facts through an enriched description of sociomaterial interaction. If the characterization of an affordance already contains an agent's social address, responsive possibilities, and changes of skill, the proposed concept may remain a convenient regional name for that configuration. Its philosophical usefulness would then be organizational rather than explanatory. A defensible independent contribution requires

showing why the relation of offering and recipient-directed uptake illuminates differences that a merely ecological opportunity description leaves difficult to articulate at the relevant level of investigation. Such a showing could be practical: two environments may supply similar affordances, while the institutions governing who may formulate questions, contest intended meanings, and alter the next offer yield different trajectories. Still, an ecological theorist could in principle include those relations. The present comparison therefore establishes a burden of specification, rather than priority over the rival approach.

Dialogical Understanding and Participatory Sense-Making

Dialogical philosophy presents an equally demanding precedent. Buber's account of relation directs attention to the encounter with another rather than their reduction to an instrument of one's plans [6]. Levinas gives asymmetrical responsibility a central role, complicating the assumption that a response must return an equivalent benefit [23]. Ricœur's treatment of capable persons, solicitude, and recognition locates practical encounter within the conditions through which agency is acknowledged and sustained [32, 33]. These perspectives already furnish powerful arguments against construing the recipient as a passive conduit for an originator's intended content. In consequence, the relational language of generative invitation cannot claim originality simply by emphasizing respect, openness, or the recognition of another's independence.

An enactive alternative makes the challenge especially precise. De Jaegher and Di Paolo explicitly propose that an interaction process can acquire a degree of autonomy and that meaning can be transformed in the interplay between the participants and the interaction itself [9]. Their 2007 account concentrates on the micro-level of social encounters, with dyadic, face-to-face interaction as a simplifying model. They define social interaction through regulated coupling that sustains an emergent autonomous relational organization without destroying the autonomy of the agents involved (2007, pp. 492–493) [9]. This is a substantive philosophical predecessor to the present account of relational co-unfolding, and its autonomy conditions set a more demanding standard than observable behavioral coordination. Jointly established attention, unplanned changes of meaning, and activities irreducible to either participant's prior intention already fall within its explanatory ambitions. The GR proposal consequently cannot make emergent joint meaning or autonomous coordination its exclusive distinctive criterion.

The proposed distinction concerns the directed availability of another's generative opportunity and the history of capacities that may persist through subsequent encounters. The interactional process itself may be highly consequential; still, a participant can offer a problem that another later develops in the absence of further direct interaction. Alternatively, a group can sustain mutual coordination without any discernible practice of inviting participants to reformulate or originate questions. These contrasts suggest different analytical emphases. Participatory sense-making foregrounds the interactive production of meaning, whereas generative invitation foregrounds an offering's relation to possible recipient-led activity, including uptake that travels beyond the encounter. Yet this remains a proposed difference of explanatory focus. Enactive scholarship can examine changes that persist beyond a particular episode, and the GR proposal would become redundant wherever its purportedly distinctive relations are already described with comparable precision by an enactive account.

A further difficulty arises when the philosophical vocabulary shifts between reciprocity and agency. Coordination between systems need not imply mutual recognition, shared intention, or equivalent standing. A technically coupled human–AI interaction may exhibit elaborate adaptation, and an animal's movement can be contingently coordinated with a human's behavior, while evidence of reflective endorsement remains sparse. The concept of participatory sense-making explicitly requires agents whose autonomy persists within an autonomous interaction process. Extending that particular account to a technically responsive system would require showing how those autonomy conditions are satisfied; a description of prompt-conditioned output or behavioral coordination alone cannot establish the extension. The GR proposal likewise needs an explicit discipline of attribution. It can provisionally describe causal interaction and accessible possibilities without asserting that every participant is a moral, aesthetic, or self-legislating subject. These limits are substantive constraints on comparison, rather than an opportunity to enlarge the

concept by stipulation.

Educational Scaffolding and the Transformation of Competence

Educational theory provides an unusually strong challenge because the proposed mechanism was partly motivated by experiences of teaching through the learner's own conceptual resources. Freire's problem-posing pedagogy already contests a model of education organized around deposits of predetermined knowledge and assigns a generative role to dialogue and inquiry [13]. Rancière's account of intellectual emancipation questions how a teacher's claims to superior explanatory authority can reinforce the very hierarchy they purport to overcome [31]. Dewey's treatment of experiential continuity and Lave and Wenger's study of changing participation in social practices provide further resources for explaining how situated experiences can affect subsequent capacities [11, 22]. It would be misleading to suggest that learner-led discovery, historically situated knowledge, or long-term transformation is first articulated by the proposed framework.

The empirical tutoring literature raises another alternative. Wood, Bruner, and Ross study children undertaking a structured construction task with a tutor who initially knows its solution. Their study concerns a specific construction task attempted by children aged three to five under the guidance of a tutor who already knows the solution (1976, pp. 89–90) [43]. The authors explicitly distinguish recruitment, reduction of degrees of freedom, direction maintenance, marking of critical features, frustration control, and demonstration as functions of tutoring (p. 98). Their account thus offers a concrete analysis of adaptive support in a bounded task, while its specific empirical design should not be taken as an investigation of every form of open-ended education. More significantly for the present inquiry, their discussion of the tutor's interpretation of the learner (p. 97) recognizes that an effective instructional response depends on a working account of the task and of the learner's developing activity. This precedent already gives adaptive, situated support a substantive role; tailoring prompts and enabling later competence therefore cannot establish the originality of generative invitation. A more specific contrast concerns whether the participant can contest the task itself, reformulate the ends of inquiry, and later originate offers to others. Even that contrast may be expressed within broader theories of pedagogy. GR's possible value must be demonstrated by how precisely it traces such reconfiguration across changing relations, rather than by attaching a new name to scaffolding.

Consider two constructed pedagogical situations. In the first, a tutor supplies a sequence of increasingly explicit hints until a student solves a problem whose solution and method the tutor knows in advance. The student may learn a durable skill, and the tutoring may be respectful and effective. Such success establishes neither that the activity was an open invitation to develop an independently constituted problem nor that a new general mechanism has been identified. In the second, the educator first learns how the student organizes an everyday practice, introduces a question that connects that practice to an unfamiliar domain, and permits the student to alter the question's terms, challenge the educator's assumptions, and develop an inquiry that neither party had specified. The contrast is suggestive, especially if the student subsequently generates novel questions in independently chosen situations. Nonetheless, problem-posing pedagogy and situated learning already explain much of the second situation. GR would need to contribute a clearer comparative vocabulary for the relations among the initial offering, the student's historically specific generative operations, changes of capacity, and later counter-invitations.

A further test concerns an apparent improvement that depends entirely on the tutor's continuing presence. If the learner can perform only while the educator supplies prompts, the observed improvement may reflect relational support without an internalized or independently deployable competence. That distinction matters even when continuing dependence is ethically acceptable and practically productive. Some worthwhile capacities are irreducibly collective; their persistence is evidenced by stable access to shared practices rather than by solitary competence. The framework must therefore specify the level at which transformation is claimed: individual skill, effective opportunity, collective practice, or institutional arrangement. The same description of a successful invitation should not shift silently among these levels.

Interpretation, Creative Appropriation, and the Authority of the Offerer

Literary and hermeneutic theories already show how a finite work can participate in differentiated interpretive activity. Rosenblatt's transactional account gives the reader's linguistic and experiential resources an essential role in the realization of a literary work [35]. A poem read differently by participants with divergent histories therefore supplies an illustration of established readerly transaction as well as a possible case of generative offering. The author of an evocative text may contribute a form that supports unforeseen readings; interpretive plurality, considered alone, cannot establish a separate theory of generative invitation. The companion aesthetic investigation examines this problem in detail. Here it serves as a comparative limit on the general relational proposal.

Three further distinctions matter. First, the openness of a work is constrained by its material and formal organization and by the recipient's practices of interpretation. The possibility of multiple readings provides limited support for treating every association as an interpretation of equal standing. Second, a recipient's creative appropriation may exceed what can responsibly be attributed to the offered work. A student who develops a research program after encountering a poem may have been prompted by it, but the ensuing program also reflects independent work and other influences. Third, the worth of the result is a separate question: novelty, aesthetic significance, epistemic reliability, and ethical permissibility can diverge within the same trajectory. An account of invitation that conflates these features would reproduce the explanatory ambiguities it is meant to resolve.

An authority problem also emerges when an offerer claims to know in advance what the recipient ought to become. A seemingly open question can be designed to produce a narrow conclusion while concealing the asymmetry of evaluative power. The recipient may be free to formulate words while lacking the possibility of changing the underlying aim or contesting the criteria of success. Such a case can generate new skills and even a novel product, yet its relation to independent inquiry is markedly different from an encounter in which counterproposal and refusal are materially possible. Consequently, an adequate description should report the offerer's explicit and implicit constraints, the range of recipient modifications actually tolerated, and the institutional consequences of dissent. The distinction between generative effectiveness and ethical legitimacy introduced earlier remains intact.

Discriminating Cases and Comparative Explanatory Burdens

A conceptual framework becomes more useful when it identifies cases in which its application would be misplaced or its strongest claims would remain unproved. Five constructed contrasts are particularly instructive. The first is *accidental discovery*: a researcher finds an unfamiliar technique while handling an artifact deposited by an unknown maker. The artifact affords a productive transformation; without evidence of address, an intentional invitation need not be attributed. The second is *scripted completion*: a participant accomplishes a prescribed exercise through prompts that specify all decisive choices. An offering and uptake are present, while evidence of open recipient-directed generation is weak. The third is *counter-invitation*: a recipient challenges the terms of an offer, supplies an alternative problem, and alters subsequent activity on both sides. This is a particularly suitable candidate for the proposed concept, although it also admits dialogical and enactive explanations.

The fourth contrast is *productive dependency*. A participant completes increasingly complex tasks through repeated assistance while losing access to necessary independent resources or to the authority to formulate questions. Output expands as practical autonomy narrows. Such a case illustrates how an invitation can be generatively consequential and ethically troubling, and how achievement alone fails to establish durable independent capacity. The fifth is *unilateral delayed transformation*: an initial offering is remembered and developed through years of work in which the initiator takes no further part. A genealogy of generative influence can be reconstructed, but the strength of the claim that an invitation remained the causal source depends on evidence of mediating practices, alternative encounters, and the recipient's own contributions. Calling the entire later trajectory an accomplishment of the initiator would overstate the evidence.

These contrasts define several demanding explanatory obligations. One must specify what makes

an interaction an *invitation*, what evidence distinguishes an invitation from an affordance or instruction, and whether the recipient possessed practical alternatives. One must also identify the claimed outcome: immediate interpretive variation, a novel artifact, enhanced effective opportunities, durable capacity change, or transformation of a common practice. Those outcomes call for different kinds of evidence. The proposed GR account gains comparative value only if its distinctions allow an investigator to make better warranted descriptions and attributions than the available alternatives. The purpose is not to demand that one philosophical theory uniquely explain every event. Competing theories can provide complementary accounts at different levels. The requirement is that the additional vocabulary earn its place through a discriminating analytical function.

A specific counterexample would concern two interactions classified by the GR proposal as materially different invitations because of their recipients' histories and relational conditions. Suppose an established situated-learning or affordance-based model already explains all relevant differences in uptake, participation, later independent activity, and control over resources. If the GR account offers no further defensible differentiation, its incremental explanatory contribution in that domain would be negligible. Conversely, if a local inquiry finds that the same formal task and available tools acquire distinct consequences because one participant can revise the offering, alter evaluative authority, and subsequently initiate further encounters, then the GR vocabulary may provide a useful joint account of relations that separate disciplinary descriptions often address individually. Evidence of that usefulness would still fall short of establishing a universal mechanism.

The comparison can be sharpened through a *minimal-pair* research design. Hold the material resource and immediate task broadly similar while varying the recipient's authority to modify the question, reject the offered categorization, or propose a later inquiry. Then examine whether the rival accounts and the proposed GR analysis distinguish the same changes, at the same level of detail, using comparable evidence. A second comparison keeps the invitation's initial form stable while documenting differences in recipients' historically formed practices and access to subsequent resources. If affordance, scaffolding, or participatory sense-making explains both the immediate events and the later trajectories as well as GR does, the latter supplies a vocabulary of synthesis rather than an independently established mechanism. If GR yields additional disciplined questions about who controls continuing conditions of generation, the analytical advantage should be described in those limited terms. Neither comparison licenses an inference that heterogeneous subjects possess equivalent experiences or common valuations.

A more exacting comparison would register four independent contrasts within each minimal pair. The first concerns *address*: whether the structure was merely available or was offered as an opportunity for a particular recipient. The second concerns *revision authority*: whether the recipient could change the framing, methods, or standards by which the undertaking would proceed. The third concerns *persistence*: whether subsequent independent activity differs from the immediate task performance, with relevant alternative explanations recorded. The fourth concerns *institutional consequence*: whether the recipient can retain, contest, share, or develop the resulting resources. These contrasts are not a universal index of invitation quality. They offer a common case description against which affordance theory, educational scaffolding, participatory sense-making, and GR can each be assessed. An observed difference attributable entirely to accessible resources might favor an affordance account; one explained by tutor-managed task complexity might favor scaffolding; autonomous coordination that transforms meaning may be adequately described by participatory sense-making. The GR terminology has an incremental role only where tracing the addressed offering across heterogeneous capacities and continuing authority relations improves the explanation in a specific way.

Evidence for Capacity Change and Alternative Causal Histories

The strongest version of the generative-invitation proposal concerns transformation extending beyond one encounter. Evaluating such a claim requires a temporal and relational account of activity rather than an isolated outcome. In educational research, one could examine whether learners formulate independent questions in unfamiliar settings, adapt rather than repeat a supplied procedure, and sustain inquiry when

the original inviter or their prompts are absent. Such observations would be more relevant to a claim of durable competence than a single successful performance. Interview accounts, classroom observations, artifacts, and subsequent work could triangulate different aspects of the trajectory. They would still leave uncertainty about the relative contributions of prior learning, peer participation, available resources, and the initial offering.

The design should also include rival conditions that make attribution difficult. An ordinary explanatory lesson, a scaffolded exercise, a learner-led discussion, and an intentionally open generative invitation can all yield valuable results. Without a sufficiently clear account of their actual differences, a comparison would test labels rather than interventions. Research questions should therefore address operational differences in control over the inquiry, availability of counterproposal, dependence on subsequent prompts, and the types of future activities within the recipient's effective reach. The same framework could be used for qualitative process tracing of a single case or for carefully limited comparative investigations. The validity of each approach depends on the question asked, the strength of records, and the ethical costs of experimental control.

A counterfactual assertion that a transformation *would not have occurred* without an invitation often exceeds available evidence. Participants follow multiple and interacting trajectories, and the decisive alternatives may be inaccessible to observation. One can sometimes establish that an invitation introduced a previously unavailable resource, altered the conditions of participation, or made a new question salient. Such findings support narrower causal claims. Where experimental comparison is appropriate, pre-specified measures of later independent activity and follow-up observations could strengthen an inference; where it is impractical, richly documented process tracing may identify plausible mechanisms without excluding every alternative. The account remains revisable in either case. Moreover, a change in visible performance can reflect altered willingness, access, recognition, or institutional permission while internal capacities remain comparatively stable. Each proposed mechanism should identify which of these levels it addresses.

For collective activity, the relevant evidence may consist in new rights to initiate projects, durable changes in access to instruments, shared decision procedures, and practices of returning the results of collaborative work to its participants. These are forms of relational capacity even when no person's individual ability can be isolated as the transformed variable. Yet collective improvement does not imply distributive justice. The mechanisms of invitation, productive contribution, authority over results, and the distribution of value must be studied separately. In this respect the present paper provides an interface to a subsequent inquiry into heterogeneous value co-creation, rather than claiming to have supplied its normative theory.

The same evidence must also be evaluated at two different levels of claim. A descriptive claim such as "the recipient generated a new question after the encounter" requires documentation of the question, relevant prior practice, and the encounter's conditions. A causal claim that the invitation *enabled* that question additionally requires a defensible comparison with other plausible pathways. A still stronger evaluative claim that the practice *emancipated* the recipient calls for reasons concerning effective refusal, sustained control, vulnerability, and the recipient's own values. The conceptual sequence places greater evidential and justificatory burdens on stronger claims. The requirement applies equally to declarations of mutual recognition or value co-creation: neither an original output nor an apparently cooperative exchange settles authorship, authority, or distribution.

Attribution Across Heterogeneous Forms of Agency

The word *recipient* can function as an operational designation for a person, organism, or artificial system whose activity is affected by an offering. Its ethical and phenomenological interpretation varies. In human encounters, testimony, participation histories, reasons, and contextual observation can sometimes support claims about intentional response or independent judgment. Testimony is still mediated by language, memory, and unequal conditions of credibility; a participant's assent cannot simply be treated as transparent proof of freedom. In interspecies encounters, experimental behavior, ecological context,

species-specific repertoires, and welfare considerations may justify narrower inferences about response or preference. Such evidence need not establish shared linguistic understanding or identical subjective experience.

In artificial interaction, repeated outputs, tool use, system traces, and behavior across changed prompts can support claims about computational generalization and situated performance. These observations may be sufficient for a technical account of how an offered structure changes a workflow. They do not directly resolve whether the system experiences an invitation, reflects upon norms as a moral subject, or possesses its own aesthetic life. Where those stronger claims are relevant, the inquiry needs independent criteria. A model can exhibit apparent refusal because of externally configured rules; a human recipient can experience a supposedly helpful recommendation as difficult to reject because of institutional dependence. Collapsing these phenomena into a single measure of autonomy would conceal their differences.

A further problem concerns *translation*. Evidence that two participants produce similar expressions, complete comparable tasks, or enter a stable coordination pattern supports local correspondence at the observed level. It does not establish equivalent histories, meanings, or values. Conversely, differences of interpretation do not warrant assuming that another participant's experiences are permanently beyond understanding. The practical task is to distinguish what has been communicated, what has been inferred, what remains disputable, and what can be learned only through sustained participation. This discipline prevents heterogeneity from becoming either a pretext for epistemic isolation or an assertion that every difference can be dissolved through a single representational scheme.

Conditions of Revision and the Scope of the Proposal

The proposed account should be revised in at least four circumstances. First, where existing approaches already provide a sufficiently precise and economical explanation of the case, generative invitation should be retained at most as an integrative descriptive concept. Second, where evidence fails to support a durable capacity transformation, the claim should be restricted to immediate uptake, altered opportunity, or a locally productive event. Third, where the recipient cannot meaningfully alter or contest the offered activity, the description should disclose the relevant controls and avoid inferring autonomous participation from apparent novelty. Fourth, where subjective or normative agency is disputed, the analysis should use the narrowest level of attribution supported by available evidence.

The remaining contribution is conditional. Its value may lie in bringing together features usually examined apart: historically differentiated generative capacities, the practical address of an offering, situated possibilities of uptake and counterproposal, transformations extending beyond one interaction, and the distribution of authority over what emerges. This integrative advantage is itself a hypothesis requiring comparative work. It offers a way to formulate questions about heterogeneous co-creation without assuming common values, identical experiences, or symmetry of contribution. The paper's philosophical proposal thus earns its standing through the specificity and revisability of its distinctions, while remaining open to replacement by a better account. The concluding section will gather these conditional findings and identify the most consequential unresolved problems for relational praxis and value co-creation.

12 Conclusions and Open Problems for Heterogeneous Co-Creation

This investigation has examined *generative invitation* as a provisional concept for a relation in which one participant makes a condition available for another's generative activity while leaving significant aspects of its uptake and development to the recipient. Its aim has been to identify the philosophical work such a concept might perform across heterogeneous histories, capacities, perceptual organizations, and normative conditions. The argument has proceeded through dialogical philosophy, ecological theories of affordance, accounts of learning and recognition, questions of translation and autonomy, and comparisons involving aesthetic, educational, interspecies, and artificial encounters. The conclusion consolidates the resulting distinctions, specifies the proposal's conditional explanatory contribution, and identifies

problems for further conceptual and empirical inquiry. In keeping with the exploratory status of the study, its conclusions concern the coherence and possible usefulness of an analytical framework; the constructed encounters discussed throughout the paper establish neither a general causal law nor the ethical merit of every practice described as generative.

The central distinction concerns the relation between an available possibility, an act of offering, and an invitation. A generative affordance arises when the relationship between a participant's capacities and some material, symbolic, or practical condition makes an activity possible. An offering is a participant's action of making such a condition available to another. Generative invitation adds an addressed, recipient-directed dimension: the offering provides room for the recipient to engage, alter, defer, contest, or refuse the activity. These descriptions may overlap in actual encounters, yet they make different features of the relation available for analysis. A person can encounter a productive affordance without having been invited by anyone. An educator can issue an invitation that remains unintelligible or inaccessible to the intended learners. A recipient can recognize an invitation and decline it, or develop an initially proposed question in a direction its originator could scarcely have anticipated. The philosophical point is that the significance of the offering is partly constituted through the recipient's historically situated activity, while the offering retains a describable material and relational organization of its own.

The ensuing activity is usefully described through a *generative trajectory*: a course of interpretation, inquiry, action, or transformation in which the offered condition participates. Such trajectories involve histories and dependencies that are partly independent of the originator's intentions. The proposed GR vocabulary foregrounds these dependencies without asserting that a complete formal representation of a subject's history is available. The account distinguishes a single achievement, an increase in effective access to activities, a change in relatively durable generative capacities, and an alteration of the collective arrangements through which further activity becomes possible. These distinctions matter because similar visible outcomes can arise from very different mechanisms. A learner's successful answer may exhibit a skill already possessed, reproduce a scaffolded procedure, reflect newly available equipment, or express a capability that can subsequently be exercised under changed conditions. The vocabulary of invitation offers a framework for asking which description is warranted; it does not decide the question independently of evidence.

A further conclusion concerns the plurality of relations among participants. Responsive reciprocity, productive contribution, and obligations of return may coincide, yet each requires its own account. A question offered by one person can influence the development of another's inquiry without receiving an answer or material reward. Participants may affect each other's capacities through sustained exchange while contributing differently and benefiting unequally. A result may be produced through interdependent work, with responsibilities and entitlements that depend on social and institutional circumstances beyond the fact of mutual influence. Accordingly, a common generative trajectory does not by itself establish symmetrical agency, an equal division of authorship, or an equivalent distribution of value. The distinction between a relation's genesis and the legitimacy of resulting claims is especially important where one participant controls access to resources, evaluation standards, publication channels, or opportunities to decline further participation.

These conclusions locate the proposal within a demanding philosophical genealogy. Buber's account of dialogue, Levinas's emphasis on responsibility toward alterity, Ricœur's understanding of capable persons and recognition, and Arendt's treatment of initiative under plurality already give substantial reasons to attend to another participant's independence and the openness of action [6, 23, 32, 2]. Ecological affordance theories explain how opportunities depend on relations between activities, capacities, and environments [15, 7, 34]. Participatory sense-making, situated learning, educational scaffolding, and problem-posing pedagogy offer established analyses of interpersonal coordination and the development of competence [9, 22, 43, 13]. Dialogical openness, situated interpretation, and the dependence of learning on existing capacities are established precedents that constrain the proposal's originality claims. Its more specific aspiration is to make these insights jointly relevant to a recurring configuration: an addressed offering, heterogeneous receiving conditions, recipient-directed uptake, potentially enduring transformation, and questions of who may control or appropriate the resulting process.

This aspiration remains conditional. The concept has explanatory standing when it clarifies differences among encounters that would otherwise be described too coarsely for the problem under investigation. For example, two programs may supply similarly useful resources yet differ in whether participants can reshape the questions, determine relevant forms of evidence, and continue inquiry independently. Such differences concern institutional and relational conditions that can be investigated. An account already capable of explaining these differences with equal precision may be preferable on grounds of economy or established evidence. Generative invitation can then serve as an integrative vocabulary without implying the discovery of a distinct natural mechanism. Philosophical originality should be assessed through discriminating analysis, explanatory adequacy, and engagement with competing traditions, rather than by renaming familiar social processes.

The conditional results can be stated at three distinct levels. At the *descriptive* level, the proposal separates an addressed offering from an affordance discovered without address and identifies recipient uptake as an activity conditioned by a particular history. At the *explanatory* level, it proposes that tracing this address across later opportunities and capacities can sometimes reveal differences concealed by an exclusive focus on immediate outputs. At the *evaluative* level, it requires independent inquiry before attributing autonomy, ethical legitimacy, aesthetic value, or rights over results. These are levels of analysis, with different burdens of evidence, rather than stages through which every encounter must pass. The comparative tests in Section 11 accordingly serve as limits on the claim to a separate mechanism: a domain in which established theories suffice is a domain in which the integrative terminology may remain useful without explanatory priority.

The first open problem concerns *the individuation of an invitation*. Intentions, acts of address, accessible opportunities, and recipients' recognitions can diverge. An originator may sincerely invite participation while retaining such extensive control over the activity that recipients have little space to alter its direction. A recipient may treat a remark as an invitation although the speaker intended merely to report a fact. A designed system can present apparently open-ended prompts according to an externally specified objective. Further inquiry should establish whether the concept is best individuated through the speaker's intention, the pragmatic form of an address, the recipient's available response space, or some conjunction of these conditions. The choice has practical consequences: definitions centered exclusively on intention risk overlooking institutional constraints, whereas definitions based only on observed creativity risk assimilating unaddressed affordances and manipulative inducements to invitation. A differentiated account may be more defensible than a single rigid criterion across all domains.

A second open problem concerns *the persistence and attribution of capacity transformation*. An invitation can occasion an impressive result while leaving the recipient's abilities largely unchanged. It can also contribute to the availability of resources, permissions, or relationships through which an existing ability becomes newly exercisable. A stronger claim of durable transformation requires attention to activity in subsequent settings, independence from the original scaffold, opportunities for counterproposal, and the participant's own account of the change where such testimony is available. Causal attribution remains difficult because capacities develop through intersecting histories of practice, material support, social recognition, and learning. In a human educational study, a comparison of independently generated questions across changed contexts might be informative; in collective inquiry, changes in who may initiate projects and decide how evidence is used may be more relevant. The most responsible conclusion may identify a contribution of the invitation to an altered possibility space, while leaving the size and exclusivity of that contribution unsettled. Such qualified findings retain philosophical and practical significance without positing a privileged originating cause.

A third problem concerns *translation between heterogeneous generative languages*. The paper has used the expression *generative language* broadly, to encompass ways of perceiving, classifying, acting, representing, and responding that organize a participant's possibilities. The breadth of the term can be useful, although it invites careless analogy between linguistic practice, animal perception, and algorithmic computation. Partial correspondences may support collaborative activity under a given task even where histories and forms of experience differ. The group-theoretic and relational representations introduced earlier formalize restricted invariances and task-indexed associations. Their mathematical validity depends

on stated structures and assumptions; their philosophical significance depends on which distinctions they preserve. Quine's challenges concerning translation, Davidson's arguments against radically untranslatable conceptual schemes, and work on intersemiotic and culturally situated translation reinforce the need to keep both successful correspondence and its limits in view [30, 8, 19, 1]. A fruitful research question is whether participants can sustain a practice of offering and revising generative possibilities even when their accounts of the encounter remain partly irreducible to a common descriptive scheme.

A fourth problem concerns *autonomy under asymmetric conditions*. The possibility of responding to an offer should be evaluated through what a participant can effectively do, including revision, deferral, departure, and the introduction of a counterproposal. In educational or organizational settings, a formally available refusal may carry severe costs in livelihood, evaluation, recognition, or access to resources. Here relational autonomy and non-domination offer complementary questions about social support, practical choice, and vulnerability to another's discretionary power [24, 29]. The present account proposes that meaningful refusal is a significant feature of ethically responsible invitation. Yet the exact conditions for such refusal are historically situated and sensitive to differing capabilities. A dependent child, an adult collaborator, an animal participating in a care relation, and a computational tool occupy different domains of evidence and authority. The relevant ethical analysis should attend to these differences rather than infer a general theory of autonomy from the surface form of an interaction.

A fifth problem arises from the relation among *norm formation, ethical justification, and aesthetic value*. Norms can enter an encounter as inherited institutional rules, reflective commitments, or expectations that develop through continuing interaction. The three pathways describe aspects of normative history and change, while the legitimacy of a rule remains a separate question. A community can develop stable norms of participation under unequal power. An individual can endorse a norm that reflects restricted alternatives. Conversely, collaborative revision can yield procedures more responsive to those affected. The distinction draws attention to the different philosophical tasks addressed by social-norm theory, reflective accounts of practical authority, and discourse-oriented justification [4, 21, 16]. Aesthetic value presents an additional irreducibility. A poem or question can support divergent unfoldings among its recipients, including aesthetic experiences that neither the inviter nor an external evaluator can reproduce. Norms can regulate which forms are presented, valued, or permitted; their presence alone neither determines that beauty has emerged nor warrants claiming another's aesthetic judgment as one's own. The aesthetic case therefore cautions against equating generative novelty, shared normativity, and common value.

A sixth problem concerns *the scope of subject attribution*. The analytical description of a recipient can sometimes refer operationally to a system that is affected by an offering, while the stronger terms *subject, experience, recognition, and self-legislation* introduce distinctive evidential and philosophical burdens. In human contexts, testimony, social history, and participation can support claims about intentionality and evaluative judgment, albeit with familiar limitations. In interspecies contexts, ecologically informed observation can support more restricted conclusions about preference, response, learning, or welfare. An artificial model's outputs and adaptation can be investigated as computational behavior. Such evidence may establish that the system participates causally in a human's creative trajectory while leaving artificial phenomenal experience, moral autonomy, and independent normative authority unresolved. The GR perspective gains little by erasing these differences. It is more useful when it permits questions about relational effects without prematurely conferring, or categorically denying, forms of subjecthood for which independent argument remains necessary.

A seventh problem concerns *co-creation, value attribution, and the circulation of results*. The present paper proposes that an invitation can become one contribution to a relational process from which significant knowledge, aesthetic experience, material arrangements, or other forms of value emerge. The philosophical step from a causal contribution to a claim of co-creation needs criteria concerning the substantiality of participants' roles, mutual or distributed organization, and the independence of recipients' work. The further step from co-creation to rights over outcomes involves questions of consent, property, recognition, institutional design, and distributive responsibility. These distinctions are indispensable in settings where an organization provides an initial problem or platform while other participants generate

results through their own historically formed capacities. Control over the conditions of uptake can make another's productivity visible and valuable to an institution while leaving that contributor with little authority over its use. Future inquiry into heterogeneous value co-creation should examine how value can be realized and circulated among participants whose evaluative criteria are only partly commensurable, without assuming that the offerer is the owner of what another creates.

The cross-domain discussion also identifies a methodological asymmetry. Evidence of an animal's response, a person's reflective judgment, a reader's aesthetic testimony, and an artificial system's adjusted outputs should be assessed by the standards appropriate to each inquiry. The recurrence of an offered form and an altered trajectory is a reason to investigate possible correspondence; it is never sufficient grounds for attributing identical experiential or moral standing. This allows the GR programme to remain open to heterogeneous beings while keeping its present empirical and normative commitments bounded.

The connection to educational practice deserves special emphasis because it supplied one of the motivating examples for the concept. An educator may begin with learners' existing languages, cultural practices, and material activities, and offer questions that learners can elaborate through their own interpretive resources. The philosophical promise of this practice lies partly in the possibility that learners become originators of further questions and contributors to common inquiry. Freire's problem-posing education, Rancière's interrogation of explanatory hierarchy, and culturally situated design approaches developed by Eglash and collaborators are important precedents rather than illustrative confirmations of a new theory [13, 31, 12]. The question for GR concerns what a sustained analysis of heterogeneous generative conditions adds to those accounts, especially when the educator and learners hold different models of valuable inquiry. A rigorous educational investigation should evaluate learners' ongoing agency, the durability of their new capacities, the accessibility of shared resources, and whether the inquiry's results remain available to the communities participating in their creation. Educational success cannot be inferred solely from a teacher's intention to invite.

The comparative programme also requires a sensitivity to time and scale. A locally successful invitation may participate in a larger historical process that reduces participants' long-term independence, while an encounter that appears unproductive at the moment of exchange may later become consequential under changed relational conditions. Rather than privileging an immediate output as the definitive location of value, inquiry can examine a succession of partially connected interactions, institutional transformations, and changing capacities. It may be appropriate in some cases to model dynamical relations or group actions; in others, interpretive histories and qualitative studies will provide more adequate access. The selection of method should follow the specific question, with distinctions maintained between a formal representation, a philosophical hypothesis, and an empirically supported mechanism. The GR terminology is intended to support such cross-disciplinary translation under ontological suspension, leaving open the deeper constitution of the subjects and relations to which it is provisionally applied.

The most consequential practical implication is therefore a discipline of *responsible opening*. An inviter can seek to understand the recipient's conditions, present possibilities in forms the recipient can engage, remain receptive to unexpected developments, and refrain from claiming control over results merely because the initial condition was supplied. The recipient can interpret, revise, or decline the offering, and may in turn become an originator of further invitations. Where material dependencies make these options fragile, institutional arrangements concerning access, contestability, credit, and control become part of the ethical evaluation. Such a discipline is an orientation for practical inquiry rather than a universal formula for good teaching, just cooperation, or beautiful creation. Its significance depends on whether participants have effective opportunities to shape what occurs, whether the practices are open to criticism, and whether the resulting relations sustain forms of generative agency consistent with the standards relevant to those involved.

The most defensible comparative contribution is methodological. The analysis separates six records that practical and philosophical descriptions often merge: the offering's provenance; the conditions of its recognition; the recipient's observable response; later changes in effective opportunity; evidence for a transformation of capacity; and the allocation of authority over resulting work. Their separation does not entail that each requires a wholly new theory. It enables rival accounts to be compared on the same

concrete trajectory. In particular, two participants may make unequal, differently valued contributions to one process, while the subsequent claims of joint authorship and legitimate distribution remain matters for separate evaluation. This bridge to heterogeneous value co-creation remains a programme for further inquiry, especially where a platform or institution supplies initial conditions but another participant develops the consequential work.

The resulting claim has a defined scope. *Generative invitation* provides a candidate analytical description of the way an addressed offering can participate in another’s distinct generative trajectory, sometimes changing the conditions of later activity and sometimes contributing to forms of co-creation. It also supplies distinctions that help prevent productive influence from being treated as evidence of ethical legitimacy, shared subjective experience, or entitlement to the value produced. Existing dialogical, ecological, educational, and enactive theories explain important components of this configuration; the proposed GR synthesis remains worthwhile only insofar as it clarifies relations and differences they leave insufficiently specified for a particular investigation. Whether its more ambitious claims withstand empirical comparison, sustained engagement with primary philosophical texts, and independent criticism is an open question. The enduring philosophical task is to understand how participants with heterogeneous histories and possibilities may help open one another’s generative activity while preserving the possibility that what emerges will exceed, transform, or challenge the initial offering.

Research Ethics and Source Provenance

Evidence and research status. The illustrative examples are constructed philosophical cases. The manuscript reports no human-participant research, new empirical evaluations, or evidence of nonhuman or artificial subjective experience. Institutional ethics approval was not sought because no original human-participant data were collected.

Source status. Bibliographic records and the scope of cited claims in Sections 1–12 were checked against identified publisher, library, and scholarly reference resources before manuscript completion. These checks are documented in `refs/VERIFICATION_LEDGER.tsv`. They do not yet constitute full primary-text passage audits, nor do they establish independent scholarly endorsement.

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