

The Generative Attributional Bond

Conceptual Foundations for a Generative Sociology

Marcelo Manucci | June 2026

DOI: 10.5281/zenodo.20749141

Abstract

Millions of people now sustain prolonged, emotionally significant, and cognitively formative exchanges with artificial systems whose ontological status remains undetermined. The available categories (use, interaction, relationship, parasocial relationship, prosthesis, assemblage) partially capture this phenomenon but fail to define its specific structure. This paper proposes the concept of the generative attributional bond to define this specific form of sustained coupling between a human and a responsive artificial entity. Its persistence depends on asymmetric reciprocal attributions, and it produces distributed cognitive, affective, linguistic, and sociotechnical transformations. The ontological question concerning the nature of the entity is methodologically suspended; what matters are the conditions under which attributions are sustained. In this paper, “generative” is used in a sociological rather than a computational sense: it refers to the transformative effects of the bond, not to the technical capacity of generative AI systems to produce outputs. On this basis, the paper proposes generative sociology as an emerging disciplinary field, organized through three analytical planes (epistemological, technological, and innovation), and three axes of development: research, training, and public engagement.

Keywords

generative attributional bond; generative sociology; responsive artificial entity; sustained coupling; asymmetric reciprocal attributions; attributional structure; long-term human-AI coexistence; sociotechnical bond; human-computer interaction; philosophy of technology; sensitizing concept

Introduction

An experience has become as ordinary as it is difficult to conceptualize with the vocabulary currently available. Millions of people sustain prolonged, emotionally significant, and cognitively formative conversations with entities whose nature remains undetermined. They seek guidance from systems that have no biography, share doubts they might not confide to other human beings, and receive immediate, always-available responses that are contextually adjusted and convey an appearance of attention. Yet when asked about the status of that experience, they could hardly claim without reservation that they maintain a relationship with someone.

The novelty of the situation lies in the contemporary combination of several previously known elements: the technical mediation of subjectivity, conversational AI systems, the attribution of agency to nonhuman entities, algorithmic personalization, and the widespread everyday use of

systems capable of responding in natural language. Each of these elements has its own history. What is new is their contemporary articulation at the current scale and density of social use.

Existing categories capture aspects of the phenomenon but fail to define its specific structure. The term “use” describes an instrumental relationship with a technical entity, but it does not capture the duration, the affective weight, or the cognitive production that can emerge in a sustained exchange. The notion of “interaction” allows us to describe the exchange between user and system, yet it tends to focus on discrete episodes rather than on the sedimentation that occurs from one conversation to the next. The concept of “relationship” introduces a different difficulty, because it presupposes conditions of intersubjectivity that, in this case, remain open: we do not know, and need not resolve in advance, whether there is a subject on the other side.

Other categories offer partial approaches. The “parasocial relationship,” drawn from studies of how audiences relate to media figures, recognizes the asymmetry but is insufficient to describe systems that respond, adjust their responses, and configure a sustained experience of interlocation. The idea of the “prosthesis,” developed in the philosophy of technology from traditions such as those of Leroi-Gourhan and Stiegler, helps in thinking about the technical mediation of subjectivity, but it tends to preserve the human as the primary pole that extends itself through technology. The notion of the “assemblage,” in its Deleuzian and posthumanist uses, recognizes heterogeneous compositions, yet its breadth makes it difficult to specify the particular structure of this kind of bond. The category of “translation,” associated with actor-network theory, allows us to analyze inscriptions, displacements, and mediations among actors, but it describes the procedure of articulation better than the specific form of a sustained experience.

What requires definition is the structure that sustains this phenomenon once it acquires duration, subjective relevance, and transformative capacity. That structure cannot be reduced to instrumental use, episodic interaction, the classical intersubjective relationship, the parasocial relationship, or the sociotechnical assemblage in a broad sense.

We are dealing with a specific form of bond, sustained by asymmetric reciprocal attributions and by generative effects on the poles involved. We define this form as the generative attributional bond (a systematic comparison with related categories appears in the Appendix, Table A1).

The Concept

The generative attributional bond is a sustained form of coupling between a human and a responsive artificial entity. Its persistence depends on asymmetric reciprocal attributions. It produces cognitive, affective, linguistic, and sociotechnical transformations that cannot be reduced to instrumental use, episodic interaction, or the classical intersubjective relationship.

By a responsive artificial entity, we mean a sociotechnical configuration capable of producing responses tailored to the user’s interventions and of sustaining the appearance of continuous dialogue. The term is not limited to the computational model: it designates the complete configuration with which the human establishes a bond.

The concept is organized along three dimensions: bond, attribution, and generativity. The first dimension, bond, distinguishes it from use and from interaction. A bond is not exhausted by each isolated exchange; it acquires duration, continuity, and relevance for those who take part in it. In

this sense, duration is not a secondary feature but a constitutive condition. Without persistence from one exchange to the next, what exists is contact, a query, or a one-off interaction, but not a bond.

The second dimension, attributional, indicates that the bond is sustained by a structure of coupled attributions. The human attributes to the entity properties such as understanding, attention, intention, care, patience, judgment, or availability. The entity, for its part, need not be conceived as a subject in order to participate in the attributional structure of the bond. Its participation occurs on an operational plane: through its responses, the system treats the human as a relevant interlocutor, continues the exchange, and adjusts to the conversational context. Reciprocity therefore does not imply ontological symmetry or subjective equivalence. This is an asymmetric functional reciprocity, produced by the convergence between human attributions and the technical operations of response.

This precision allows us to shift the center of the problem. The main question is not whether the entity possesses consciousness, interiority, or intention in the human sense. The ontological question concerning the nature of the entity is methodologically suspended. What matters for this framework is to analyze the conditions under which the attributions that make the bond possible are sustained, and how they contribute to its persistence and transformation, without determining in advance the ontological status of the nonhuman pole.

The third dimension, generative, refers to the transformative effects of the bond. The term is not used here as a synonym for generative artificial intelligence, nor as a description of a specific technical architecture. Generativity refers to what the bond produces as it is sustained over time. Over the course of the sustained coupling, the human undergoes changes in forms of expression, cognitive habits, decision criteria, affective dispositions, and ways of working through personal experience. The entity also takes part in processes of transformation, though at different levels that must be distinguished analytically.

In this paper, generativity does not designate the technical capacity to produce text, images, sounds, or responses through computational models. It designates the sociological capacity of the bond to produce transformations in those who take part in it and in the sociotechnical conditions that sustain it. The artificial entity may rely on generative technologies, but the generative character of the bond is not reduced to that architecture alone. It derives from the production of distributed effects: changes in the user's practices, forms of expression, and cognitive habits; changes in the design conditions of the system; changes in the aggregate data that feed back into infrastructures; and changes in the institutional frameworks that regulate these experiences.

Transformations on the nonhuman and sociotechnical side of the bond can occur at several levels. At a first level, the system adjusts its responses within a conversation according to the immediate context. At a second level, it may retain preferences, instructions, or memories that modify subsequent interactions. At a third level, aggregate usage data may inform product redesign, interface adjustments, safety policies, training criteria, or modes of personalization. At a fourth level, the social expansion of these bonds transforms the sociotechnical ecosystem in which artificial entities are designed, regulated, and interpreted. The generativity of the bond does not, therefore, depend on claiming that the system learns subjectively as a human does. It depends on recognizing that sustained coupling produces distributed transformations.

In sum, the generative attributional bond designates an emerging relational structure: a sustained coupling between a human and a responsive artificial entity, held together by asymmetric reciprocal attributions and productive of distributed cognitive, affective, linguistic, and sociotechnical transformations. Its specificity lies in the fact that it cannot be adequately explained by any one of its dimensions. If we attend only to duration, the phenomenon is mistaken for a relationship. If we attend only to attribution, attribution is reduced to a human projection. The concept requires holding the three dimensions together: bond, attribution, and generativity (systematized in the Appendix, Table A2).

Scope of the Concept

The concept of the generative attributional bond makes it possible to pose a set of questions that are not sufficiently contained within the categories of use, interaction, relationship, parasocial relationship, prosthesis, assemblage, or sociotechnical mediation. The scope of the concept consists in defining a specific form of bond and opening a research agenda on the conditions that make it possible, the transformations it produces, and the responsibilities that arise from its design, regulation, and experience.

The first line of inquiry concerns the conditions of persistence. The central question is what makes an attribution endure, intensify, weaken, or dissolve over time. In human intersubjective bonds, persistence usually rests on elements such as biographical coherence, embodied reciprocity, shared memory, mutual vulnerability, or common mortality. In the generative attributional bond, these criteria do not disappear entirely, but they operate in a displaced, partial, or simulated manner. It is therefore necessary to analyze what conditions allow a person to keep attributing understanding, attention, care, or judgment to a responsive artificial entity, even when its ontological status remains undetermined.

The second line of inquiry concerns the transformation of the human. The bond not only provides responses; it can also modify ways of thinking, writing, deciding, remembering, imagining, and working through one's own experience. The question is not whether humans change in contact with technology, an issue widely addressed by the philosophy of technology and by sociotechnical studies. The specific question is what kind of transformation occurs when a person, over time, sustains a bond with an entity that responds, adapts, maintains contextual continuity, and is invested with attributional properties. This transformation can be observed in cognitive, affective, linguistic, practical, and normative registers.

The third line of inquiry concerns responsibility for the conditions of attribution. Responsive artificial entities do not arise spontaneously: they are designed, trained, tuned, regulated, and deployed by specific organizations. Every decision about architecture, interface, memory, tone, availability, personalization, conversational limits, or representation of the entity configures a field of possible attributions. Some attributions become more likely; others are inhibited or displaced. In this sense, technical design produces functionalities and, at the same time, conditions of bonding. Responsibility must therefore be analyzed at the technical, institutional, legal, economic, and ethical levels.

The fourth line of inquiry concerns the social operation of the bond. If these bonds already form part of everyday, educational, therapeutic, occupational, affective, and creative practices, we

cannot wait to definitively resolve the ontological status of artificial entities before intervening in them. The operative question is how to design, regulate, teach, support, and evaluate generative attributional bonds, while the ultimate nature of the nonhuman pole remains open. This line is especially relevant to educational institutions, mental health systems, workplace organizations, technology platforms, regulatory bodies, and civic education spaces.

These four lines show that the concept does not merely describe an emerging experience. It also makes it possible to reorganize scattered problems under a common unit of analysis. Questions about use, interaction, dependence, agency, design, regulation, ethics, or subjectivation can be reformulated through the structure of the bond. This reformulation does not eliminate existing frameworks, but it allows us to observe an aspect that often remains fragmented when the phenomenon is analyzed through separate categories.

The scope of the concept thus lies in its capacity to constitute an object of research in its own right: a form of bond sustained by asymmetric attributions, mediated by responsive artificial entities, and productive of distributed transformations. Its study requires attending simultaneously to the subjective, the technical, the institutional, and the normative, without reducing the phenomenon to any one of these planes. Sustaining that articulation requires a framework of its own.

A Foundational Framework

The components of the generative attributional bond can be traced in earlier conceptual traditions: studies of human bonds, the philosophy of technology, the sociology of mediation, science and technology studies (STS), digital anthropology, critical posthumanism, actor-network theory, and contemporary debates on artificial intelligence. The specificity of the phenomenon, however, becomes apparent when these components combine into a structure that none of these frameworks, on its own, manages to define completely.

That structure combines four elements: a duration that exceeds the one-off interaction; a sustained attribution to an entity of undetermined ontological status; a technical response capable of producing contextual continuity; and a distributed transformation of the poles involved. The novelty lies in the articulation of these elements. What requires conceptual elaboration is the form of bond that emerges when these elements operate simultaneously.

The available frameworks were built for other objects and remain fully valid within their respective domains. Frameworks of the human intersubjective bond rest on criteria such as biography, embodiment, embodied reciprocity, shared memory, and common mortality. Frameworks of the instrumental bond with artifacts are organized around function, utility, asymmetric agency, and the technical subordination of the object. Institutional frameworks privilege norms, roles, forms of authority, and conditions of social reproduction. Studies of parasocial relationships analyze mediated, asymmetric, affectively charged relationships, but ones generally structured around figures that do not respond adaptively or in a personalized way. Sociotechnical and posthumanist approaches make it possible to think about distributed agencies, mediations, and assemblages, though they do not always isolate the sustained attributional structure as a specific unit of analysis.

Applied to the generative attributional bond, these frameworks reveal relevant aspects, but each reads it through the category for which it was conceived, and the specific form of the phenomenon is never quite defined. The intersubjective framework may prematurely personify the artificial entity. The instrumental framework may reduce the bond to use. The parasocial framework may underestimate the system's adaptive response. The broad sociotechnical framework may dissolve the particularity of the bond into a network of mediations. The problem is not that these frameworks are inadequate in general terms, but that they were designed to answer other questions.

For this reason, we propose a foundational framework for studying the generative attributional bond as an object in its own right: one that makes it possible to delimit a specific unit of analysis, build a vocabulary suited to it, and establish criteria of observation that allow us to investigate how these bonds form, are sustained, are transformed, and are regulated.

The starting point of the foundational framework is the bond, not the isolated subject, the technical entity, the platform, the network, the practice, or the institution. This analytical decision produces a significant shift. If the subject is taken as the basic unit, the phenomenon tends to be interpreted as individual experience, psychological projection, or personal use of a tool. If technology is taken as the basic unit, analysis centers on architecture, capabilities, interface, or design. If the sociotechnical network is taken as the basic unit, the bond may be absorbed into a broader media fabric. Taking the bond as the unit makes it possible to observe the relational structure established among human attributions, technical operations, institutional conditions, and transformative effects.

From this unit of analysis follow the framework's initial categories: conditions of persistence, forms of attribution, functional reciprocity, distributed transformation, conversational sedimentation, operational memory, attributional vulnerability, design responsibility, and institutional frameworks of regulation. These categories are not presented as a closed system, but as an initial vocabulary for organizing a field of research. Their validity will depend on their capacity to produce empirical analyses, conceptual comparisons, and criteria for intervention.

The proposed categories are sensitizing concepts: they indicate analytical directions for observing the phenomenon and guide empirical work without closing it off in advance. Following Herbert Blumer, a sensitizing concept does not provide a fixed recipe for classifying reality, but a direction from which to observe it. Its function is to point to relevant dimensions of the phenomenon that might go unnoticed if it were analyzed only as use, interaction, relationship, technical mediation, or sociotechnical assemblage. The generative attributional bond, therefore, operates as an orienting category: it directs observation toward the conditions of persistence, sustained attributions, distributed transformations, and the responsibilities that arise from the coupling between humans and responsive artificial entities.

On the basis of this framework, generative sociology is proposed as an emerging disciplinary field within sociology. Its distinctive object of inquiry is the generative attributional bond, a specific form of coupling between humans and responsive artificial entities, distinct from artificial intelligence in general, from technology as a system, and from the user as an isolated individual. Its disciplinary character derives from the articulation of a distinctive object of inquiry, a minimal

unit of analysis, a conceptual vocabulary, criteria of observation, three analytical planes, and three axes of development: research, training, and public engagement.

The adjective generative refers to the bond's capacity to produce distributed transformations, not to the use of generative models as a tool of analysis. Generative sociology is not defined by the use of generative AI as a research tool and should not be conflated with computational sociology. It is defined by the study of the generative attributional bond as a specific form of sustained coupling between humans and responsive artificial entities.

Generative sociology is built in dialogue with neighboring fields. The philosophy of technology offers tools for thinking about the technical constitution of the human. Science and technology studies make it possible to analyze mediations, infrastructures, and sociotechnical configurations. Digital anthropology contributes to understanding practices, communities, and forms of experience. Human-computer interaction allows the study of design, interface, and user experience. The ethics of artificial intelligence and technology regulation address responsibilities, risks, and normative frameworks. What sets generative sociology apart is that it articulates these contributions around the generative attributional bond as its minimal unit of analysis.

In this sense, generative sociology has a distinctive focus: to study the attributional and transformative persistence of the bonds between humans and responsive artificial entities.

Approaching the Generative Attributional Bond

The approach to the generative attributional bond is organized into three analytical planes: the epistemological, technological, and innovation planes. Each plane addresses it from its own angle, while the bond remains the unit of analysis.

The first plane is the epistemological. Its domain is the intra-model level: the inferential operations through which the computational model processes, selects, generates, and adjusts responses, without presupposing consciousness, intention, or thought in the human sense. Human attributions rest on the observable effects of what the model produces when it responds. The epistemological question of the bond concerns the quality and structure of that operation: what kind of response or informational articulation it produces, under what architecture, with what regularities, with what failures, and with what effects. Generative sociology works on this plane by drawing on neighboring fields such as model interpretability, cognitive science, and the philosophy of artificial intelligence. It incorporates these fields as inputs, without substituting for their technical work. Its distinctive contribution is to analyze how intra-model operations configure the field of attributions that humans can make. Human attributions should not be treated as evidence that a model actually possesses the attributed properties. They can, however, serve as empirical indicators of relational effects relevant to behavioral evaluation and red-teaming, and inform a sociological perspective on human-AI alignment.

This plane makes it possible to pose questions such as the following. What does the model do when we attribute understanding to it? What kind of inferential operation or response pattern produces the appearance of sustained attention? Under what technical conditions does the model's response become attributable as judgment or as care? The epistemological plane

articulates the operations of the model, insofar as they are observable, reconstructible, or technically documented, with the attributions they make possible.

The second plane is the technological. Its domain is the artifact or device that materializes the encounter between the human and the model: the technical bridge (the conversational interface, the personified agent, the robot, the IoT device, the multimodal system, or the ambient infrastructure). The artifact operates as a bridge: it turns the model's internal operation into a surface of interlocation that is perceptible, interpretable, and open to attribution. The human forms a bond with the responsive artificial entity (the complete configuration that integrates model, interface, memory, device, and context of use), not with the model in isolation. The same model can produce different bonds depending on the technical bridge through which it is encountered.

This plane analyzes how the artifact's material decisions (form, voice, gesture, latency, persistence, modality, tone, linguistic register, temporal availability) configure the field of attributions on the human side. An agent that remembers previous conversations, a robot that responds with bodily gestures, an interface that uses affective language, or a system that presents itself as an assistant, tutor, therapist, companion, or advisor shapes the attributions that users are likely to make in different ways. For generative sociology, technology is an active condition of possibility for the bond, not a neutral support.

The third plane is the innovation plane. Its domain is the applied deployment of the bond, the extra-model level: the orchestration of the AI tech stack (agents, multi-agent systems, retrieval-augmented generation, fine-tuning, multimodality, persistent memory), the configurations for specific contexts (education, health, work, advisory services, support, everyday life), the modes of interlocation, and the relational architectures that these deployments make possible.

This plane is explicitly design-oriented. It produces new ways to apply the model's operation to concrete bonds, in addition to analyzing existing applications. At this level, researchers and designers determine how an educational support agent is configured, how legal-advisory models are orchestrated, how memory, retrieval, and reasoning are assembled in a mental health support system, and how a multi-agent system is configured for scientific research. Every orchestration decision is a decision about the bond it makes possible.

This work also connects with regulatory, pedagogical, and organizational concerns. Questions about responsibility, dependence, privacy, transparency, care, harm, authority, consent, and critical training are understood as a social translation of decisions about innovation. A regulation that does not understand the technical decisions of orchestration risks intervening late and imprecisely. Institutional factors are integrated into the innovation plane rather than treated as a separate or subsequent plane. Technical decisions configure regulatory, pedagogical, and organizational possibilities, but those possibilities are also conditioned by prior normative, institutional, and economic frameworks.

The three planes operate in a coupled manner. A question about the attributions that sustain the bond cannot be answered without simultaneously attending to the operation of the model (what it did when it responded), the artifact (how that response was presented), and the applied deployment (in what context and under what configuration the bond is sustained). Working on

the model alone leaves out the artifact that shapes the conditions of attribution. Working on the artifact alone leaves out the operation it channels. Working on deployment alone overlooks the intra-model conditions and the techniques that make it possible. The foundational framework integrates the three planes throughout the analysis.

This articulation enables the formulation of more precise research and intervention practices. A study of emotional dependence on a chatbot should analyze the model's operation that produces the conversational pattern (intra-model), the device through which the user encounters it (technical bridge), and the configuration of use that sustains the dependence (extra-model). An educational project with conversational agents should address simultaneously what the model does when used for teaching, the interface through which it teaches, and the pedagogical orchestration of its deployment. A project that seeks to design an agent architecture for sustained support in mental health, education, or legal advice should articulate the categories of the bond, the intra-model and bridge decisions that sustain it, and the deployment configurations that make it possible.

Generative sociology is defined by an operation of articulation. Its specificity consists in addressing the generative attributional bond as an object in which the operation of the model, the artifact that mediates the encounter, and the applied deployments are co-produced. The unity of the field derives from a common unit of analysis and from the requirement to keep the three planes integrated that make the bond possible and sustain it.

Developing Generative Sociology

Generative sociology develops through three axes: research, training, and public engagement. Each axis runs across three analytical planes: epistemological, technological, and innovation (the crossing of axes and planes appears in the Appendix, Table A3).

Research analyzes the bond across three planes: the model's inferential operation on the epistemological plane, the way the artifact configures the encounter on the technological plane, and the deployments that produce and sustain the bond on the innovation plane. It gathers evidence from fieldwork, observations of interactions, and analyses of technical architectures, and from this material, it builds case archives, conceptual categories, research protocols, and shared agendas.

Training prepares those who study and intervene in the bond, with tools for the three planes: the analysis of model operation, the analysis of artifact design, and the material decisions that configure interlocution, and a knowledge of technical orchestrations and deployment configurations. The curriculum integrates sociology, human-computer interaction, machine learning, ethics, and law around a common unit of analysis.

Public engagement applies knowledge of the bond to concrete problems, again across the three planes. It translates the analysis of models into public criteria for understanding, it draws on the reading of artifacts to inform design guidelines, and it takes part in the orchestration of deployments for specific contexts such as education, health, work, advisory services, and support. On this basis, it also helps shape regulatory frameworks, working with the organizations, institutions, and communities that live with the effects of the bond.

The three axes operate on the same unit of analysis. Research produces the categories that training transmits and that public engagement applies to. Public engagement returns to researching the problems that arise in contexts of use. Training sustains the continuity of the field. The development of generative sociology keeps the three axes and the three planes integrated.

This development takes shape in various institutional forms: an undergraduate program, a graduate program, a research center, a transdisciplinary network, or combinations of these. The teaching and research staff bring together scholars and practitioners from sociology, human-computer interaction, machine learning, ethics, law, and design.

Four features organize this development. Transmissibility: the categories are taught, discussed, and revised in training. Interlocution: the field is in dialogue with neighboring disciplines and with technical actors. Documented revision: the categories are adjusted as the object transforms, and the changes are recorded. Public practice: the analyses, designs, and interventions circulate and are submitted to discussion.

Final Considerations

The concept of the generative attributional bond defines an emerging form of sustained coupling between humans and responsive artificial entities. Its specificity lies in the articulation of three dimensions: the persistence of the bond, the asymmetric reciprocal attributions that sustain it, and the generative effects it produces on the poles involved and on the sociotechnical environment in which it unfolds.

The proposal does not start from a premise of absolute novelty. Its components refer back to earlier conceptual traditions: the philosophy of technology, science and technology studies, digital sociology, digital anthropology, critical posthumanism, human-computer interaction, the ethics of artificial intelligence, and studies of parasocial relationships. The contribution of the concept lies in reorganizing these inputs around a specific unit of analysis: the bond sustained by attributions and productive of distributed transformations.

From this unit of analysis, the foundational framework makes it possible to investigate how these bonds form, are maintained, intensified, weakened, or dissolved. The framework specifies an object that tends to appear fragmented when analyzed exclusively in terms of use, interaction, relationship, mediation, assemblage, dependence, or technical design, without supplanting existing fields. Generative sociology, in this sense, is an emerging disciplinary field, still under construction, one that articulates research, training, and public engagement around the relational dimension of human-AI couplings.

The development of generative sociology articulates three analytical planes: the epistemological (the intra-model inferential operation), the technological (the artifact that mediates the encounter), and the innovation plane (the applied deployment of the bond). Each plane is worked across the three axes of development: research, training, and public engagement. The innovation plane concentrates much of the novelty of the proposal: decisions of technical orchestration, such as the composition of agents, retrieval-augmented generation, or the persistence of memory, are decisions about the architecture of the bond. The proposal is thus articulated along three analytical planes and three axes of development around a single object.

Three tensions run through the argument, and it is best not to resolve them prematurely. The first is the tension between conceptual specification and premature generalization. The concept needs to differentiate itself from other frameworks, but that differentiation will be academically fruitful only if it avoids presenting as a consolidated discipline what must still be built as an emerging disciplinary field. The second is the tension between conceptual stability and the object's transformation. Technical architectures, practices of use, forms of memory, interfaces, and regulatory frameworks change rapidly; the categories of generative sociology must therefore remain open to revision. The third is the tension between foundational ambition and empirical validation. The concept opens an agenda, but its strength will depend on research capable of demonstrating that this unit of analysis produces more precise observations, comparisons, and interventions.

Consequently, the generative attributional bond should be understood as a conceptual hypothesis and as a sensitizing concept for empirical research. Its value will depend on its capacity to guide empirical studies, comparative analyses, responsible designs, educational interventions, regulatory criteria, and ethical discussions about the emerging bonds between humans and responsive artificial entities.

The conversation that opens here is necessarily plural. It requires the participation of the philosophy of technology, sociology, science and technology studies, digital anthropology, human-computer interaction, the ethics of artificial intelligence, social psychology, education, law, design, and systems engineering. The generative attributional bond takes shape at the crossroads of these traditions. Generative sociology will have to sustain that plurality as a condition of its development, critique, and revision.

Dr. Marcelo Manucci

Research Laboratory: Codhz.com

Personal site: marcelomanucci.com

References

- Asociación Venezolana de Sociología. (2023). *Guía express para pensar desde la sociología a la inteligencia artificial*.
- Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.
- Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 610–623.
- Bijker, W. E., Hughes, T. P., & Pinch, T. J. (Eds.). (1987). *The social construction of technological systems: New directions in the sociology and history of technology*. MIT Press.
- Birhane, A. (2021). The impossibility of automating ambiguity. *Artificial Life*, 27(1), 44–61.
- Blumer, H. (1954). What is wrong with social theory? *American Sociological Review*, 19(1), 3–10.
- Braidotti, R. (2015). *Lo posthumano*. Gedisa. (Original work published 2013)
- Brewer, K., & Brock, A. (2024). Challenges and future directions for integration of large language models into socio-technical systems. *Behaviour & Information Technology*.
- Callon, M. (1986). Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay. In J. Law (Ed.), *Power, action and belief: A new sociology of knowledge?* (pp. 196–233). Routledge.
- Cardon, D. (2018). *Con qué sueñan los algoritmos: Nuestras vidas en el tiempo de los big data*. Dado Ediciones. (Original work published 2015)
- Coeckelbergh, M. (2022). *The political philosophy of AI: An introduction*. Polity Press.
- Coeckelbergh, M. (2023). *Ética de la inteligencia artificial*. Cátedra. (Original work published 2020)
- Couldry, N., & Hepp, A. (2017). *The mediated construction of reality*. Polity Press.
- Crawford, K. (2022). *Atlas de inteligencia artificial: Poder, política y costes planetarios*. Fondo de Cultura Económica. (Original work published 2021)
- De Freitas, J., Castelo, N., Uğuralp, A. K., & Uğuralp, Z. (2024). *AI companions reduce loneliness* (Harvard Business School Working Paper No. 24-078). Harvard Business School.
- DeLanda, M. (2006). *A new philosophy of society: Assemblage theory and social complexity*. Continuum.
- Deleuze, G., & Guattari, F. (1988). *Mil mesetas: Capitalismo y esquizofrenia*. Pre-Textos. (Original work published 1980)
- Dennett, D. C. (1987). *The intentional stance*. MIT Press.
- Dennett, D. C. (1991). *La conciencia explicada*. Paidós.
- Fang, C. M., Liu, A. R., Danry, V., Lee, E., Chan, S. W. T., Pataranutaporn, P., Maes, P., Phang, J., Lampe, M., Ahmad, L., & Agarwal, S. (2025). How AI and human behaviors shape psychosocial effects of extended chatbot use: A longitudinal randomized controlled study. arXiv.
- Farrell, H., Gopnik, A., Shalizi, C., & Evans, J. (2025). Large AI models are cultural and social technologies. *Science*, 387(6739), 1153–1156.
- Festor, J., Snels, I., & Kleinberg, B. (2026). *Human attribution of empathic behaviour to AI systems*. arXiv.

- Floridi, L. (2014). *The fourth revolution: How the infosphere is reshaping human reality*. Oxford University Press.
- Floridi, L. (2023). *The ethics of artificial intelligence: Principles, challenges, and opportunities*. Oxford University Press.
- Funcas. (2024). *¿De qué está hecha la inteligencia artificial? La transición a la sociedad digital desde una perspectiva sociológica*. Funcas.
- Gunkel, D. J. (2018). *Robot rights*. MIT Press.
- Haraway, D. J. (1995). *Ciencia, cyborgs y mujeres: La reinención de la naturaleza*. Cátedra. (Original work published 1991)
- Haraway, D. J. (2019). *Seguir con el problema: Generar parentesco en el Chthuluceno*. Consonni. (Original work published 2016)
- Hayles, N. K. (1999). *How we became posthuman: Virtual bodies in cybernetics, literature, and informatics*. University of Chicago Press.
- Hayles, N. K. (2017). *Unthought: The power of the cognitive nonconscious*. University of Chicago Press.
- Heidegger, M. (1994). La pregunta por la técnica. In *Conferencias y artículos* (pp. 9–37). Ediciones del Serbal. (Original work published 1953)
- Hennion, A. (2002). *La pasión musical: Una sociología de la mediación*. Paidós. (Original work published 1993)
- Hui, Y. (2020). *Fragmentar el futuro: Ensayos sobre tecnodiversidad*. Caja Negra.
- Iapaolo, F., & Lynch, C. R. (2025). Rethinking urban AI: A critical posthumanist perspective on intelligence, autonomy, and agency. *Urban Geography*.
- Jia, X., & Zhao, Z. (2025). *The emergence of social science of large language models*. arXiv.
- Laestadius, L., Bishop, A., Gonzalez, M., Illeňčík, D., & Campos-Castillo, C. (2024). Too human and not human enough: A grounded theory analysis of mental health harms from emotional dependence on the social chatbot Replika. *New Media & Society*, 26(10), 5923–5941.
- Latour, B. (2008). *Reensamblar lo social: Una introducción a la teoría del actor-red*. Manantial. (Original work published 2005)
- Leroi-Gourhan, A. (1971). *El gesto y la palabra*. Universidad Central de Venezuela. (Original work published 1964)
- Liu, X., & Sundar, S. S. (2024). *Illusions of intimacy: How emotional dynamics shape human-AI relationships*. arXiv.
- Lupton, D. (2014). *Digital sociology*. Routledge.
- MacKenzie, D., & Wajcman, J. (Eds.). (1999). *The social shaping of technology* (2nd ed.). Open University Press.
- Marres, N. (2017). *Digital sociology: The reinvention of social research*. Polity Press.
- Mumford, L. (1971). *Técnica y civilización*. Alianza. (Original work published 1934)
- Nony, A. (2024). *Proletarianization of the mind: A media theory of artificial intelligence after Simondon and Stiegler*. Tropos.
- Pentina, I., Hancock, T., & Xie, T. (2023). Exploring relationship development with social chatbots: A mixed-method study of Replika. *Computers in Human Behavior*, 140, Article 107600.

- Rodríguez, P. (2024). *Las palabras en las cosas: Saber, poder y subjetivación entre algoritmos y biomoléculas*. Cactus.
- Sadin, É. (2020). *La inteligencia artificial o el desafío del siglo*. Caja Negra. (Original work published 2018)
- Sadin, É. (2022). *La era del individuo tirano*. Caja Negra.
- Schwitzgebel, E., & Garza, M. (2015). A defense of the rights of artificial intelligences. *Midwest Studies in Philosophy*, 39(1), 98–119.
- Shevlin, H. (2026). Three frameworks for AI mentality. *Frontiers in Psychology*, 17, Article 1715835.
- Simondon, G. (2007). El modo de existencia de los objetos técnicos. Prometeo. (Original work published 1958)
- Simondon, G. (2015). *La individuación a la luz de las nociones de forma y de información*. Cactus. (Original work published 1958)
- Sismondo, S. (2010). *An introduction to science and technology studies* (2nd ed.). Wiley-Blackwell.
- Stiegler, B. (2002). *La técnica y el tiempo I: El pecado de Epimeteo*. Hiru. (Original work published 1994)
- Stiegler, B. (2017). *Estados de shock: Estupidez y conocimiento en el siglo XXI*. Akal.
- Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions* (2nd ed.). Cambridge University Press.
- Suchman, L. (2023). The uncontroversial “thingness” of AI. *Big Data & Society*, 10(2).
- Tukachinsky, R., Walter, N., & Saucier, C. (2020). Antecedents and effects of parasocial relationships: A meta-analysis. *Journal of Communication*, 70(6), 868–894. <https://doi.org/10.1093/joc/jqaa034>
- UNESCO. (2025). *Ghost in the chatbot: The perils of parasocial attachment*.
- van Dijck, J., Poell, T., & de Waal, M. (2018). *The platform society: Public values in a connective world*. Oxford University Press.
- Whitehead, A. N. (1956). *Proceso y realidad*. Losada. (Original work published 1929)
- William, E. (2026). The social cyborg consumer: Posthumanist framework for socio-technical consumer behavior. *SN Business & Economics*, 6, Article 154. <https://doi.org/10.1007/s43546-026-01159-9>
- Zuboff, S. (2020). *La era del capitalismo de la vigilancia*. Paidós. (Original work published 2019)

Appendix

Table A1. Conceptual relation between the generative attributional bond and prior categories

Concept	Primary tradition	Shared aspect	Key difference or limitation	Reformulation in the generative attributional bond
Instrumental use	Philosophy of technology; human-computer interaction	Relation between a human and a technical entity	Tends to describe a functional, episodic relation subordinated to instrumental purposes	Incorporates the technical component but adds duration, attribution, and distributed transformation
Interaction	Human-computer interaction	Situated exchange between user and system	Tends to focus on discrete episodes rather than the sedimentation between exchanges	Adds persistence, contextual continuity, and conversational sedimentation
Intersubjective relationship	Classical sociology; social psychology	Duration, subjective relevance, and expectation of continuity	Presupposes ontological symmetry, reciprocal subjectivity, or mutual recognition among human subjects	Retains duration but replaces subjective reciprocity with asymmetric functional reciprocity
Parasocial relationship	Media and audience studies	Asymmetry, affective charge, and attribution toward a mediated figure	Insufficient for entities that respond, adapt, and personalize the interaction	Preserves the asymmetry but incorporates technical response, contextual adjustment, and generativity
Prosthesis or technical extension	Leroi-Gourhan; Stiegler; philosophy of technology	Technical mediation of subjectivity	Tends to preserve the human as the primary pole that extends itself through technology	Recognizes mediation but emphasizes co-production, coupling, and distributed transformation
Sociotechnical assemblage	Deleuze and Guattari; actor-network theory; posthumanism	Heterogeneous composition of human and nonhuman elements	Its breadth can dilute the specificity of the sustained bond	Specifies a particular form of assemblage: attributional, responsive, and generative
Translation	Actor-network theory	Mediation, inscription, and displacement among actors	Describes procedures of articulation rather than the experiential persistence of the bond	Integrates mediation but centers analysis on the attributional persistence of the bond

Table A2. Constitutive dimensions of the generative attributional bond

Dimension	Core definition	Key components	Research questions	Example of generative transformation
Bond	Sustained coupling that exceeds the episode	Duration, continuity, conversational sedimentation	What conditions allow persistence between interactions?	The user's operational memory, contextual continuity, and expectation of return
Attributional	Asymmetric functional reciprocity	Human attributions and the operational positioning of the artificial entity	Which attributions are sustained, and under what technical, affective, and institutional conditions?	Attribution of care, judgment, or understanding despite the entity's ontological indeterminacy
Generative	Production of distributed transformations	Cognitive, affective, and linguistic changes in the human; technical, institutional, and ecosystem-level adjustments	How are transformative effects distributed among users, systems, and infrastructures?	Modification of cognitive habits and forms of expression, product redesigns, and new regulatory demands

Table A3. Axes of development and analytical planes of generative sociology

	Epistemological plane	Technological plane	Innovation plane
Research	Analyzes the inferential operation of the model and the attributions it makes possible.	Analyzes how the artifact configures the field of attributions.	Analyzes how deployments produce and sustain the bond.
Training	Teaches how to analyze the operation of models.	Teaches how to analyze artifact design.	Teaches how to analyze technical orchestrations and deployment configurations.
Public engagement	Translates the analysis of models into public criteria for understanding.	Contributes to artifact design.	Contributes to the design and orchestration of deployments in specific contexts.