

MEANING PRODUCTION IN HUMAN–BONOBO INTERACTIONS: A SEMIOTIC ANALYSIS OF TWO SCENES AT THE LOLA YA BONOBO SANCTUARY

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ABSTRACT

This study analyzes two scenes of interaction between humans and bonobos observed at the Lola ya Bonobo Sanctuary in the Democratic Republic of the Congo to understand the mechanisms of meaning production in interspecies relationships. Based on a qualitative approach relying on participant observation and the analysis of two filmed scenes, the research draws on Fontanille's semiotics of practices and Greimas's actantial model to examine the role of gestures, postures, movements, objects, and distances in the coordination of interactions. The findings show that meaning is progressively constructed through reciprocal adjustments between caregivers and bonobos, in which misunderstandings contribute to the regulation of action rather than to its failure. This research thus demonstrates that interspecies interactions are part of a dynamic of situated negotiation and contributes to the development of an interspecies semiotics grounded in empirical data.

Keywords: Relationships; Bonobos; Caregiver; Situated Interaction; Actantial Analysis; Meaning Production.

1.0 INTRODUCTION

Interactions between humans and animals are receiving increasing attention in research in semiotics, biosemiotics, and zoosemiotics. Long centered on human language, the sciences of signs are now focusing on the processes of meaning production that emerge from relationships between species, in which gestures, postures, vocalizations, objects, and movements contribute to the organization of action. From this perspective, Sebeok considers zoosemiotics as the study of the sign systems specific to animals and of their interactions with their environment (Sebeok, 1972, pp. 15–20). Likewise, Maran shows that care settings, such as primate sanctuaries, constitute privileged environments for observing the semiotic processes that develop between humans and animals (Maran, 2017, pp. 201–205).

Fontanille's work has profoundly renewed this reflection by proposing a semiotics of practices that shifts analysis from abstract structures to concrete and situated actions. According to this author, meaning does not reside solely in texts or discourses, but is also constructed through social practices via interactions among actors, objects, and their environment (Fontanille, 2008, pp. 26–32). This approach appears particularly relevant for analyzing relationships between caregivers and bonobos, where the coordination of behaviors relies largely on bodily adjustments, distances, rhythms of action, and material mediations.

Furthermore, several authors emphasize that interspecies interactions are characterized by ongoing processes of interpretation and readjustment. Kohn shows that living beings continuously interpret the signs produced by other species without these interpretations necessarily leading to perfect understanding (Kohn, 2013, pp. 8–12). Despret also argues that relationships between humans and animals are built through regimes of address and response in which uncertainty and repeated actions play an essential role (Despret, 2004, pp. 111–134). In the same vein, Haraway considers that interspecies relationships are based on forms of co-presence and co-construction that reciprocally transform the partners in the interaction (Haraway, 2008, pp. 3–5).

Despite these theoretical advances, research based on detailed empirical observations of everyday interactions between humans and bonobos remains relatively limited, particularly in African sanctuaries. Existing studies often privilege behavioral or ethological dimensions, whereas the semiotic mechanisms of meaning construction in interactional practices remain insufficiently documented.

It is within this perspective that the present study is situated. It analyzes two scenes observed at the Lola ya Bonobo Sanctuary in the Democratic Republic of the Congo: the first concerns an exchange between a caregiver and a bonobo involving a water container; the second concerns a greeting performed by an infant bonobo at the request of a female caregiver. The objective is to show how gestures, postures, movements, objects, and the management of distance contribute to meaning production in these interspecies interactions. More specifically, this research seeks to answer the following question: how do the semiotic resources mobilized during interactions between caregivers and bonobos contribute to the coordination of action and the construction of meaning? The proposed hypothesis is that meaning emerges from a process of reciprocal adjustments in which misunderstandings, repetitions, and negotiations constitute central elements of the interactional dynamics.

From this perspective, bonobos constitute a particularly relevant model for the study of interspecies interactions. As close evolutionary relatives of human beings, they display complex social abilities characterized by cooperation, social learning, and multimodal communication. De Waal's research has notably shown that great apes use relational strategies based on tolerance, negotiation, and behavioral adjustment in social situations (de Waal, 1998, pp. 145–150). These observations invite us to consider bonobo behaviors not as mere instinctive responses but as practices embedded in relational contexts where different signs may be interpreted by the interaction partners.

The Lola ya Bonobo Sanctuary provides a particularly favorable setting for observing these processes. Unlike controlled experimental situations, this environment makes it possible to study everyday interactions between caregivers and bonobos in a context where a relational history has gradually been built. Caregivers develop with the animals habits of interaction, routines, and forms of mutual recognition that constitute a genuine shared practical repertoire. In this context, semiotic analysis makes it possible to examine how ordinary behaviors—approaching, waiting, handing over an object, responding to a request, or modifying bodily distance—become meaningful within an interspecies relationship.

The interest of this research therefore lies in shifting the analytical perspective: the aim is not merely to determine whether bonobos possess communication systems comparable to those of

humans, but rather to study how two different species succeed in coordinating their actions in concrete situations. This orientation is consistent with Haraway's perspective, according to which encounters between species constitute spaces of reciprocal transformation in which each partner participates in the construction of the relationship (Haraway, 2008, pp. 3–5). The study of the scenes observed at the Lola ya Bonobo Sanctuary therefore makes it possible to examine meaning production as a relational, emergent, and situated phenomenon produced within the shared space of interaction.

From this perspective, the present research also forms part of the extension of the Theory and Practice of BOOTO Semiotics (TPBS), which proposes broadening the field of semiotics to the study of meaning-production processes in relationships among different forms of life. Based on the principle "sign–meaning–life," this approach considers that meaning emerges from interactions among organisms, their environments, and the practices they develop to adapt and act together. Applied to human–bonobo relationships, TPBS makes it possible to view bodily behaviors, mediating objects, and interactional adjustments as semiotic manifestations embedded in a relational dynamic (Booto, & Ohaki., 2026, p. 6). It does not seek to assimilate animal communication systems to human ones, but rather to analyze the conditions under which forms of partial understanding and coordination become possible between different species.

2.0 MATERIALS AND METHODOLOGY

2.1 Type of Research

This study adopts a qualitative, descriptive, and interpretive approach. It draws on the semiotics of practices to analyze the mechanisms of meaning production in human–bonobo interactions observed in real-life situations. This approach is well suited to the study of interactional phenomena because it prioritizes the observation of situated practices rather than the quantitative measurement of behaviors (Fontanille, 2008, pp. 26–32).

2.2 Study Site

The research was conducted at the Lola ya Bonobo Sanctuary, located in Kinshasa, Democratic Republic of the Congo. This sanctuary shelters orphaned bonobos or those rescued from illegal wildlife trafficking and provides a privileged setting where everyday interactions between caregivers and bonobos can be observed in a relatively stable environment.

2.3 Data Collection

The data were collected through participant observation conducted over six months, from October 2025 to March 2026. This immersion was complemented by field notes and video recordings totaling forty-two hours of observation. From the entire corpus, two scenes were selected for their semiotic richness: the first, recorded on April 21, 2026, concerns an interaction between the caregiver Papy and the bonobo Salonga involving a water container; the second, observed on April 30, 2026, concerns a greeting scene between the caregiver Anto and the infant bonobo Moba in the presence of researchers (Field Survey, 2026).

2.4 Data Analysis

The data were analyzed using a semiotic approach inspired by Fontanille's semiotics of practices (2008, pp. 26–32) and the actantial model of Greimas and Courtés (1979, pp. 17–20). The analysis consisted of identifying the actants, value objects, narrative programs, and the semiotic resources mobilized in each scene, including gestures, postures, movements, distances, objects, and vocalizations.

Particular attention was paid to reciprocal adjustments and situations of misunderstanding in order to understand how these elements contribute to the coordination of action and the production of meaning in interspecies interactions.

This research also adopts a situated observational perspective, considering that interspecies interactions cannot be understood independently of the context in which they occur. The observed behaviors were therefore analyzed by taking into account the material environment of the sanctuary, the presence of caregivers, the relational history between the actors, and the specific conditions of each scene. This attention to context is consistent with the semiotics of practices, which considers that meaning depends on the articulation between subjects, objects, and the circumstances of action (Fontanille, 2008, pp. 26–32).

The selection of the two analyzed scenes follows a principle of semiotic relevance rather than one of statistical representativeness. The water-container scene was selected because it highlights the role of a mediating object in the organization of the interaction, whereas the greeting scene makes it possible to observe how a gesture becomes meaningful in a situation of address, response, and social recognition. These two situations therefore make it possible to examine different modes of meaning construction: coordination around an object and the production of a relational act.

Finally, the analysis took into consideration the limitations inherent in qualitative research on interspecies interactions. Bonobo behaviors are not interpreted as direct equivalents of human intentions, but rather as observable actions embedded in a relational dynamic. This methodological precaution aims to avoid anthropomorphism while recognizing the animals' capacity to participate in processes of adjustment and interpretation. Thus, the adopted approach seeks to maintain a balance between rigorous empirical description and semiotic interpretation of the observed practices.

Within the framework of this research, data analysis also relies on the principles of the Theory and Practice of BOOTO Semiotics (TPBS), used as a complementary perspective for interpreting the processes of meaning production in interspecies interactions. Based on the principle "sign–meaning–life," this approach leads to the examination of the observed practices as semiotic configurations in which gestures, objects, postures, and bodily behaviors contribute to the emergence of meaning in a given situation. TPBS therefore makes it possible to understand human–bonobo interaction not as a simple exchange of signals, but as a relational dynamic in which each actor contributes, through actions and responses, to the progressive construction of shared meaning (Bootto, & Ohaki., 2026, p. 9).

3.0 RESULTS

The analysis of the two interaction scenes shows that meaning production between humans and bonobos is based on a dynamic of reciprocal adjustments rather than on the simple transmission

of signals. In the first scene, the water container appears as a semiotic object of mediation: its gradual placement, the caregiver's management of distance, and the bonobo's cautious approach show that the coordination of action is constructed step by step. The interaction reveals an actantial organization in which each partner continuously adapts his or her behavior according to the other's reactions.

The second scene shows that the infant bonobo's greeting does not constitute a simple learned behavior but rather a relational practice embedded in a specific social context. At the caregiver's request, the greeting gesture is recognized by the researchers as an appropriate response to the situation. This scene demonstrates that gestures derive their meaning from the relationship between the actors, the interactional context, and the shared expectations.

The comparative analysis of the two scenes also reveals that gestures, postures, movements, objects, and the management of distance constitute the principal semiotic resources mobilized in interspecies interactions. The observed misunderstandings do not represent communication breakdowns but rather moments of adjustment that enable the partners to redirect their actions and maintain the coordination of the exchange.

Overall, the results show that interactions between humans and bonobos are organized around situated negotiation processes in which meaning progressively emerges from bodily and relational practices. These observations confirm the relevance of an approach based on the semiotics of practices for understanding the mechanisms of meaning production in interspecies relationships.

The detailed analysis of the two scenes also shows that interspecies coordination is based on a progressive organization of actions. In the water-container scene, the interaction does not occur through the immediate transfer of the object but through a succession of stages marked by the caregiver's approach, the bonobo's reaction, the modification of distance, and the placement of the object on the ground. This sequence highlights a gradual construction of interactional trust, in which each partner adjusts his or her behavior according to the signals produced by the other.

The observations also reveal the importance of the body as a support for meaning. The bonobo's bipedal postures, body orientation, arm extension, the caregiver's slowing of movement, and the greeting gesture all constitute elements that organize the relationship. These bodily manifestations do not function in isolation but derive their value from the sequence of actions and from the overall situation in which they appear. Thus, meaning production is manifested through a combination of verbal and nonverbal semiotic resources.

Finally, the comparison of the two scenes highlights different forms of bonobo participation in the interaction. In the first situation, Salonga is involved in a dynamic of negotiated access to a material resource; in the second, Moba participates in a social situation in which the gesture is interpreted as a response to a human request. In both cases, the results show that bonobos are not merely recipients of human actions but active partners whose reactions influence the course of the exchange. The observed interactions therefore appear as dynamic processes based on reciprocity, adaptation, and the progressive construction of a shared interactional order.

The results obtained also provide empirical elements capable of enriching the Theory and Practice of BOOTO Semiotics (TPBS). The two analyzed scenes show that meaning production

does not depend solely on intentional or conventional signs but emerges from a dynamic relationship between the signs produced, the partners' interpretations, and the living conditions in which the interaction takes place. In both the water-container scene and the greeting scene, gestures, objects, and bodily behaviors appear as manifestations of a process in which the sign acquires its value through action and relationship. These observations are therefore consistent with the "sign–meaning–life" principle proposed by TPBS, according to which meaning is constructed through the articulation between semiotic forms, lived experiences, and interactions among living beings (Booto, & Ohaki., 2026, p. 13).

4.0 DISCUSSION

The findings of this study show that interactions between humans and bonobos are not based solely on the exchange of signals but on the progressive construction of meaning through bodily adjustments, mediating objects, and situated practices. This observation is consistent with the conception of the semiotics of practices developed by Fontanille, according to which meaning emerges through action and through the relationships that actors maintain with their environment rather than through abstract sign systems alone (Fontanille, 2008, pp. 26–32). In the two scenes analyzed, the water container and the greeting gesture acquire their value only within the interactional situation that makes them relevant.

The analysis also shows that actantial roles are not fixed. The caregiver, the female caregiver, and the bonobos continuously adapt their behaviors according to each other's reactions. This dynamic confirms the relevance of the actantial model of Greimas and Courtés while showing that, in interspecies interactions, narrative trajectories are marked by continuous negotiations and successive readjustments (Greimas & Courtés, 1979, pp. 17–20). Objects, distances, and movements thus become genuine mediators of action.

Furthermore, the observations confirm the work of Despret (2004, pp. 111–134) and Haraway (2008, pp. 3–5), who consider interspecies relationships as processes of co-construction based on response, mutual attention, and uncertainty. The misunderstandings observed in this study do not reflect communication failure; on the contrary, they constitute moments of adjustment that enable the partners to redirect their behaviors and maintain the coordination of the interaction. This interpretation is also consistent with Kohn's approach (2013, pp. 8–12), according to which living beings continuously interpret the signs produced by other species without perfect understanding being necessary.

Finally, this research makes an empirical contribution to interspecies semiotics by drawing on direct observations conducted at the Lola ya Bonobo Sanctuary. While many studies remain essentially theoretical, this study concretely demonstrates how meaning production is constructed in the everyday practices between humans and bonobos. It therefore opens perspectives for comparative research involving other species, other sanctuaries, or other contexts of human–animal coexistence in order to enrich the understanding of the semiotic mechanisms underlying interspecies interactions.

Beyond the two scenes analyzed, this research invites us to rethink the very notion of communication from an interspecies perspective. The observed interactions do not correspond to a model based on the transmission of a message from a sender to a receiver, but rather to a relational dynamic in which each partner participates in the construction of meaning. This

conception is consistent with the perspectives of biosemiotics and zoosemiotics, which consider living organisms as being engaged in processes of interpreting their environment (Sebeok, 1972, pp. 15–20). Bonobos thus appear as semiotic actors capable of responding to situations according to their own perceptual and interactional modalities.

Furthermore, the study shows that the semiotic approach complements classical ethological analyses by paying attention to the qualitative dimensions of interactions. Ethology generally describes observable behaviors, whereas semiotics seeks to understand how these behaviors become meaningful in a given situation. The analysis of gestures, objects, and distances thus reveals a relational dimension that is often difficult to access through simple behavioral observation. From this perspective, sanctuaries become spaces in which emerging forms of coexistence and partial understanding between different species can be studied (Maran, 2017, pp. 201–205).

However, this approach requires maintaining interpretive caution in order to avoid an excessive projection of human categories onto animal behavior. The objective is not to attribute to bonobos intentions identical to those of humans, but to describe how their actions participate in observable processes of coordination. This position is consistent with Despret's work, which invites us to consider animals as interaction partners whose responses contribute to transforming the situation itself (Despret, 2004, pp. 111–134). Thus, the interspecies semiotics proposed here does not seek to erase the differences between species but rather to analyze the forms of relationship that make a shared production of meaning possible.

The results obtained also make it possible to discuss the contribution of the Theory and Practice of BOOTO Semiotics (TPBS) to the study of interspecies relationships. The observations conducted at the Lola ya Bonobo Sanctuary show that the sign cannot be separated from the relationship that produces it and from the context in which it acquires meaning. The "sign–meaning–life" principle proposed by TPBS thus finds empirical support in the analysis of the observed interactions: the bonobo's gesture, the caregiver's approach, the circulation of an object, or even a bodily response do not constitute independent meaningful units, but rather manifestations embedded in a vital and relational dynamic. This perspective contributes to broadening the semiotics of practices by integrating more fully the biological, bodily, and intersubjective dimensions of meaning production. It therefore invites us to envision an interspecies semiotics in which living beings are not merely producers of signs but partners engaged in continuous processes of interpretation and adjustment (Booto, & Ohaki., 2026, p. 13).

5.0 CONCLUSION

The objective of this study was to analyze the mechanisms of meaning production in interactions between humans and bonobos based on two scenes observed at the Lola ya Bonobo Sanctuary. The analysis showed that gestures, postures, movements, objects, and the management of distance constitute essential semiotic resources in the coordination of actions between the two species. The findings demonstrate that meaning does not pre-exist the interaction but is progressively constructed through the reciprocal adjustments, negotiations, and repetitions that characterize the observed practices.

From a theoretical perspective, this research confirms the relevance of the semiotics of practices for the study of interspecies interactions and shows that the actantial model can be mobilized to analyze situations involving partners from different species. It thus contributes to the development of an interspecies semiotics grounded in empirical data by proposing an interpretation of interactions in which objects, bodies, and practices occupy a central place in meaning production.

However, this study has certain limitations, notably the limited number of scenes analyzed and the fact that the observations were conducted in a single sanctuary. Future research could expand the corpus to include other interactions, other primate species, or other contexts of coexistence between humans and animals. Such an approach would make it possible to deepen the understanding of the semiotic mechanisms that organize interspecies relationships and to strengthen the foundations of a comparative interspecies semiotics.

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