

# Pragmatic Challenges in Studies of Animal Acts. Interpreting Zoo-Communication from a Systemic Socio-Semiotic Perspective

Original Study

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**Abstract:** Animals' communicational acts are meta-studied based on a framework interrelating five *aspects* form, content, act, time, and space in a systemic perspective. Aspects relate to *levels*, sign, utterance, life-genre, and lifeworld and to *processes*. Six studies are investigated, positioning *act* as part of a web of communicational elements aiming at illustrating the *pragmatic* role act and life-genre play in sustaining animal life-functions. Re-interpretations of studies of signals, calls, and gestures further aim at enhancing the framework epistemologically and methodologically for the study of zoo-communicational pragmatics. It is suggested that since act tends to be treated as a limited category the field could benefit from a *systemic* perspective, one that allows balancing open and closedness on all levels and between all aspects. Studies of great apes' gestures are studied in particular, focusing which epistemic position *acts* have when communication is seen as systemic. The paper concludes that a socio-semiotic, systemic, and pragmatic framework can play a constructive role when designing and validating research on zoo-communicational acts.

**Keywords:** Pragmatics, animal life-functions, systemness, meta-studies of communication, animal acts, life-genres.

## 1. INTRODUCTION

### 1.1. Background for Project and Study

This study is part of an overall project investigating the role *kinds* of utterances, so-called life-genres, may play for understanding animal communication. In a series of articles four of five assumed key aspects constituting animal utterances and hence specific kinds of communication called life-genres have been investigated in the project so far. Through meta-studies of empirical research on animal communication, the aspects *reference* (Ongstad, 2021a, 2022a), *space* and *time* (Ongstad, 2022b, 2023), and structured *form* (Ongstad, 2024) have been studied more in detail. The present paper studies the final fifth, *act*.

A methodological solution for the project as a whole has been to study each key aspect in depth separately.

This approach is chosen in order to handle the challenge of the process of *the hermeneutic circle*. The metaphor describes the process of interpreting and refers to the idea that understanding of utterances as a whole is established by mapping parts back and forth in a circle or as a spiral to a final whole. The process forces research that involves communicational *meaning* to make thorough studies of *parts* before eventually balancing how parts make a whole that is more than a straight sum of its parts (Gadamer, 1975). For the project this implies that it can end and conclude only after this last aspect, the act, is covered.

Yet, a whole of parts studied on a particular level always implies a new, overarching *level* and hence yet a possible new epistemology (Welsch, 2004). The assumption is that signs make up utterances, utterances life-genres, and life-genres finally lifeworlds (Luckmann,

2009; Habermas, 1984). As a whole such a system is defined as *communicational* (Baecker, 2013), not just 'behavioral' focusing *acts* or 'semiotic', focusing *signs* and sign types as such (Sebeok, 1965). The logic of the sign needs to be part of the logic of the utterance which differs from the logic of the sign. The same holds for the level of utterance as part of a life-genre as well as for life-genres collective significance for sustaining and developing an animal's lifeworld.

These claims therefore imply an extension of the scope by moving from a categorial to a relational and thus to a *systemic* epistemology (Schommer-Aikins, 2004), one that will obstruct possibilities for direct final inferential closing. This article's main focus is hence on the aspect *act/s* – as a *pragmatic* part of communication as systemic which will lead to specific challenges for empirical studies.

Firstly, how to distinguish between animals' communicative and 'non-communicative' acts? This question concerns the relationship between ethological and bio-semiotic epistemologies, and hence even their aims as fields and sciences (Brier, 2015). For convenience I have termed the common research target for the sciences or fields I investigate for zoo-communication. Secondly, the pragmatics of such studies has been under critique (Bar-On, 2021, 2024; Bar-On & Moore, 2017; Sharov, 2002). In Ongstad (2025) such criticisms are studied more in detail. In general, the critique asks for a broader scope, which I have found in the semiotic-systemic works of Morris, Bakhtin, Halliday, Habermas, and Witzany, all-encompassing pragmatics in between and integrated with syntax and semantics. This paradigmatic general grip indeed extends our conception of communication, but increases, by the same token the complexity confronted with the task to operationalise concepts for empirical studies, as needed in this study of act.

## 1.2. Key Outcomes of the Theoretical Study

Ongstad (2025) is a theoretical and partly methodological inquiry intended as a preliminary in depth-study of zoo-communicational pragmatics. It ended with a set of key points concerning operationalisation of main concepts for and designing of an empirical (this present) study. The following points, partly rewritten, are the most basic ones from the summary (Ongstad, 2025, p. 16-18).

A. *The level sign*. A sign stands for something else in some respect for someone. This implies that signs only work between minds and hence as elements in communication. When signs get a role in an utterance they are considered as dependent. When a single sign is even an utterance it is seen as independent, though as an utterance.

Signs are in general regarded as dependent elements, and a meta-study should demonstrate how concrete sub-elements of 'structured forms' may function as signs. The framework (FW) (see Fig. 1) has refrained from generating hypotheses about these signs because documentation of such sign elements should proceed theoretical assumptions.

B. *The level utterance*. An utterance is a communicational unit consisting of the five joint, reciprocally defined aspects form, content, act, time, and space expressed by an agent. Communicational means that an unintended cough, as a reflex, is not considered as an utterance. This does not mean that *receivers* may not perceive it as such.

The sign's dependency is partly caused by the project's thesis that signs are dependent parts in utterances, since utterance is made the core, focused concept in the FW and is therefore pivotal for how communication works – by externally connecting the level of signs as micro to the levels of life-genres and lifeworlds as macro. The utterance simultaneously connects the aspects internally, included the highlighted, focused aspect 'act' in this study.

Discussions in the paper revealed principle differences regarding pragmatic positioning, but the general picture was increased integration of aspects, cf. the notions *the syntax/semantics/pragmatics interface*, *the multiple information hypothesis*, and *intermediary pragmatics*. Operationalisation for studying utterances should therefore prepare for complexity by designing a meta-study as mostly relational rather than just categorial and even prioritise advanced studies in the sample. A more fine-grained pattern of animal acts can only be demonstrated empirically. A framework is just a theory. A similar relationship is for instance found between Saussure's and Chomsky's theories on the one hand and empirical pragmatist, such as for instance Halliday on the other. Even Peirce's *specular grammar* versus Morris' pragmatics can illustrate this difference between grammar and communication (Ongstad, submitted).

C. *The level life-genre*. A genre is simply any *kind* of utterance and hence a kind of communication. Life-genres are those that directly or indirectly serve basic life-functions. The logic of the concept *kind* implies that genre phenomenologically works as an advanced, complex, paradoxical sign-cluster that combines difference and similarity fused into one. Genre is a mereological phenomenon.

The theory-part stated that utterances could be considered as 'proto-communication'. This implies that it is only with the inclusion of the level life-genre that 'real' communication (between utterers and interpreters) takes place. For empirical research life-genres are nevertheless quite slippery objects. Although the utterance-aspects 'structured form' and the contextual time&space are concrete and documentable, the aspects 'content referred to' and 'addressed acts' are in principle immanent and presuppose symptomatic interpretation. Animals, researchers, and meta-researchers have all to balance the concrete with the immanent in order to establish a meaningful whole. In addition, they need to estimate by interpretation which life-function(s) the utterance and the specific life-genre in question may serve. This further means that (life-)genre plays a key role in any hermeneutic circle, when trying to make sense, understand, or analyse communication, be it animals or humans.

D. *The level lifeworld.* Within German sociology the concepts Umwelt, Innenwelt, and Lebenswelt have been developed further defining lifeworld as communicational reciprocities between a subject's 'inner world', 'world', and 'society'. The theoretical framework is admittedly quite implicit about this conception, but the choice has been motivated by the view that a meta-study focusing act will be less concerned with this ultimate level. In Olteanu and Ongstad (2024, p. 534) the concept is explained as follows:

Lifeworld can be seen as an ultimate *mental* background and environment for meaning making. According to Habermas (1984, p. 100), a lifeworld consists of a dynamic compound of three interwoven and simultaneous *components*: an inner world (*self*), a mental representation of an outer world (the *world* as referential, mental 'objects'), and relations to others (*society*). There are thus a subjective world, which are all experiences to which each communicator has privileged access, an objective world, about which there can be made true statements, and a social world consisting of all interpersonal relations. To the components there are three corresponding reproduction *processes*: socialization, cultural reproduction, social integration (Habermas, 1984, p. xxvii, p. 100). Although Habermas (1998) stressed the stability and the reproduction of these tripartite lifeworld aspects, they should also be seen as in flux, renewed through semiotic processes.

E. *The aspects.* The focus of the theoretical study was on the aspect 'act' and its relational complexity. The pragmatic terms that reflected variations in different research-fields were segregated in two groups, one characterised the pragmatics of uttering and the other the pragmatics of receiving. Despite this segregating 'split', the FW presupposed that analyses should consider both the sequence from uttering to receiving and this very process from the perspective/level of life-genre. The paper suggested a row of life-processes and life-functions that might be involved.

F. *The processes.* What sustains the FW as system, is the sum of the dynamics of signs in all part. 'Semiosis' is accordingly seen as the main process for meaning making. When focus is on acting as a signifying process, things become more complex. The discussion problematised the verbalising of 'act' as performatives. The presumption that a signal, a behavior, or an act, can easily be tagged by a subjectively chosen English verb, is an easy way out of a basic phenomenological problem. Cautious interpretations were recommended.

'Genrefication' as a process was defined as the establishing of or the change in meaning of a life-genre or a set or system of life-genres. Such changes are generated by new sign-processes in one or more of the aspects. Such processes are just as hard to document as conceptual retentions of life-genres, but 'genrefications'

tend to occur during environmental change and shift of habitat (as will be illustrated).

'Positioning' was described as a process performed by a mind or agent who chooses a certain combination of aspects within the FW for meaning-making. It should be underlined that positioning is an *empty* concept until it is explicitly tied to specific agents and aspects. For example when a study will perform *act*-positioning by applying a pragmatic perspective. Even analysing other researchers' studies will imply whole sets of positionings. In principle, positioning involves connection to all aspects in a communicational system and is therefore a key methodological concept. Utterers, receivers, and interpreters are all doomed to constant positioning of themselves within communication.

H. *The dominant.* Any analysis will have to balance the importance of each involved aspects on all four levels. Metaphorically, a 'dominant' can be seen as the possible 'heaviest vector' in utterances. Conclusions will depend on what dominates a specific positioning. Methodologically, interpretation and concluding of course involve traditional ways of inferencing such as induction and deduction. However due to the relational and open nature of the FW's systemness quite a few conclusions would have to be drawn abductively.

I. *Validation.* Systemness complicates validation but should basically balance between aspects in the triad subjectivity-objectivity-intersubjectivity (in context).

J. *'Communicational'.* In Ongstad (2025) it was argued that *communication* implies more than semiotics and semiosis. In the end communication could be seen as a shared system that merges syntax, semantics, pragmatics, and spacetime for a community of sign-users. It can accordingly be regarded as the over-arching phenomenon that conceptually embraces and unites mind and body in the animal world.

## **2. ACT AS A PRAGMATIC PART OF A SYSTEMIC FRAMEWORK FOR STUDYING ANIMAL COMMUNICATION**

To reduce the complexity of communication as a phenomenon the framework was first generated and developed in the early 1990s. It was applied in socio-semiotic, empirical studies of communication in education and more lately even in biosemiotic studies of animal communication. The most significant change is that recently time and space (spacetime//chronotope) has been integrated in the utterance as internal, instead of just being kept separate and seen as external, as 'context' proper (Ongstad, 2022b, 2023). Accordingly, models of the framework have over time been extended from three to five key aspects. The following presentation is a condensed version of the framework as described in Ongstad (2024) and Olteanu and Ongstad (2024).

Watzlawick et al. (2017) claim that *an organism cannot not communicate*, Derrida and Ronell (1980) similarly hold that *one cannot not use genres*, and partly based on a Bakhtinian view one could even argue that *one cannot not utter* (Ongstad, 2019). These claims connect,

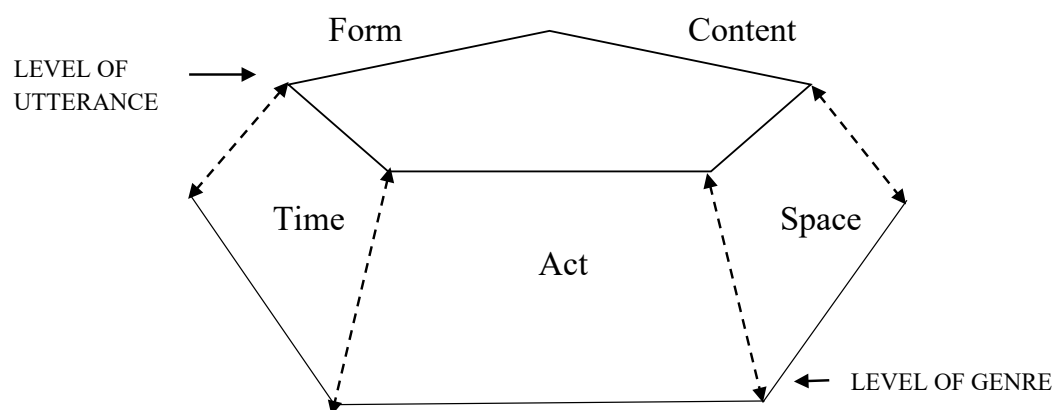


Figure 1. Five basic aspects constituting utterance and genre as communication. The pentagonal relationship between the five basic aspects applies for both levels. As a whole utterance and genre is modelled as a shortened or cut pentagonal pyramid with utterance as a concrete surface plane and genre as an underlying 'abstract' part, marked by lines on an imagined floor. The dotted lines with double-headed arrows between the two planes symbolise the dynamic, dialogical, reciprocal relationships between of utterance and genre. These processes work both in the moment of uttering and of interpreting (seen synchronically) and over time through communicational development of utterers/interpreters (seen diachronically). [© The Author.]

respectively, three levels, *sign*, *utterance*, and *genre* hierarchically into a semiotic system that taken together makes up an organism's assumed fourth level for meaning, its *lifeworld* (Schütz & Luckmann, 1973; Habermas, 1984). "System" is here associated with Hallidayian and Habermasian more open perceptions of communication, not Luhmann's (1995) more 'closed' system theory.

An utterance consists of five aspects (Ongstad, 2019): structured form, content referred to, addressed act, now integrating even time and space (Bakhtin, 1986; Ongstad, 2022a, 2023). *Structured forms* are any physical structure and division of substance (matter) which has been and can be used by organisms for communication on any semiotic level and in any media, mode, or channel (Ongstad, 2024). Structured form is in this basic sense manipulated ('formed') matter to be applied as sign. Yet, it is from a *communicational perspective even a sign* because it is made to work as a sign to generate meaning (Kress, 2009). However, structured form works only as a sign when it in addition is part of an *utterance*. Further, *content* is anything that might implicitly or explicitly be *referred* to by means of structured form by communicating organisms (Ongstad, 2021, 2022a). An *act* is a pattern of structured form that refers to a content of utterances and is simultaneously *addressed* to others, to some- or any-one, the aspect that in this study will have the main focus.

Finally, *time* and *space* are considered as physically integrated in the very structuring of form in utterances along with being even signs. These two twin-aspects may accordingly both be seen as a part of the structured form as well as functioning as the immediate left out *context* for an utterance (Rosenthal, 2007; Ongstad, 2022a). Time and space occur integrated and simultaneously as *spacetime* (Nomura, 2023) or (termed) *chronotope* (Bakhtin, 1981; Perrino, 2023). The very *focusing*

of an initiated utterance implies and generates a direct *abortion*, a discontinuity of time and space, creating an intrinsic locked-in part and an extrinsic part. Bakhtin shall have called a code a killed context. We could just as well argue though that the very focusing, the initiation of an utterance generates a chronotopical *birth*, an utterance-related *context*. The framework will still consider the external context as *dynamic* though, not as 'killed' or dead context, because it, as we will see, is important for interpretations of utterances.

As a whole then, the five integrated, reciprocal aspects constitute the level and phenomenon of utterance. Besides, as argued, 'rest-time' and 'rest-space' will in addition make up the external, but dynamic context for any utterance (Ongstad, 2023). Together the parts make up a communicative entity for meaning.

Both act and utterance are hence parts in a flexible communicational framework. Generative systems are considered as partly closed, partly open. The utterance is therefore related to three other semiotic *levels*, *hypotactically* ordered from micro via meso to macro: sign, utterance, genre, and lifeworld (Olteanu & Ongstad, 2024). The five communicational, semiotic aspects, form, content, act, time, and space are arranged *paratactically*. They thus work jointly and *simultaneously*, both in the moment of uttering and when receiving in order to have meaning or make 'sense'.

So far aspects of the framework have been described from a *synchronic* perspective, describing parts as categorical elements. *Key processes* that make the system work (diachronically over time) are, as mentioned above, *semiosis*, *genrefication*, and *positioning*. In the case of human, verbal communication, even *theme-rheme*, the text-weaving processes as cumulative combining of given and new information (Ongstad, 2019). Processes work within and between levels and within and between

aspects as well as directly between aspects and levels. *Semiosis* is here conceptualised in the broadest sense, as ('just') change in any meaning, caused by changes in the structuring, referring, addressing, timing, and spacing of utterances. *Genrefication*, admittedly a clumsy, but still a necessary term, is the establishing or changing of macro kinds of communication on the level of genre but is nevertheless generated by changes on lower levels (Frow, 2015).

*Positioning* is communicators' dynamic relation to (balancing) each aspect of the utterance in order to create wholeness in meaning (or necessary 'sense') when uttering and/or interpreting (Bakhtin, 1986; Ongstad, 2007). Even for observers' and researchers' of utterances meta-perspectives on aspects of (animal) utterances are regarded as positioning(s). Hence, for example, my own current text implies a positioning, a certain *accentuation* of an aspect as part of a system, in particular *act*.

Since all aspects of a semiotic utterance are regarded as sign-elements, signs in utterances can metaphorically be seen to play a somewhat similar role to morphemes in linguistic sentences. An utterance is a complex of 'clustered' signs (Olteanu & Ongstad, 2024). With Morris (1946 [1938]), Halliday (1978, 1994), Habermas (1998), and Witzany (2013), the syntax, semantics, and pragmatics of signs are seen as functioning through their *simultaneity* in order to generate a *whole* that is not just a mechanical addition of aspects as parts (Habermas, 1984, 1998; Bakhtin, 1986). As argued above the simultaneity of this triad coincides and can be seen as integrated with the dyad of its present chronology and topology. These five aspects constitute uttering as well as communication in general and therefore even life-genres in an animal's (subjective) lifeworld (Ongstad, 2023).

In Olteanu and Ongstad (2024) it is argued that in *analytic* approaches, applying these aspects as operationalised elements, researchers must produce and *interpret* a whole by investigating, coordinating, and integrating parts. These consist of signs for syntactic organising, semantic meaning, and pragmatic doing, chronological timing, and topological spacing. Both uttering and interpreting are therefore a sign-based, semiotic processing.

In principle this generalised framework could embrace almost any communicational question. It is nevertheless useless if not firstly combined empirically with a significant thematic research focus, secondly with a specific ditto focused research position, and finally an epistemological intention of searching an empirical complementation to the framework. Together these three focal conditions should create specificity and more fine-grained elements within this systemic web, in this current study a more detailed study of communicational acts. A further differentiation for this study is achieved by relating acts to animal life-processes and *life-functions* that communication by utterances and life-genres may serve.

### 3. META-STUDIES OF ANIMAL ACTS

#### 3.1. Choosing Studies

Examples of such basic life-functions, or 'needs' for the survival of a species are reproduction foraging, kinship and cooperation, defence and aggression, communication, and play (Dugatkin, 2020, p. 14). Since communication and hence acts are seen as means for life-functions in this inquiry, *reproduction* and *foraging* ('sex & food') are somewhat prioritised when selecting illustrating studies. In addition, a project hypothesis is that communicational systems, at least for some species, are generated for handling contextual change individually and collectively, and in the long run perhaps even genetically. Therefore, some cases focus collective teaching and learning.

Over years the project has accumulated studies of animal signals, calls, or acts, especially mammals and birds. These studies only make up a fraction of what is published and would hardly be representative. Moreover, from this 'collection' I can only apply yet another fraction as empirical basis for the study. Prioritised studies can accordingly only *illustrate* some acts' significance for life-genres and life-functions in animals' lifeworlds.

To compose a sample set I have chosen three minor studies earlier applied when investigating *form*, *content*, *spacetime*, and *life-genre*. However, this time I focus on pragmatics of animal behavior and *acts* enabling expositions between acts and other aspects in a *systemic* perspective. I have also added a new case, exemplifying a situation of *wolves'* teaching and learning by communication. These four are further supplemented with recent studies from two particular sub-fields of frequently researched species. They concern *birds'* *vocality* and *great apes'* *gesturing* and are prioritised for being well researched and documented and hence suitable for semi-empirical meta-studies. The studies of apes' gestures are of special relevance because they represent a crucial challenge – animal communication repertoires as possibly *systemic*.

These six examples should not be considered as a 'representative dataset' though. They will be inspected as a series of single cases that in sum may throw new light on some *qualitative* traits of animal uttering, seen in a *pragmatic, socio-semiotic, systemic communicational* perspective. There are more than a million hits when googling studies of *acts, calls, signals, and communication*. Such an extensive research field can therefore not be represented by six studies. Rather, since this study investigates act qualitatively as a systemic *concept* and not quantitatively as a *field*, no generalisations across kingdoms should be drawn.

Hence, an aim is to problematise ethological, or zoo-communicational perceptions of animal *signals* and *calls* through re- or meta-interpretations of a small sample of empirical studies of animal communication by means of the framework. It is in this sense mainly a *pragmatic* approach since *act* is positioned as the key inspected aspect. The design of targeted studies varies from simple and more traditional to rather advanced

and comprehensive. The advanced ones were chosen because they seem to have paved the way in the field for a broader understanding of animal signals and calls as uttering – beyond traditional essentialism. Thus, these studies are not *critiqued*, but rather re-interpreted and epistemologically *extended* by the framework's alternative and multiple *optics*. This allows for contrasting categorial and relational research on animal uttering as well as illustrating how semiotics can add to ethology. Therefore, it is assumed that exposing advanced patterns of acting will position this study *between* ethological and socio-semiotic pragmatics by *not* giving the concepts *signal* or *sign* any upper hand. As foreshadowed in the title, an aim is to position systemic as a *significant* trait, by inspecting behavioral approaches in a socio-semiotic perspective.

The somewhat complex ambition to pinpoint what acts are as part of utterances received by minds able to interpret them by means of life-genres as a mental resource calls for some few clarifications and delimitations: The project as a whole deals with communication in an *evolutionary* perspective assuming that some early life- and sign-process can be seen as prime *stages* towards communication in a more advanced form on the macro-levels. Studies inspected will therefore in reality focus on and 'represent' a much later stage in evolution. Given this methodological 'short-cut' of evolution, studies of vertebrates, mammals, and especially great apes have been prioritised. I have delimited the study to zoo-communication. Although of relevance, studies of earlier stages of communication such as Witzany (2016) are not considered.

### 3.2. 'Begging'– Positioning Act in the Framework as a *Communicational* Aspect

In a footage of chimpanzees (BBC, 2014) two young males have caught a pray. The dominant older runs up in tree, turns his back to the other and starts eating. The younger approaches him slowly from behind, sits down waiting. He stretches his arm and opens his hand, so that the older one shall see it, a sign and an addressed *act* in this given context. This kind of act, this life-genre could in human terms be labelled as *begging*, a term which admittedly has an anthropomorphic touch (Augustyn, 2011; Horowitz & Bekoff, 2007). The example is anecdotal, but Jensvold, Wilding, and Schultze (2014, p. 26) claim that young chimpanzees use particular social *gestures* for begging.

In Ongstad (2019) this episode and its explanation illustrated how the structure of the arm (form), the wanted meat (content), the particular time and space (as context) were integrated with the pragmatic element addressing (act), the wanting, *completing* the utterance as a whole (Bakhtin, 1986). Utterance as a communicational level can further be made sense of at the next level, the life-genre, which again can be made sense of at – or by – the final, assumed level, lifeworld (Olteanu & Ongstad, 2024). *Begging* can thus be seen as a communicational means for nourishing

as a basic life-function, collectively for a species as *foresting* of food.

A socio-semiotic understanding of lifeworld presupposes a tight connection of a subject's inner *personal* world, its *external* world, and others as *society* (Habermas, 1984) in a given context, a spacetime. The framework considers the lifeworld to be a *subjective* (personal) resource-centre for making sense of events in a subject's life as its 'final' or 'highest' communicational level. The begging as *communicational* act contains, in addition to meat in the external world, accordingly even a socio-semiotic *aspect* both in utterances and life-genres. It *connects* the *individual* utterer, focusing meat, to its *society*, to which it continuously relates communicatively to as utterer, receiver, and/or interpreter. *Communication* here is, in a systemic perspective, more than 'just' ethological *signals* and Peircean *signs*. It implies an integration of the system's four levels and five aspects driven by specific semiotic processes affecting all aspects on all levels.

This explanation is synchronic. In a *diachronic* perspective all processes help confirming and renewing the system and its key elements into the future. Habermas (1984) terms the processing of the above three key components for socialisation (of a communicator), cultural reproduction (of things and phenomena in the world), and social integration (with others *by* communicating).

### 3.3. Female Capuchins' Pebble-Throwing as Courtisation

The following short example highlights how particular acts for particular species relate to particular *life-genres*. Relations between act and other aspects will be less focused.

In Oxford Scientific Films (2014) a camera follows a group of capuchins. We are witnessing first how an eager female throws pebbles at a male to make aware her interest in mating. Later several other females try to catch the male's attention by the same means. Coelho (2015) argues that such pebble-throwing has spread within the group. They live in a Brazilian conservation park and have generated a new, lasting social pattern within this particular group. In Coelho's words the pattern represents spreading of behavioural traditions across populations (Coelho, 2015, p. 7).

We can here observe a rare example of *genrification* (Frow, 2015), a birth of a potential new version or kind of "mating game" as a life-genre. The throwing of pebbles works as a new pragmatic sign, a semiosis. The act of throwing them may be regarded as a kind of uttering and become recognised within the community of sign-users and hence shared as a renewed life-genre. Coelho underlines that the documented new pattern may of course later change or fade out over time depending on this species' shifting environments in the future. Whether or how such new mating patterns might make their way into genes is not an issue in this context.

The throwing as a communicative act and the male's registration of it happen on the level of utterance. Yet, life-genres can only 'belong' to a collective

that 'understands' its social, and hence common significance. It is a *shared* resource for meaning. Here we are confronted with a form of paradox. Although acting is individual, it make sense communicatively by means of a sufficiently shared life-genre, which epistemologically becomes a collective phenomenon. Pragmatically, throwing pebbles is here a *new* act, compared to earlier ways. This semiosis leads to renewing of a life-genre once adopted in the community. Yet, it continues to serve the life-function mating. Between the lines the example raises the big question whether genrication only happens in the real social world and fades out or if this faculty over time is taken care by genes. In other words, a new, advanced level of perception and meaning making as we find with humans.

### **3.4. Puffer Fishes' Nest-Construction – Spacing as Act**

The male Japanese white spotted puffer fish builds intricate nest constructions by fine-grained bottom-sand to attract females for mating (NRK, 2015). It is mathematically a fairly precise circle with 24 openings. Its formed structures function as a nest, inviting females to inspect. If accepted, the two will start spawning, following a particular pattern where the male will first wipe out the centre. The female will lay the eggs, while the male will hold on to her lip, and they vibrate together. The female will leave, and the male will cover eggs with sand for protection.

The whole sequence of actions can be seen as a life-genre, although obviously mostly 'prescribed' genetically. Still, the performance of the act(s) will have to happen in always *new spacetimes*. The male act and the female reacts: However, it is the puffer fish's life-genre system that according to the framework will orchestrate the event. It balances rather stable patterns with room for a certain flexibility. A successful outcome is not given though. Females may not turn up or just leave, rejecting the construction, and other males may disturb building and mating, as shown both by Ramesh and Mohanraju (2018) and Matsuura (2015). This nesting then, is not just a plain physical behavior, but part of a row of communicational acts, as part of the life-genre mating. Physically the nest itself is *space* as part of the fish's utterance and *simultaneously* 'behavior' and pragmatic communication.

### **3.5. Kinds of Bites as Kinds of Acts – in Play as Learning**

In a BBC's series a spy-camera is placed in a wolf packs' habitat, their lair. Here in my own narration of the footage:

We witness how a wolf teaches a pup a tough lesson (BBC, 2017): Three quite young pups are playing. A 'caretaker', a female wolf, watches them. One of the pups' play seems rather wild. Suddenly she therefore takes a low (attack) position before she rushes up to the wild one, bites it, first gently around the neck, and tries several times to turn the pup on its back. The pup resists and continues to bite back and defend itself. Suddenly the caretaker with a strong strangle bite around the pup's neck and throat,

forces it violently to the ground and manage to turn it on its back. The resistant pup eventually gives in and stays calm. The caretaker loosens her grip and gives the pup a gentle nudge. Thereafter the pups continues to play. Finally, they even turn the spy-camera-pup upside down.

McLeod (1996) investigated wolf pups' enculturation to and development of postures the three first months. He wondered whether postural components become more tightly or loosely associated with age. He was interested in whether there were couplings among components or intervening variables that could account for the observed associations among postural components. His final comment is of particular interest for interpreting the documented, somewhat anecdotal footage above:

It is important to remember that motivational interpretations for wolf pup posturing are purely inferential from these data and a direct one-to-one correspondence between signal message and internal state cannot be assumed at any age. Adult displays can encode conflicting messages, such as attack and escape (Smith, 1977; Hinde, 1981, 1985a, b). Hinde has argued that it is precisely when an animal is uncertain about what it will do, i.e., when motivations are in conflict, that many animal signals are given. *For these reasons, it may be more appropriate to consider the interpreted dimensions as indicators of the contexts in which the postural components were observed* (McLeod, 1996, p. 116 / my italics).

In terms of the framework and in the light of the project's hypotheses the footage can be interpreted as follows: The caretaker *utters* by *acting*. The life-genre can be termed *teaching-learning* in these wolves' *lifeworld*. The sub-genre, the lesson, the act, the sign, the posture she has 'taught' is *submission*, incorporating the new learned submission game. The taught/learned possible reference for submission is the posture "abdomen up". The setting is *play* under governance of a caretaker in their lair. The pup has eventually *learned* a new *position*, as posture, a sign, which will become part of its communicational resource for future uttering and acting in a pack. However, the particular sign, *abdomen-up*, is part of a system of postures fitted to work in different *contexts*, in *utterances*, within *life-genres*, which might function and make sense in their *lifeworld*. In light of McLeod's findings different wolf postures may cooperate or be in conflict with other postures such as different positions for tail (tucked, high, wagging), for body (low or high), or for signing by ear and eye. Such elements of wolves' communicational *system* and what they supposedly mean, depend, as McLeod above stresses, on *context*.

Wolf communication is of course both semiotic and multidimensional (Tønnessen, 2011, 2016). A key point here though is that some signs have to be *learned* even socially. The critical incident learning moment for the too wild pup is when the caretaker holds it in an extremely strong strangle-like bite. The pup can now add

a new to a given, being forced to incorporate *submission* postures as a sign in its play repertoire by an appropriate and adopted act. Learning, new added to given, is *semiosis* and the pup's understanding of 'play' has now been expanded with a new *percept* for acting. The sign appeared in an utterance which in their lifeworlds serve a key life-function of wolf-pup's play, preparation for adjusting to rank-order in a pack, Habermas' life-world process *social integration*. To play with a Batesonian phrase – this bite is not just a bite: Behave.

### 3.6. Birdsong as Kind of Acts

According to Dezechache and Berthet (2018, p. 4) a broad category of animal communication is *general calls*, often found in alarm, feeding, and social contexts. Alarming, feeding, and socialising can hence be seen as examples of life-functions dependent on efficient, collective communication. This rather broad perspective allows communicational elements to be seen both in a systemic and multifunctional perspective. Calls' connection to life-functions enables linking act and utterance to life-genres and lifeworld when studying (alarm) calls.

Expressivity concerns calls' and hence utterances' *structured forms*. Generally, calls have been considered to be rather simple and mostly genetically driven. Some researchers have asked whether there could be more to call sounds than just being a general alarm call. In Ongstad (2022a) I used Prior et al. (2018) as an example. They made use of spectrograms to decide to which degree fine-grained communicational structures in finches' calls which the human ear cannot hear, could carry complex information. Based on the findings they argued that some signals, or signs in acts in utterances in my terms, could carry at least three different aspects, categories, or information bits:

There is a significant amount of behavioral and neurobiological research that has demonstrated that zebra finches are able to discriminate the calls of males and females [...]. Additionally, zebra finches have 10 call types in their call repertoire, and there is strong physiological evidence that perceptual categories exist for many of those call types [...]. Furthermore, there is also independent evidence that zebra finch calls carry individual identity, which is at least accessible to an individual's pair-bonded mate [...] Prior et al. (2018, p. 8).

Prior et al. underline that zebra finches' utterances are potentially *multifunctional*. From the perspective of the framework there are thus reasons to believe that different call types could be regarded as life-genres as they might have different functions in their lifeworld.

Birdsong research has recently taken a *pragmatic* turn (Bar-On & Moore, 2017) as new projects often study relationships between *form* and *function*. Naguib and Riebel (2014) can illustrate how biology can be connected to communication and social dimensions. Their article covers for instance such functions as learning to sing and listen, moving novices from individual learning into

song cultures by specific singing activity and vocal interactions, phenomena that could be regarded as acts and life-genres. Naguib and Riebel (2014, p. 35) give four examples: territory defence, mate attraction, mate stimulation, and pair-bond maintenance. They claim that for some bird species: "(...) males change their singing behaviour after pairing, suggesting that the function of song differs between the period of mate attraction and the period thereafter" (Naguib & Riebel, 2014, p. 240). The term that positions their work on birdsong within an explicit pragmatic frame is *addressed*. Still, much research shows that functional, addressed birdsong is not always given, as sub-genres might be acquired during a development: Chaffinches have a song type repertoire of from one to five song types. Their song may, through upbringing develop through song type stages, such as subsong, plastic song, and crystallized song (Naguib & Riebel, 2014, p. 236).

### 3.7. The Pragmatics of Birds' Calls - Comments on Gill and Bierema (2013)

In Ongstad (2019) I concluded that birdsong as a field for studying communication seemed suitable for meta-studies of life-genres: Song often covers main aspects in the framework such as form, function, time, and space, as well as tensions between individual and collective perspectives (the social dimension). However, although birds are vertebrates, they are not on mammals' evolutionary line, leading to great apes and humans. This does not necessarily imply that the project's main hypothesis is weakened. Communalities of zoo-communicational traits might have been in place early. Vertebrates, through common *earlier* ancestors, do share some basic life-functions, life-conditions and behavioural patterns that could generate similar life-genres for birds and mammals (Griffin, 2013). The very term *genre* here precisely hints *familiarity* (*kin-ship*). Basic aspects of kind of communication, life-genres might be inherited. That is an assumption though.

*Calls* are probably some of the most researched and discussed vocalities in the field's literature, especially alarm calls. Gill and Bierema (2013, p. 451) investigated six bird species able to produce so-called *functional reference* in alarm calls. I discussed this notion at length in Ongstad (2021) claiming that its two parts amalgamate pragmatics and semantics (respectively). As mentioned in my present intro a methodological grip for the project has been to keep key analysed aspects *separate* in the first part of the project before relating them eventually.

In this context the twin-nature of the notion *functional reference* is not a problem though, since Gill and Bierema (2013, p. 451, Table 1) actually point out possible *functions*, or *acts* in my terms. Their rather broad approach combines six factors: *Species*, *Functional reference*, *Alarm call Production*, *Specificity*, *Conspecific receiver(s)*, and *Perception specificity* enabling exploitation of their findings that have *pragmatic* significance. From their overview I extract three of the six factors, in Table 1 called *Species*, *Term for type of call*, and *Receivers'*

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Species	Term for type of call	Receivers' reactions
Galliformes Fowl	Scream	Look upward, crouched down
Passeriformes Acanthizidae	Buzz	Cease begging
Corvidae Siberian jay	Alert	Fly to cover; scan
Paridae Great tit	Chicka	Crouched, Horizontal scan
	Jar	Left nest, look down
Turdidae American robin	Seet	Stopped calling, scanned sky
Parulidae Yellow warbler	Seet	Nest-protection behavior
	Chip	Frequent perch changes

Table 1. Example of six bird species' alarm calls' possible functions. Based on and extracted from Gill and Bierema (2013, p. 451, Table 1).

reactions (the implicated claimed function) for the six species that their review covers.

Several warnings could be made against applying Gill and Bierema's overview in such a reduced version. First, methodologies applied in the studies they refer to vary. Second, the terms registered in the two columns are interpretations and suggestions. Third, the terms are all in onomatopoeic English and may lack a precise re-testable description. Last, I have skipped the following calls: *Cut! \_cut-cut-cut-KAYAH!*, *Trill*, *Alert*, *Attack*, *Perched hawk*, *Ki-ki*, *Long croak*, *Short croak*, *gargle*, *Mew-a*, *mew*, *Siren*, *Chuck*, *Yeep/shirp*, and *Metallic chip*. These are either not tested for *Perception specificity*, there is no response, or meaning is not sufficiently clear.

With these possible criticisms in mind, it could nevertheless be argued that such alarm calls or in my terms, utterances, have documented functions that might be considered as an aspect *act* in a sub-type of a *life-genre* alarm calls, across different bird species. I should add that *act* as such is not Gill and Bierema's main perspective, but rather the role of *calls* as communication more in general. As said, their key focus is the combined *semantics* and *pragmatics* of avian alarm calls in specific species.

My simplified table, read from left to right contains first a species, then one or two of its significant song type, termed in English, and finally the type's interpreted *impact* on receivers behavior. Some of the receivers' particular reactions are claimed to be rather stable over time, others more uncertain or open. *However, this mix does not seem to lead to communicational collapse for the species in question.* In the long run combined firmness and openness appears to be sufficiently, stable, flexible, and functionable, as a *shared system*. The system's openness produces *approximate* meaning for utterers and receivers, given that *minds* with *agency* can interpret utterances based on a semiotic common ground for a species. With the framework's perspective we are concerned with the life-genre alarm call. The system's openness, its systemness, does not seem to be an existential threat to these species, but rather a flexible resource for meaning making. The act of addressing is rather general in its direction. The specific interpretation is individual. The applied resource for uttering and interpreting is *collective*.

So far, re-interpreting of studies has been motivated by the possibility of discovering how act in different ways may *interrelate* with some selected key aspects in animal communication. In a deeper sense these five meta-examples allow pragmatics to be seen as parat-actically *integrated* with syntax and semantics irrespective whether projects explicitly have focused structure/expressivity, content/referentiality, or act/addressivity in context/spacetime. The following inquiry tries to embrace several aspects at once, as well as levels, in other words, meta-studying a more integrated *systemness*.

### 3.8. Great Apes' Pragmatics toward Increased Complexity

Chimpanzees are our closest living ancestors in the animal kingdom. The communicational system of different hominids in the link between chimps and us are lost though. Chimps' today's communicational patterns are therefore what remain as the best choice investigating an assumed further evolution of animal life-genres that started about 6 million years ago.

Jensvold, Wilding, and Schultze (2014) have studied research on forms of chimpanzee communication, claiming that chimpanzees communicate by the channels vocalizations, gestures, facial expressions, and postures. Examples of vocalizations, such as *pant hoots* and *screams* tend to depend on *context*. Forms of gestures vary and are regulated functionally depending on *receivers* and on *context*. Facial expressions are partly depending on vocalizations. Postures, such as a crouching to express subordination, as exemplified in the first case, are less researched. Since their study was published research on ape gestures has flourished. Comparative studies of great apes' gestural repertoires now play an important role in discussions of possible lines to human communication in general and to verbal language in particular.

Recent studies of apes' communication in the wild are often produced by cross-disciplinary teams, rather than by individuals or duos. This type of research has expanded foci from the specific, the singular, the signal, the factor, or the category toward complexity, macro and mixed methodologies, systemic patterns, and multimodality (Amphaeris et al., 2023; Fedurek, Zuberbühler,

& Dahl, 2016; Gros-Louis et al., 2008; Wilke et al., 2017; Mielke et al., 2024; Ekström et al., 2024; Grund et al., 2024). This trend coincides with a growth in the number of studies addressing the very issue complexity of specific species' communicational repertoires (Hebets et al., 2016; Haentjens, 2018; Patricelli & Hebets, 2016.) The broad designs seem to emerge as a result of the recognition that narrowed scope and design risk reducing a study's scientific validity. However, even due to a methodological recognition that broader empirical and statistical scopes are needed to understand animal communication more at large. From some of these and a couple of other studies I extract, with pragmatics in mind, what is claimed about great apes' gestures, vocalisations, and face-expressions.

There is a long tradition, starting with Goodall [van Lawick-Goodall], (1968), for research on (especially) chimpanzees' gestures in the wild. From early on definitions were rather broad and general: A gesture should be a physical movement and be intentional, that is, have meaning. Documentation was typically subjective, often relying on human intuition and interpretation. However, Hobaiter and Byrne (2017, p. 4-5) in their article, *What is a gesture? A meaning-based approach to defining gestural repertoires*, found it worrying that there was little agreement on how to *define* a gesture as well as little consistency on how to *discriminate* between gestures. These dissatisfactions motivated their ambition to establish a discriminating regime defining *gestures* as discrete, mechanically ineffective physical movements of the body observed during intentional communication (Hobaiter & Byrne, 2017, p. 9).

Observations analysed were made in Uganda on filmed "(...) habituated wild chimpanzees (*Pan troglodytes schweinfurthii*), during field periods between 2007 and 2013" in a community consisting of 81 individuals. Six body-related features were used to enable splitting of gesturing in process to identify gestures' specific *form* by *morphological* classification. In this sense it can be seen, in my words, as a *syntactic study*, or what the framework would term a study of utterances' *formed structure*: Such a study searches possible sub- and co-structures, or '*morphs*' in their terminology. In a socio- and biosemiotic perspective, these elements could be studied as prime structural *signs*.

However, my own interest in their terminological and thus even semantic "cleaning-up-study" is rather how well redefined structured gestures can match specific *acts*. This fitting seems possible due to their correlational studies of gestures as signals, here seen as acts. The access to their well-documented and detailed described structure of gestures in specific, and to documented contexts, can increase validity both of meta-studied acts and life-genres as well as the concrete life-functions and the immanent lifeworld they support.

Their methodology appears robust. Firstly, they search for the gestures in the sample that can be given a rather clear *structured* meaning and those dependent on specific *contextual* conditions. Secondly,

their approach enables encircling a specific meaning of each single gesture based on receivers' reactions to them. Based on their shape-up work of the gesture repertoire, Hobaiter and Byrne (2017, p. 30) were able to generate a new standard of *St. Andrews Catalogue* for chimpanzee gestural communication, containing 81 gesture types:

In this catalogue, all gestures were distinguished based on the features for which there is evidence that they affect the primary meaning of the gesture." Their article ends stating that the methodology offers a new means "(...) to investigate the evolutionary origins of *linguistic* features such as syntactic *structure* or *reference*" (Hobaiter & Byrne, 2017, p. 34; my italics).

I have three comments: First, their design and findings are, at the end of the day, seen in a *linguistic*, not in a *semiotic* perspective as there is no mentioning of *sign* or *semiosis*. On the one hand this position leads to rather precise and research- and measurable categories and features, but on the other renounces from or reduces possibilities for handling challenges of meaning in a bio- and socio-semiotic perspective. Next, they paradigmatically choose to favor the dyad syntax (structure) and semantics (reference) over a possible joint triad, *including and balancing pragmatics*. This priority reduces the possibility of their study for understanding gestured, addressed acts as *integrated* with structure and reference in utterances and to be further related to life-genre and life-functions, which is communication in a wider context.

Last, as could be expected from a socio-semiotic perspective, chimpanzees' gesture-competence in general appears contextual, not just essential, as a set of well-defined, separable concepts that regulate behavior. This recognition might represent a paradigmatic challenge and even a crucial shift: Chimpanzees may after all be more interpretative, and not just 'slaves' of a restricted, genetically given communicational system. Mind may partly trump genes so to speak. Evolution may at some stage have generated both a degree of *agency* for chimpanzees as a species (Krupenye & Call, 2019; Sharov, 2018) and an increased functionality of their gestural 'vocabulary'. In the following I therefore inspect an implicit, silent *pragmatics* in their work.

We find gestures interpreted and categorised as for instance 'Move away', 'Follow', 'Acquire object', 'Contact', 'Reposition', 'Stop that', 'Climb on me', 'Sexual Attention', 'Present groom', and 'Direct attention'. They are all carefully described, in relation to which part(s) of the body used and for different contextual, systemic (recurring) situations (life-genres) as well as regarding frequency of similar cases. After the 'burst' of the pragmatic wave in the 1970s, Leech (1983) warned that *terms* developed as pragmatic categories within this new discipline were not 'objective' *performatives*. This warning is relevant even here.

Not all the mentioned acts can be exemplified here. Due to space, I pick a footage from a BBC-program (Gill,

2023) illustrating a related work of Graham and Hobaier (2023) on gestures. A group of chimps are about to leave after resting. A mother starts moving with her back turned to her toddler. She lifts her right leg (as a sign gesture). The toddler runs after and jumps on her back. This foot-lifting gesture means, in their terms, 'Follow' and/or 'Climb on me'. They found that this gesture had a rather common meaning/effect across different chimpanzee groups and communities across Africa. (I return to the issue of context-independent gestures as acts.)

### **3.9. Great Apes' Gestures Interpreted as Systemic Communication**

Generally, any meaning must be deduced indirectly, often being solved methodologically by adhering specific gestures to specific contexts. Graham et al. (2018) chose a somewhat different, more sophisticated approach. By picking only cases where a chimpanzee gesture was interpreted as intended, its meaning could be defined by the 'Apparently Satisfactory Outcome' (ASO), a reaction of the recipient that seemingly and likely satisfies the *signaller*. It is claimed that this method makes possible examining gestures' general meanings in a larger population. Yet, this does not in their view imply that meanings are "(...) conventionalised nor indeed does it imply any particular ontogeny for gesture meanings." (Graham et al., 2018, p. 1.) Through their method at least 19 types of behavioural response from the recipient have been documented, each having a distinct meaning "(...) calculated by comparing the distribution of meanings for a gesture type to the distribution of meanings across all gesture types." (Graham et al., 2018, p. 1.) Their article's main aim is to apply ASO for documenting even bonobos' (comparatively) to chimpanzees' repertoire. In Graham et al. (2018, p. 2) degrees of communalities across some ape species are outlined:

All species of nonhuman great ape share the majority of their gestural repertoire in terms of the gestures' physical forms. The overlap for chimpanzees and bonobos is 88%±96% [...]; for chimpanzees and gorillas, 60% [...]; and for chimpanzees and orangutans, 80% [...]. But simply using the same actions does not mean that chimpanzees and bonobos share a communication system (that is, that a chimpanzee and bonobo would in principle be able to understand one another). Only if bonobo and chimpanzee gestures share the same meanings can they be said to share the same system of communication. (The sign [...] marks a removed reference number.)

Graham et al. (2018, p. 9, fig. 6) compare main parts of chimpanzees' and bonobos' gestural repertoire (as acts). With terms from the framework, I have collected and (re-)grouped their terms for gestures and functions:

21 *structural signs* (gestures): Push, Punch other, Present (grooming), Present (climb on), Mouth stroke, Slap other, Hand fling, Embrace, Present (sexual), Big

Loud Scratch, Beckon, Object move, Hand on, Grab, Reach, Grab-pull, Object shake, Directed push, Arm swing, Touch other, Arm raise.

11 likely intended (ASO) acts: Initiate grooming, Move closer, Stop behavior, Contact, Move away, Acquire object food, Follow me, Climb on me, Initiate copulation, Reposition, Travel with me.

Given this set of 21 × 11 'factors' there should be 231 systemic possibilities. 31 signs are *shared* by both species, 27 used by bonobos *only*, 33 by chimpanzees *only*. 140 are thus non-used 'possibilities'. The fact that as many as 31 gestural signs are shared is not surprising given their common and close evolutionary history. *What is interesting from a pragmatic perspective though is that shared signs seem to be less context dependent.* In figure 1, page 4, Graham et al. (2018) makes a diagram over 33 chimpanzees *gesture types* and 14 *goals* (acts) they may cover. Of the 31 types 17 fulfils a 100%-criterion of meaning the same independent of context and 16 (to different degrees) dependent.

There are three major categories which actions semantically fall into. First *tight* to characterise rather high degree of context independency. Second *loose* to characterise rather high degree of context dependency. The third term, *ambiguous*, means that a single meaning of a gesture has not been documentable. A high number of gestures with no *fixed* meaning may at a first glance seem unsatisfactory. However, it might be seen as an indication of chimpanzees' capability of handling an *interpretation dependent meaning system*, one that balances functionally firmness and openness. That is, *the approximate is more functional than fixed preciseness.* It further turns out, visually demonstrated in a series of 16 illustrations (page 5 to 8) comparing the two species' main 16-ish gestures, that the same seems to apply for bonobos as well.

According to more or less bygone perceptions great apes once were believed to act and behave mainly by genetical mechanisms and dispositions. They were just 'aping'. Even after the discovery of DNA this partly deterministic position was not uncommon. Only slowly has the challenging semiotic idea of mind, meaning, and agency worked against this deterministic view. While Graham et al. (2018) accept the notion of meaning, their research tries to tie validity to the ground, so to speak. They insist that intention in the mind of a signaller should be a key criterium for judging which referential meaning gestures may have, not, as the more common, to only compare specific gestures with receivers' reactions.

Pragmatics in the wake of Austin (1961) and Searle (1969) may invite to a such simplification, by attaching *perlocution* to receivers rather than to senders. This position may still prohibit a triadic understanding of utterance. Although Graham et al. (2018) never mention the possibility of utterance as composed by (simultaneous) syntactic, semantic, and pragmatic aspects, their design and methodology nevertheless make this indirectly

empirically possible and plausible. The methodological work of Grund et al. (2024), in which Graham also participates, strengthens this possibility by measuring (quantifying) the statistical likelihood of different interpretations in a larger dataset.

The overarching project, presented in Ongstad (2019) is less concerned with conflicts over the role of *intention*. One reason is that the term is part of an ideological battle over whether animal *communication* inherit significant aspects in human, verbal language. The semantics of *intention* seems therefore partly burdened with a *linguistic* logic and ideology. As mentioned above, Graham et al. (2018) are careful when touching this theoretical challenge. They nevertheless at least apply the term/concept *goal*, which implies *intention*, and goal-direction fits well the crucial pragmatic term *addressing* (Bakhtin, 1986). Great apes' gestures, as species-related system, thus fulfil some key criteria baked into the framework: Gestures are signs, acts, and utterances. Gestures are recognisable as specific kinds of communication, as life-genres. Gestures serve as a collective resource (an 'affordance') for their specific needs, their life-functions in their lifeworld (Umwelt).

#### 4. POSITIONING ACT, PRAGMATICS, AND SYSTEMNESS WHEN STUDYING ANIMAL COMMUNICATION

##### 4.1. The Functionality of Systemness as Balance of Openness and Closure

Regarding *act* as a phenomenon, we have seen in these studies that, on the one hand act may be turned into a category when positioned and classified by objectifying research. On the other it works even as a dynamic, relational *sign-process* in moments of uttering and interpreting. Act can hence admittedly be made *categorical* by the very focusing but is nevertheless always even *relational* and thus systemic in its orientation. Further, act appears as a *dependent* aspect when it is part of a (communicational) utterance. It is first on the level of utterance though that act can contribute to meaning or make sense. Yet, as demonstrated in several of the cases, not even the utterance is sufficient to give a *specific*, full meaning. As we saw, Graham and her co-researchers, studying chimpanzees' vocabulary of signs, pointed out two significant groups of gestures. One functioned almost *irrespective* of context. An other functioned *because of* interpretation of context, a both/and solution in other words. I take this blurred logic as an empirical indication of the relevance of the principle openness of the framework.

Also, Cartmille (2015, p. 66), has argued that ape gestural communication as a system can be characterised both by its flexibility and by a striking similarity in gestural repertoires across groups. Further, along somewhat similar lines, Zuberbühler (2006) holds that studies of Campbell's Diana monkey system showed that "(...) alarm calls undergo semantic adjustments in the minds

of the recipients, depending on the sequencing of alarm calls." (Zuberbühler, 2006, p. 10-11.)

The framework, *and* some animals' communication, are hence regarded as *systemic* or 'system-ish' because the implied system presupposes a certain *openness* in combination with a degree of *closure*. Such a both/and logic is not necessarily confusing, but rather functional for some species. Simplicity in utterances combined with flexible interpretation by receivers is also found in studies of great apes' calls. Several researchers of animal communication have proposed concepts that as a set can embrace larger parts of a species' communicational repertoire. One example is Fedurek, Zuberbühler, & Dahl (2016). Their *multiple information hypothesis* assumes, and their own studies confirm, that a main reason for the complexity of chimpanzees' 'pant hoot' calls is that it allows receivers to tap different types of information from a single call:

By virtue of being a complex, multi-phased call, different phases of the call seem to co-vary differently with specific attributes of the caller (such as identity, age, or social status) or with context of call production. This consistent covariance might then allow receivers to make decisions about subsequent responses (Fedurek, Zuberbühler, & Dahl, 2016, p. 7).

Seyfarth et al. (2010) too have argued that a species' communicational system is not *bound to* an exact preciseness of 'information' (reference) or of 'signal' or 'call' (act). Both Seyfarth et al. and the framework regard flexibility for utterers as well as receivers, when facing ever new contexts, as crucial for survival. My study has stressed the role of semiotic dynamics between *levels* to achieve communicational flexibility. Researchers can get a systemic hypotactic comprehension of the pragmatics of complex calls: An act as part of an utterance might be interpreted as a *certain* kind of communication, a specific *life-genre*. It works as an overarching resource for *interpretation* in specific contexts. Several such kinds of utterances/communication have been exemplified, all connected to specific *life-functions*. Although these case-studies to a certain degree have prioritised the *meso-levels*, utterance and life-genre, even act as a *micro-level* has been exemplified.

##### 4.2. Lifeworld, Interpretation, and Positioning

In this study the fourth level, lifeworld, has received somewhat less attention. Lifeworld and Umwelt are both regarded as individual or *subjective*. A difference between them is that '*society*' is regarded as a third constitutive, and hence the pragmatic component of lifeworld (Olteanu & Ongstad, 2024). Since the framework combines socio- and biosemiotics it is accordingly equipped with a tool to catch symptoms of how life-genres may add up as a crucial part of an assumed lifeworld. The above arguments describe how levels are perceived as part of the framework and are positioned in the actual studies. For levels, this study has tried to

demonstrate that explanation at a single level may suffer from its own presupposed, restricted epistemology and logic, because meaning and sense depend on the epistemologies of lower and higher levels as well. The recognition of this systemic and complex reciprocity should be baked into studies' design when planning methodologies and when validating claimed acts in general and validating the role of a projects' pragmatics in particular.

Regarding *pragmatics* the approach has combined pragmatic positions of early pragmatists, such as Bakhtin, Halliday, and Habermas. They regard pragmatics as *intertwined* with syntax and semantics in time and space. Pragmatics has not been given the *upper* hand in the meta-studies though but has been *positioned* by my pre-chosen research focus. This implies *accentuating act* under the reciprocity of syntax, semantics, pragmatics, chronology, and topology on different levels.

Focusing *act* can, by the very focusing, have a suppressing impact of the other aspects. For a sensible balancing Roman Jakobson's advice to search a *dominant* could help researchers and projects when searching crucial *aspects, levels, and processes* in multifunctional simultaneous communication. In this present study it is the focusing, the positioning of the *aspect* act that makes it currently and seemingly a dominant (Jakobson, 1971[1935]. In this sense the study represents a certain, focused pragmatics, but only as part of a systemic perception of animal communication.

These case-studies, along with a row of other meta-studies in the project, can illustrate how different, systemic, specific connections between highlighted aspects cooperate with acts. The covered co-elements make up just a fraction of possible combinations. It has nevertheless been possible in each case to increase the likelihood that pragmatic aspects of animal communication, at least for some bird species and some mammals take on a certain *systemic* character. A key element for detecting systemic communication in this study has been the uncovering of occurrences of the role of acts in a variety of life-genres to sustain life-functions.

The idea of systemic aspects and levels will imply hypotactic and paratactic *dependencies* between key elements. Through six case studies different types of specific dependencies between *acts* on different levels have been highlighted in order to illustrate *some* patterns of acts in systemic communication between some animals/species. *Processes* have been less focused. Although not explicitly argued, *change* in/of all aspects is regarded as semiotic: *Positioning* implies structuring, referring, addressing, timing, and spacing as intertwined sign-processes, as well as their conceptualised whole, that make sense or have meaning, be it for utterers, receivers, distanced interpreters, or readers.

Finally, it should be made clear that systemness, perceived as open and flexible by the framework, will face challenges when being applied empirically. Only the aspects *structured form, time, and space* can be researched due to Popperian criteria. The other aspects

and concepts have to be treated with hermeneutic, that is interpretive methodologies. Accordingly, ethological and biosemiotic methods have to be combined and balanced. This study has only *illustrated* some empirical details within the pragmatic domain act.

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