ORIGINAL RESEARCH

Perceptions of Context. Epistemological and Methodological Implications for Meta-Studying Zoo-Communication

Sigmund Ongstad[1]

Abstract

Although this study inspects context in general, it is even intended as a prerequisite for a meta-study of contextual time&space in zoo-communication. Moving the scope from linguistics to culture, communication, and semiotics may reveal new similarities between context-perceptions. Paradigmatic historical moves and critical context theories are inspected, asking whether there is a *least-common-multiple* for perceptions of context. The short answer is that context is relational – a bi-product of attention from a position, creating a focused object, and hence an obscured (back-)ground – the attention's context. A more comprehensive one is that when the focused phenomenon is culture, semiotics, or communication, context becomes embodied. This recognition triggers new questions: What is the relation between embodied, immanent context and this perception's external, physical context (its surroundings)? If utterances are regarded as constituted by the triad form-content-act *and* the dyadic chronotope time&space, what and where is then context? Which challenges will empirical (zoo-)communicational research face if context is split in internal and external versions of context? These questions raise some epistemological and methodological issues. These are discussed based on a framework that regards communication as a micro-macro interplay between utterance and genre. Genres are kinds of communication. More specifically animal genres related to their basic life-functions are called *life-genres*. A conclusion is that life-genres function as both mental and situational contexts. This complicates empirical research on communication in general, and zoo-communication in particular. The paper concludes that contexts' relational and embodied nature and the 'situational' characteristics of life-genres challenge researchers to validate continuously, shifting between contextualising, decontextualising, and recontextualising.

Keywords Context · situationality · time&space · zoo-communication · utterance theory · embodied contextuality

---

Extended author information available on the last page of the article

The Study's Design and Line of Arguing

Since the ambition of this study has led to a relative complex design I will briefly describe the basic argumentative line. I start with the term's etymology and outline how it historically entered different semantic domains, in particular scientific fields. Since context at the outset is constructed metaphorically based on verbal language ('-text') I continue with its liberation from traditional linguistics and further follow extensions made in fields such as pragmatics, sociology, communication theories, and biosemiotics. I further search for a possible least-common-multiple among definitions given by different key theorists in the fields. This essentialised definition is further problematised epistemologically and methodologically since one of the purposes for this study is to clarify obstacles when meta-studying empirical research on zoo-communication. Epistemological challenges are associated with the idea of (non- linguistic) embodied context in utterances. A shortened version of utterance theory is therefore applied to raise some crucial issues. They are just 'raised' because they will be dealt with in depth in a separate article (Ongstad, submitted). According to the model interplay between its five aspects form, content, act, time, and space, as well as between utterance and life-genres, play a key role in explaining communicational context. Issues concerning methodology stem partly from the expectation that embodiness should be studied as a mental object and hence as a Bühlerian symptom. The article therefore ends suggesting some expectations for a methodology for studying zoo-communication in multiple contexts, especially focusing the challenge of validation. The study could accordingly be seen as a prerequisite and a steppingstone, not only for my own further study of time&space and embodied life-genres but even for studies of animal communication more in general where troublesome contexts might be involved.

Clarifying Context as Term, Context, and Phenomenon

There is, in the English language, a surplus of terms for different kinds of context:

> Setting, incident, episode, happening, situation, co-text, vicinity, culture, society, times, period, connection, circumstance, state of affair, condition, background, scene, event, environment, position, occurrence, condition, location, spot, site, locus, place, surroundings, milieu, scenario, habitat, territory, domain, the natural world, nature, earth, cosmos, universe, ecosystem, biosphere, semiosphere, mother nature, flora and fauna, countryside, sphere, atmosphere, stumping ground, area, region, district, frame, Umwelt, lifeworld … etc.

These and other notions are both much older and much younger than *context.* Etymologically the very term context, when it appeared in English in the 16th century, first meant the weaving together of words in language (Merriam-Webster, 2022). According to the same source, it now commonly refers to a setting for words or events. That something is contextualised generally means that it is placed in an appropriate setting, one in which it may be properly considered (Merriam-Webster, 2022). In

non-scientific language context therefore works as a general term for environments or conditions that give further meaning or background for phenomena, in other words the interrelated conditions in which something exists or occurs (Merriam-Webster, 2022).

However, in many sciences context has developed in more specific directions. An early disciplinary use of context was Malinowski's notion *context of situation*, first coined in 1923, to refer to the cultural context of use in which an utterance was located (Malinowski, 1935, p. 73). Critical contextual thinking was later developed by thinkers in different fields. For instance Bateson claimed: "It is important to see the particular utterance, or action as *part* of the ecological subsystem called context and not as a product or effect of what remains of the context after the piece we want to explain has been cut from it" (Bateson, 1972, p. 338). Somewhat similarly Firth argued: "You shall know a word by the company it keeps" (Firth, 1957, p. 11). They were both for-runners for a broader understanding of context in communication, Bateson for biosemiotics and Firth for Hallidayan pragmatic perceptions of context in applied linguistics (Ongstad, 2005).

Fifty years ago Dell Hymes started to speak about "multiple layers of contexts" (Hymes, 1972). By the influence of among others Graddol, Maybin, and Stierer's *Researching language and literacy in social context: a reader* a relational and thus levelled perception of context as a phenomenon has achieved general acceptance (Graddol et al., 1994). Levels or layers are related to how different theories perceive the phenomenological 'world' and how elements are arranged on disciplinary levels:

> If contexts are systemic and interrelated, academic fields have to find their place in such a system, by developing awareness of similarities and differences vis-à-vis other fields. Sub-disciplines within linguistics are likely to focus on textually established contexts. The nearest contexts for sounds are words, the nearest contexts for words are sentences, etc. Fields such as applied linguistics and anthropological linguistics, for instance, will need to take the larger, more general contextual aspects, such as genres and discourses, into consideration as relevant for the (re)production of meaning (Ongstad, 2005).

Later even context *as such* has been further theorised:

> In epistemology, contextualism is an approach that defines knowledge as beliefs that may be true or false depending on the situation (Preyer & Peter, 2005). Indeed, since many disciplines currently show interest in the role of various kinds of context, we may speak of contextualism as a general scientific approach (van Dijk, 2015, p. 1).

Further, perceptions of context will variate according to which theories, schools of thought, and disciplines that apply the concept. Among those, is it feasible to search for a *least-common-multiple* for context as a phenomenon to bridge gaps between fields?

Theories on the Move Toward Context Awareness

Perceptions of Context when Moving the Scope from Language to Communication

A search for a more generalised concept of context is motivated firstly by a wish to reduce the influence linguistic theories still seem to have over general perceptions of context and secondly by an interest in contributing to increased general validity for empirical communicational studies in general and in zoo-communicational in particular. For my own purpose this concept-study even serves as a prerequisite for a meta-study of other researchers' empirical research on the role of context in animal communication entitled "*Time&Space – in Utterances or Contexts? Meta-Studying Chrono-Topical Positionings in Empirical Zoo-Communicational Research*" (Ongstad, submitted).

Starting from Saussurean linguistics, the syntax/semantics dyad achieves closing of the phenomenon or construct which in English is termed *language*, by Saussure himself termed *la langue*, language as a system (Saussure, 1916). From this perspective the somewhat corresponding "intertwined twins", form and content, or structure and reference, have been considered as the two necessary dyadic aspects to establish verbal meaning. By excluding language *in use* from the definition Saussure established an additional particular version of language, *la parole*, which, as a consequence positioned *use* as some kind of *context* for *la langue* and by which pragmatics later partly turned into some kind of context theory.

The so-called pragmatic turn challenged Saussure's grammatical perspective of language as a system, by making the functional aspect crucial or dominant, as did for instance Bühler (1934), Bakhtin (1986 [1979]), and Halliday (1994). Instead of Saussure's separation of language from its use, pragmatists went a step further and claimed that syntactic structure, semantic content, and pragmatic use should carry more equal weight, and as a whole make up the key aspects not only of language but hence even of (semiotic) communication (Bühler, 1934; Morris, 1938; Halliday, 1978; Bakhtin, 1986 [1979]; Habermas 1981). However, from this position borders between language and communication became disturbingly blurred. As a consequence the perception of *context* as just a negatively defined 'left-over' phenomenon 'outside' language became questioned (Goodwin and Duranti, 1992). Hallidayian systemic functional linguistics (SFL) for example, extended the scope by presenting itself both as pragmatic (functional) and contextual (Halliday & Matthiessen, 2014).

Are There Key Logical Constituents of Context Across Fields and Disciplines?

Regarding context, thought-provoking where-and-when-questions have been asked, for instance by Bazerman (1994), *Where is the Classroom?* (if classroom is a genre) or by Erickson & Schultz (1981) *When is a context?*(studying cultures over time). Such disturbing texts refuse to take general context elements such as space and time for granted, because context often has suffered the misfortune of being conceptualised by rather simple notions of text (van Dijk 2009). By such simplifying context risks being conceived as some sort of *container* for a focused, completely and neatly

delimited focused text/object (Duranti & Goodwin, 1992). A more critical perspective should thus ask which basic elements context may consist of and hence to which degree and in what ways context aspects could be considered as integrated in or segregated from an utterance (Ongstad, 2019).

Hence, perceptions of context as a *general* concept are outlined. Confronted with multitudes and variation of types, levels, and layers in many different theories, one could therefore work from the other end, so to speak, and search for a least common multiple for context as a *mental* phenomenon. In other words, in its most basic form, and across disciplines and sciences, what are possible key logical or psychological constituents of all forms of contexts? An anecdotal story about Hegel may illustrate how *consciousness* intervene as a problem. Known for being 'difficult', Hegel once started his lecture rather easy by asking his students a simple question – whether they could see the blackboard. However, as they could, his follow-up question was: "But could you see your seeing?"

The no-answer to this question leads to a particular perception and a possible *general* definition of context as a concept. It is personal, individual, and subjective, it is someone's. It is mental. It is always an indirect result of an ever moving 'single-minded' or one-eyed, mental *attention* paid to something particular by our consciousness (Posner, 2017; Schumacher, 2012). To attend means to mentally focus, generating a clarified, encircled point, a, for the time being, delimiting and delimited (mental) figure. A consequence is the making of an immediate, but a temporary blind or foggy zone around the figure, its back-/ground, the ground which by the focusing act becomes context (McLuhan, 1994; Ongstad, 2005, 2014).

Several explicit context theories and context models define context in similar ways, as subjective, mental, and relational (van Dijk 2008, 2009; Kovala, 2014). Context is from this attended perspective a back-*ground* as a result of generating a *figure* by attending from a mental and/or physical *position*. Contexts are preliminary blinded surroundings as result of specific focusing.

However, in cases where attention is shaped to form *communicative* utterances and not just an object, context implicitly may carry elements of meaning that are supposed to be connected with meaning aspects in utterances to create wholeness of meaning. In verbal language hints in utterances may be given by deixis (Lyons, 1977). An utterer may point out when and where (now/here, then/there) or keep time&space implicit. In non-verbal communication though these possible threads are hard to detect and to prove, but they are still crucial for 'meaning' and for animals to make sense of a specific utterance.

Context as Mental and Situational

Van Dijk has outlined a more detailed understanding. His discursive, pragmatic context theory (van Dijk 2008, 2009, 2015) is admittedly made for linguistic *text*-studies, but some of the key elements seem relevant for studies of communication in general and thus also for zoo-communication. In brief, his main context categories are *setting* (mentally represented spatio-temporal dimensions of communicative situations), *participants* (the interlocutors and their roles), *acts*, and *knowledge* (van Dijk 2015, pp. 7–9). He claims that these contextual, situational parameters may define not just

the micro-level text(s), but even the macro-level *genre(s)*. As will be outlined later, the three categories *setting*, *participants*, and *acts* seem compatible with key elements in the framework. Most importantly though, van Dijk argues strongly that an explicit theory of context should define context as *mental* (van Dijk 2009, p. 11). When context is mental it will commonly have a *situational*, episodic character (van Dijk 2015). In Bakhtinian utterance theory, this *situationality* is characteristic for genres (Bakhtin, 1986 [1979]). Bex (1992) even discusses whether genres *are* (mental) contexts.

Regarding uttering, one should distinguish between a repeated and recognised situational aspect on the one hand and a (new) element of uniqueness on the other. This dialectics will be found in all utterances, a given and a new, a known and an unknown, (theme-rheme dynamics) a familiar situation blurred with a touch of newness due to ever changing physical contexts of time and space. *Situationality* could thus be understood phenomenologically, as the interlocutors' sense a familiarity with *similar* (earlier) incidents (Bakhtin, 1986 [1979]). The relationship between the unique in moments and experienced situationality is thus epistemologically close to the relationship between *the degree of newness of an utterance* ("something in principle never uttered before") and the degree of genricity in the mind of a receiver. Cf. the theme-rheme pair applied in SFL-studies (Halliday & Matthiessen, 2014). It is thus an open question to which degree familiar situations simply *are* genres. Or asked the other way round – do genres, once internalised, actually in themselves generate situations? For the time being the hypothesis is that they may. That said, it should be kept in mind that the framework does not regard genres as *closed* categories since types of genres can range from fairly fixed to fairly fluid (Martin, 1997; Ongstad, 1997).

Is There a Need for *a* Context Theory?

Kovala (2014), after discussing a set of context theories, including van Dijk's, asks whether there still is a need for a theory of context given its shadow-like and slippery nature. He concludes that the concept of context, in spite of its problems, can be retained by way of considerable redefinition, however with a price:

> But context is perhaps not something that we can have an overarching, systematic theory of in the first place. Rather, it is useful to think, following Stuart Hall, that a theory of context as such is not a goal, but to understand meaning-making, we must keep on theorizing context and contextuality (Kovala, 2014, p. 75).

He points to three reasons for continuous theorising (Kovala, 2014, p. 75). First, it is necessary to make context both the starting point and the end of analysis at the same time. Second, one cannot avoid dealing with tacit notions of context. Third, contexts can be invisible as one tends to take one's own contexts for granted and project them on to the perceived contexts of others.

Still, there are sceptical voices. Jonathan Culler, for instance, prefers framing to context, because:

(…) the notion of context frequently oversimplifies rather than enriches discussion, since the opposition between an act and its context seems to presume that the context is given and determines the meaning of the act. We know, of course, that things are not so simple: context is not fundamentally different from what it contextualizes; context is not given but produced; what belongs to context is determined by interpretative strategies; contexts are just as much in need of elucidation as events; and the meaning of a context is determined by events. Yet when we use the term context we slip back into the simple model it proposes. (Culler, 1988, ix, 147–148/Kovala, 2014, p. 73).

Another argument is that according to Hymes (and Kramsch) the key to understanding language in context is to start, not with language, but with context (Hymes, 1972, xix/Kramsch 1993:34). Similarly, one could argue that if we want to understand semiotic communication, one should start with context. However, Goodwin and Duranti (1992) warn that an overall workable definition of context even for communication in general may not be found, since it would be too general to cover diverse and specific needs of sub-disciplines. This tension between the specific and the general is captured in Culler's detoxicating aphorism: *Meaning is context bound, but context is boundless* Culler (1981, p. 24), which should in turn redirect us, now more sober, to the myriad of perceptions and definitions of *communication*. A focus on communication here may seem like a side-track, but context for language is not necessarily the same as context for communication.

Although a delicate and risky task, to delimit a workable understanding of communication seems feasible if connected to a fairly well-defined scientific, disciplinary *field* and a ditto research object to study. Very simplified one can first distinguish between and then integrate *monological* and *dialogical* aspects of communication (Bakhtin, 1986 [1979]). Hence, as a first step, to utter is simple, basic, monological communication. However, an utterance may *simultaneously* and *implicitly* hint at a possible genre and thus a specific act, a property Bakhtin terms *addressivity* (Bakhtin, 1986 [1979], p. 99; Ongstad, 2004). In communication to receive and interpret presuppose, a response, a reaction, or an answer and can therefore take on a dialogical character. However, neither monological nor dialogical communication can escape a clash between different types of contexts, and to merge perspectives even creates ever new contexts. For communication to work, utterers' and interpreters' contexts should be sufficiently or partly *shared* to function as a common system for a species.

Such 'dialogical' contexts may hence be an evolutionary developed communicational phenomenon. Perconti (2002) has compared context-dependence in human and animal communication. He proposed to use the term 'indexicality' to indicate the typical way of using context in human language. For animal communication systems he advocates 'context-dependence' for the corresponding phenomenon. However, this was written 20 years ago and animal communication as a field has since revealed ever new complexities in animals' communicational systems (Hebets et al., 2016; Beecher, 2021; Ongstad, 2021a). This is partly due to paradigmatic shifts in applied theoretical frameworks and new research methodologies, which in turn to a large extent have changed how animal communication generally is regarded (Patricelli et al., 2019). As a consequence even perceptions of context and context sub-aspects

have changed (Bar-On, 2021). To conclude so far, context-dependence now seems too general and self-evident. More specific perceptions should be inspected. At least further theorisation of context is needed.

Macro Concepts and/as Embodied Context in Human Cultural Domains

The idea that context may occur as embodied and create 'situations' is common in many social and communicational theories (Ongstad, 1997). Well-known concepts are frame (Goffman, 1974), code (Bernstein, 1990), communicative action (Habermas, 1981), discourse (Foucault, 1972), habitus (Bourdieu, 1989), register (Halliday, 1978), script (Nelson, 1986), structure (Giddens, 1984), and genre (Bakhtin, 1986 [1979]). Other concepts are mentioned by Kovola, such as "universe of discourse", "dialogue", "paratext", "mutual knowledge", "horizon of expectations", "schema", "reading formation", "rhizome", etc. (Kovola, 2014, p. 1).

According to most of these theories the embodied concept are supposed to *produce* certain behaviors. An effect of such kinds of embodiedness could be illustrated by a popular, simplified explanation of Bourdieu's habitus-concept, as *the body's second nature* (Power, 1999). In general the above concepts are perceived as both embodied *and* societal phenomena. Although used individually, they are even *shared* by a communicative community of human sign users and they all to a certain degree incapsulate the idea that embodied contexts create 'situations'. Episodes, events, and happenings are therefore not necessarily accidental, but 'situational'. Situationality conceptualise this communicational pattern. The concept I prefer for comprehending and studying this phenomenon across taxa, is genre, simply a recognised kind of communication. Accordingly, genres are contextual to utterances, both as embodied and regarding time&space.

Widening the epistemological scope from linguistics, via pragmatics and semiotic communication to culture in general has expanded the understanding of context among academics in most of the above-mentioned fields. This development has challenged more simplistic perceptions of context. Yet, the concepts (above) share with genre the fate of becoming harder to fixate and apply, while at the same time becoming ever more inevitable as a challenge for all kinds of research where a none-observable mind will hide the object.

Challenges for Empirical Studies of Genre, Situationality, and Embodied Context

When studying context as such (cf. van Dijk's term *contextualism*) rather than just utterances a certain challenge for research will emerge:

> He [Schegloff, 1992] argues strongly that the analyst is not free to invoke whatever variables he or she feels appropriate as dimensions of context, no matter how strongly grounded in traditional social theory - e.g., class, gender, etc. - but instead must demonstrate in the events being examined that the participants themselves are organizing their behavior in terms of the features being described by the analyst (Duranti and Goodwin, 1992, p. 192).

If analysts are not able to convincingly prove or make likely such behavior, the phenomenon in question may rather be related to an alternative, less concrete and obvious causality. The so-called Thomas theorem (in sociology) states that if men define situations as real (although they may be false or wrong), they are real by their consequences. The perception of a situation, someone's sense of situationality, can therefore be said to partly *cause* an action (Thomas & Thomas, 1928). Also, this theoretical position supports the idea that context could be considered, not just as an external, but even as a mental phenomenon. However, as Duranti and Goodwin argued above, this assumption will challenge how research on embodied aspects of communication can be performed and validated.

From the Thomas-theorem there can be drawn a fine line to van Dijk's theory of context. From cognitive psychology van Dijk borrows the notion mental models and applies it on context:

> Hence, contexts are *not* social situations or social structures, but mental models of what participants attend to, focus on or ongoingly find relevant in a communicative situation. We call these special models *context models* (for details, and further discussion of linguistic, cognitive, social and cultural properties of context […] (van Dijk, 2008, p. 3).

Since his key concepts already have been presented, I add three other points he makes as a consequence of his view on mental context. First, van Dijk argues that the major function of context models is to make sure that discourse is appropriate in the communicative situation. In that sense, a theory of context models also provides the basis of pragmatics as a scientific field (van Dijk 2008, p. 6). Besides, because my final goal is zoo-communication and biosemiotics, it should be added that pragmatics is crucial for discussing context when studying animals (Sharov, 2001; Bar-On, 2021; Scott-Phillips, 2015; Witzany, 2014).

Second, since the scope is *general* communication both for van Dijk and this study, the idea of mental, linguistic, contextual models should be applicable on other forms of semiotic communication in culture and nature, such as the study of context, time, and space in zoo-communication (Ongstad, submitted). Apropos, with a new-coined notion Miyamoto Gómez (2021) tries to catch how context as mental and embodied even among animals can be understood: "Experimental studies show that some corvids, apes, and rodents possess a common long-term memory system that allows them to take goal-directed actions on the basis of *absent spatiotemporal contexts*" (Miyamoto Gómez, 2021, p. 1/my italics).

Third, and last, genre in van Dijk's view – and in mine – is inescapably connected to context since genre distributes both the so-called setting (time and place/space) and the discursive roles (participants as utterers and interpreters of utterances) in a communicative 'situation'. Genre can thus be seen as embodied situationality. I return to genre as a concept when I present the framework.

Semiotic and Communicational *-spheres*, *-welts*, and *-worlds* as Contexts

In biosemiotics and sociology morphemes such as *-sphere*, *-welt*, and *-world* have been used as metaphors to describe an assumed highest level of contextual inclusion. Regarding zoo-semiotics and its extension biosemiotics it seems right to claim that they were more or less established by two major points of departure, Jakob von Uexküll's Umwelt theory and Thomas Sebeok's Peircean sign semiotics (Sebeok, 1976). In this respect there is on the one hand certain similarities with Saussurean linguistics in that sign and context are directly opposed. A paradigmatic difference though, on the other hand, is that within biosemiotics, the sign is not seen as static, but as dynamic. In addition are Umwelt and Innenwelt – as contexts – seen as epistemologically crucial for the field. According to Sharov & Tønnessen (2021), referring to Uexküll (1982 [1940]) his Umwelt theory argues that:

> […] sentient animals develop a mental model of their environment, called an Umwelt, in which objects and events become associated with living functions. The teleology of organisms is thus an aspect of their Umwelt. In contemporary terminology, this theory can be classified as "mentalistic" because it describes mental states which are not directly observed in behavioral studies. (Sharov and Tønnessen, 2021, p. 14.)

Sharov & Tønnessen (2021, p. 17) further argue that animals' individual worlds (Umwelt) are sign-mediated and hence shaped by semiosis. Organisms further develop functional environmental models of their contextual environments (Umwelt). Objects become tokens for, for instance food, shelter, and enemy. With Hoffmeyer (1996, p. 54) the Umwelt is described as an *ecological niche* as apprehended by the organism itself. The Umwelt is thus subjective, as different species interpret the same environment differently (Sharov & Tønnessen, 2021, p. 48). Traditionally time&space is seen as contextual. Sharov and Tønnessen underline that Uexküllean Umwelt theory gives new interpretation of space:

> Instead of a Newtonian absolute and transcendental space, Uexküll examined the functional space of organisms, building on and extending Kant's notion of subjective time and space. Most biologists think that space exists independently of the organisms that inhabit it. Uexküll viewed it differently: animals construct and organize their living space by establishing relationships between objects and habits. (Sharov and Tønnessen, 2021, p. 49.)

Regarding more simplified definitions of crucial contextual terms found in Sharov & Tønnessen (2021, pp. 352–360) one should keep in mind that their book is primarily about agency, not Umwelt as such. Environment, lifeworld, and Umwelt are defined as follows:

> **Environment** The physio-chemical, spatio-temporal surroundings of some *organism*. See also: *Ecology*; *Umwelt*.

Lifeworld Originally coined by Edmund Husserl, the Lifeworld (*Lebenswelt*) constitutes the "lived experience" of a human or non-human. All phenomena appear in (individual or collective) Lifeworlds. See also: *Umwelt*.

Umwelt Means 'environment' or 'surroundings' in German (literally: 'surrounding world'). Jakob von Uexküll used this term for a model of the self-centered world of an *organism*, which includes all the meaningful *objects* in aspects that are associated with the *organism*'s functions. See also: *Lifeworld*.

It is worth mentioning though that although Umwelt theory in their version explicitly is seen as a context theory, context is not in their glossary. This is not a critique. They see biosemiotics basically as a sign theory and Umwelt as context. I do too, but I am particularly interested in the role of the in-between-levels, utterance and genre. Without going into details, signs in my view constitute utterances and can hence be considered as tools for and elements in utterances. The level of lifeworld may generally equal Umwelt/Innenwelt. A difference though is that my view is predominantly *communicational*, while biosemiotitians generally stick to *sign* and *semiotics*. These three notions are of course strongly interrelated, but communication may signal more weight on meso- and macro-levels. Another difference is that lifeworld is regarded as systemic since it is seen as established by embodied contexts, as a *system* of genres (Ongstad, 2010).

Finally, on differences, biosemiotics mostly refers to American pragmatism, while the framework mainly is turned toward European pragmatics, although there are American theorists that partly bridges the gap, such as John Dewey and Charles Morris. My own work on lifeworld and genre relates more to the tradition after Husserl (Husserl, 1970; Schütz, 1970; Schütz & Luckmann, 1973; Luckmann, 2009; Habermas, 1981). It is especially the possibility of combining Habermas' communicative perspective on the lifeworld and Luckmann's view on societal genres that I find valuable. Their theoretisation of context is less developed though.

Uexküllean Umwelt theory is now being developed further by new generations of biosemiotitians. Alin Olteanu aims at bridging biosemiotics and social semiotics (Olteanu, 2021; Kull, 2009) knits together different historical threads and points to kinds of Umwelts. Maran et al., (2016) develop the Umwelt concept as a tool to discuss the human-animal relation. More critical voices are Stella & Kleisner (2010) who claim that the concept Umwelt even has "a dark side". Finally, as examples of newer research on Umwelt, Tønnessen (2015) describes the relevance of Uexküll and his Umwelt concept today. I could have mentioned many more. The idea though is that these works (among others) do not discuss context *as such* at any length, probably based on a general trust that the idea of Umwelt is functional enough for conceptualising context.

Summing up Perceptions and Conceptions of Context

Below I have collected punch-lines, brief claims about, and characterisations of context, connected to different scholars in the fields:

J. Firth: You shall know a word by the company it keeps.

M. Bakhtin: A code is a killed context.
D. Hymes: There are multiple layers of contexts.
T. van Dijk: Context is mental.
J. Culler: Meaning is context bound, but context is boundless.
P. Bourdieu: Habitus is the body's second nature.
A. Bex: Genre as Context.
F. Erickson & D. Schultz: When is a context?
W. Thomas & D. Thomas: The perception of a situation, someone's sense of situationality, can be said to partly *cause* an action.
J. Culler: Context is not given but produced.
O. Miyamoto Gomez: Corvids, apes, and rodents can take goal-directed actions on the basis of *absent spatiotemporal contexts.*
A. Fetzer: In conclusion, the relational status of context requires an interactive frame of reference accounting for context, contextualisation, decontextualisation and recontextualisation.
K. Popper: Distinguishes context of discovery from context of justification.

In order to integrate and unify these concepts into a least-common-multiple, we may use a concentrated version of a McLuhan-inspired idea, here party based on Logan (2011) and partly based on general gestalt-concepts:

A *focus* made from a *position* generates a *figure* and hence a *ground*.

Each of these aspects can be further specified: A *focus* is a limiting scope generated from an extensive field of particular interest(s), a "relevant next" (Favareau, 2015). A *position* from which one focuses can be concrete and/or abstract. Attentions that generate focusing, create simultaneously a scope delimiting a *figured* object. Surrounding grounds can be seen as contexts (Bateson, 1972). The overall idea can be captured with the words of Bateson: "It is important to see the particular utterances or action as *part* of the ecological subsystem called context and not as a product or effect of what remains of the context after the piece we want to explain has been cut from it." Bateson (1972, p. 338).

The above suggested least-common-multiple of elements implies in some sense an *essentialised* perspective on context as a *general* concept. However, *specific* contexts as researchable phenomena should be seen as dynamic, open, and relational, which in turn will raise epistemological as well as methodological principal questions. Epistemological challenges are especially related to the problems embodied situationality and embodied genres will create for studies within a zoo-communicational system. Methodologically a main challenge will be to answer where and when contexts are in studies of animal communication, especially contexts that may influence a study's validity significantly.

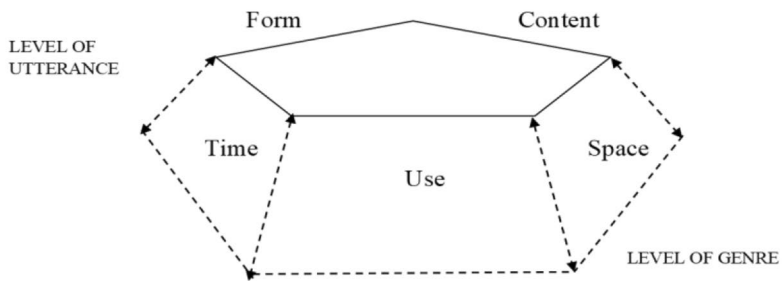## Basic aspects constituting utterances and genres as communication

Fig. 1 Five basic aspects constituting utterance as communication. Utterance and genre are modelled as a shortened or cut pentagonal pyramid with utterance as a concrete surface plane and genre are an underlying abstract part, marked by dotted lines. The pentagonal relationship between the five basic aspects applies for both levels. The double-headed arrows between the two planes symbolise the dynamic, dialogical, reciprocal relationship between of utterance and genre as well as the openness of the system. 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). [Copyright The Author.]

Epistemological and Methodological Issues

A Framework for Raising Epistemological and Methodological Issues

Above I concluded that focusing creates a contemporary blindness, a context. In the following I will make explicit which aspects that might hide in the blind-zones. To clarify the highlighted (epistemological and methodological) issues, I will apply a simplified version of the more comprehensive communicational framework presented in Ongstad (2019). The systemic framework as a whole consists of five utterance and genre *aspects*: form, content, act, time, and space and five ditto *processes*: structuring, referring, addressing, timing, and 'spacing'. Further, four interrelated *levels* are presumed: sign, utterance, (life-)genre, and lifeworld as well as *processes* that may work within and/or between the levels, for instance semiosis, given-new mechanisms, genrification, and overall meaning-making (Ongstad, 2022). (Genrification means creation or change of kinds of communication). All processes are in principle sign processes though. The model in Fig. 1 has left out the level of sign and lifeworld concentrating on the two levels placed in-between, utterance and genre, since they are expected to cause most trouble for perceptions of context. Somewhat simplified signs can be seen as building blocks in utterances. Lifeworld can be seen as the highest level of (and for) meaning- or sensemaking, comprehending all communicational resources in a (species') communicational system.

 Context is no place and everywhere in the model. The key point is that any focusing on a specific aspect makes the other aspects contextual. This will be explained in detail in the next section. Moving from the generalised description of context above to more specific, empirical studies of animal communication, the assumption or

hypothesis that even animals communicate by genres should be explained. They are called *life-genres* based on the idea that they serve animal basic life-functions such as kinds of alarm calls, kinds of birdsong, ways of territory defence, mate attraction, mate stimulation, pairbond maintenance, kinds of lek in lek-places, kinds of organised communication for hunting, kinds of bite in play ("this bite is not a bite"), etc. Examples of analysed animal utterances in context, in other words life-genres, are found in Ongstad (2019, 2021a, 2022).

Combining Framework Aspects and the Issue of Context(s)

The framework suggests that both utterances and life-genres, seen as a dynamic whole, and hence as communication, are joint dynamics of form, content, act, time, and space. From the perspective of context each of these aspects and all their many specific sub-aspects will have different contexts, depending on the specific *focusing*. This insight is the lesson from the search for a least-common-multiple. In the following I point out some context-related issues for each of the five aspects that may come to surface when observing, documenting, and describing as part of a research process.

Form is the only aspect of the five that is physical for involved interlocutors since it is structured in matter, normally shaped by utterers' bodies and bodily processes and as such it is the only directly measurable, recordable aspect of what is uttered as a whole. This physicality, the structured form of the utterance may occur *blurred* with physicalities of the surroundings. Documenting and interpreting will need both de- and recontextualisations during the research process since form has to be connected by interpretation to the four other aspects as well. It is necessary to keep in mind though that structured form concerns and relates to *all* types of senses and ways of uttering not only a single direct observable aspect. In short, a single utterance's form may consist of more than one sense and one type of form. It might be multimodal.

The second aspect, *content* is immanent and can hence only be anticipated. Empirically it should hence be studied as a *symptom* (Bühler, 1934). Whether an utterance's semantic content is indexical or a 'real' reference (Ongstad, 2021a) is not an issue in this connection. In animal semantics *aboutness* has been suggested as an alternative to content (Adams and Faigly, 2013; Yablo 2014.) Any content should in any case be considered as rather general and mental (Ongstad, 2022). The contexts for a (focused or assumed) content in animal communication might hence be as vague as content itself. To decide how significant a certain context might be for a content observers will often need to interpret *a situation* as a whole, that is, in a wider context of meaning for involved animals. (Yet, as mentioned, situationality in turn is related to embodied life-genres.)

The third aspect, the addressed *acts* of an utterance, when studied, risks being directly associated with physical behavior. Analysts may too hastily term the act with active verbs, such as *to play*, *to call*, and *to warn*, metaphorising some sort of intention related to animals' basic life-functions. Such 'verb-tagging' might be rather anthropomorphic (Wynne, 2007). Studies should encourage independent reinterpretation for the sake of validity. Acts should in a sense be *recontextualised* by yet another observer's *attention*.

The fourth and fifth aspects of utterances are the assumed embodied *time* and *space*. Combining and fusing the dyadic chronotope (Bemong et al., 2010) with the triadic version of utterance will nevertheless imply that concrete or objective time and space will still work as context for a ('pentagonal') utterance as a whole.

An implication of applying the framework is that de-contextualising will mean to consider which role the other aspects may play for the validity of the focused one. This has to be done both for a possible embodied context (a life-genre) as well as for the physical time-space surroundings. To interpret a possible wholeness for a concrete researched utterance implies a re-contextualisation. The validity of the research as a whole is related to the quality of the de- and re-contextualisation. Finally, in the process of publication the study is dependent on the different formats, the research-genres (Ongstad, 2014).

To connect to a biosemiotic perspective, context can be regarded as the metastable nature of an embodied umwelt in practice. Like Peirce's object, each new focusing, or representamen, will engender, i.e., embody, a new context that entails both the utterance and its life-genre. I owe this point to one of my reviewers. An other way of illustrating the dynamics of focusing as a process and hence creating ever new contexts one can think about the shift of lens-position of a camera in motion with its auto-focus turned on.

If we stick with the perspective on utterance as pentagonal, we are still left with the puzzle how time and space has 'entered' a body in the first place. Further, what embodied time and space when uttering and interpreting really mean or imply for animals can only be guessed (based on symptoms), at least until neurological research has become far more sophisticated (Schumacher, 2012). I should make clear that I use symptom in Bühlerian sense when a sign, an utterance's structured form, is a symptom of an immanent inner state. Yet, animals do have brain-cells that can handle place, time, and space. During the last decade research has been able to locate neural mechanisms for handling place (Moser, Kroppf, and Moser, 2008), time (Tsao et al., 2018), and space (Høydal et al., 2019) in rats' brains. Also, newer research in ethology, zoo-communication, and biosemiotics deals with this challenge. Regarding time, for instance, an early example of this orientation is Jakob von Uexküll's explorations of the temporal constitution of living beings, studied more in depth by Magnus (2011). A recent study is Nomura et al. (2020). In a biosemiotic context space has been studied, for instance, by Ireland (2015). Such studies combine hard and soft sciences, leaving the comfort zone of established research fields by theorising and investigating empirically the role of time and space both as abstract and concrete context. In Ongstad (submitted) I study such empirical efforts.

To study just utterance and its aspects is not sufficient. Utterances are supposed to be interpreted *by* life-genres helping animal interlocutors, as utterers to suggest and as receivers to interpret, which specific utterance aspects (of the five) that may be more (or less) *dominant* (foregrounded or highlighted) in a particular setting, (Jakobson, 1935 ; Ongstad 2021b). In other words: What is most important of expressivity (aesthetics and emotionality), referentiality (what it is about), addressivity (kind of act), of chronotopical aspects? How to understand and to interpret this balancing of aspects will depend on whether the overall theoretical starting point, the position taken by the first *attention*, for instance is syntax, semantics, pragmatics, or the like. Even the actual field, such as communication, contextual studies, history, geography,

culture, etc. may affect the attention, focus and context (ground). Given this challenge of general *pre-positioning* (Ongstad, 2007), it seems sensible for projects to start with a rather wide theoretical view to reduce a later possible context blindness based on a too early, hasty, and narrow chosen focus (Ongstad, 2014). From a broad pre-position researchers can eventually work their way gradually and methodologically towards a more narrow and specific perspective, one that facilitates empirical studies and presumably increase their studies' validity (Ongstad, 2014).

Contextualities and Situationalities of Life-Genres

A basic animal mental faculty is to perceive, recognise, distinguish, refine, and combine *kinds*. In an animal's life its first conceptions are presumably of concrete objects in its lifeworld/Umwelt. A further step is to handle interrelated concepts in clustered systems (Zentall et al., 2008). Later even utterances may, through increased experience, eventually be perceived and clustered as *kinds of communicational kinds*. Such processes are individual.

Characterising genres as 'just' kinds of utterances may at the first glance seem rather simplistic (MacLeod & Reydon, 2013). However, particular kinds can be further differentiated and divided into sub-kinds and further to kinds of kinds of kinds etc. of communicational behavior (Togeby, 2014; Ongstad, 2021b). Behavior is generally related to different crucial life-functions and can be further differentiated into recognisable clustered sets of distinguished and interrelated kinds of kinds of utterances (Lowe, 1997). The point here is just to make clear that a system can be fairly differentiated. And again, the process is in its first steps individual.

To search for higher order mental resources, such as the faculty of managing subtle use of sets of kinds/genres, and hence even embodied contexts, should not be too alien to ethology, zoo-communication, and biosemiotics. For instance, Tomasello (2014) resonates strikingly similar investigating evolutionary traits for human thinking. He argues that organisms must represent their experiences as *types*. These are seen as results of generalisation, as schematisation of cognitive models, as schemas of events and models of situations, which can be recognised as situations (Tomasello, 2014, p. 12). In other words as embodied/mental contexts.

Life-genres in use can therefore be considered as basically situational and, as discussed above, even contextual. Further, when clarifying *context* it was argued that subjective contexts, and hence subjective times and spaces, should be regarded as abstract, immanent, mental phenomena. The external time&space in which an utterance takes place, is therefore physical, 'non-mental', or 'concrete' and accordingly directly researchable. Researchers should, when analysing, follow the above warnings of Schegloff (1992) and Duranti & Goodwin (1992). 'Events', 'episodes', and 'happenings' are immanent, *subjective* parts of animal communication and have to be matched with documented *objective*, external, physical contexts or surroundings, and (shared) *intersubjective* interpretations (Habermas, 1981; Ongstad, 2014). Which finally leads us to methodology in a contextual perspective.

Some Methodological Issues – in Brief

Keeping the description of the least-common-multiple for context as concept in mind, researchers, including myself, should explicitly address, clarify, and relate the following context parts when validating:

- One's own *attended* theoretical and physical *position* in time&place.
- The observed uttering animal's *position* (assumed by the observer).
- The *focused* utterance (the *figure*).
- The utterance's *ground*, hypothetically consisting of both embodied situationality and context as a possible life-genre.
- Concrete *contexts*, as external, non-mental physicalities, surroundings, 'objective' times and spaces.

I should stress that since context is seen as a notorious *relational* concept, the 'nature' of context is partly paradoxical. Context are embedded in each other like so-called Chinese boxes, a context is a context is a context etc. Any *specific* context hence needs an added clarifying notion explaining the particular kind of context.

The above core elements of context as a concept apply *simultaneously* (a) to the studied animal(s), (b) the researcher(s), and (c) the meta-researcher (here me) when validating. At the end of the day contexts are directly relevant and significant for observers (and observers of observers, etc.) since to research is to attend and to contextualise ever shifting processes.

In theories of general sciences a traditional distinction has been made between *the context of discovery* and *the context of justification* (Hoyningen-Huene, 1987; Popper, 2005). The implicit shift implies kinds of genres. The research process, which may run from studying animal utterances in context (and hence possible embodied life-genres), via applying sets of methods (research genres) to publishing (text and media genres of different formats) will imply a row of shifting positions through several contextualisations, decontextualisations, and recontextualisations. Genre and context and their internal dynamics will be deeply inherited. Genrefying is contexting and vice versa (Bex, 1992; Ongstad, 2014, 2021b; Frow, 2014).

Perceptions of Context – Outcomes and Perspectives

Recent research in empirical studies of animal communication has lately more often pointed out context as an under-researched issue (Ongstad, 2022). The 'lack' motived a search in newer literature on context. This inspection aimed at clarifying key characteristics of context as a phenomenological *concept* when detached from restricting, linguistic theories of verbal language, which historically kept text and context separate. Searches were done within critical text theories, media studies, cultural theories, semiotics, and communicational theories. The inspection sought a least-common-multiple across fields.

An intermediate generalised and concentrated finding was expressed by the use of a McLuhan-inspired sentence, stressing the significance of attention: A *focus* made

from a *position* generates a *figure* and hence a *ground*. Each aspect was further seen as a process element, when contextualising, where surrounding grounds eventually would end up as specific contexts. This conclusion implied a view on context, when applied on communication, that was basically perceptional, relational, dynamic, and open. However, this somewhat essentialised view on context as a general concept would admittedly have a long way to go before it could be operationalised in concrete, empirical research on zoo-communication. Especially epistemological and methodological issues were pointed out as possible challenges.

In order to discuss such challenges a simplified version of a theoretical framework designed for the study of communication was outlined and applied. Based on the framework it was described more in detail how contexts would be related to each of the five assumed aspects form, content, act, time, and space and the many sub-aspects of each of these aspects. An epistemological key question was where to position time and place. It was concluded that although it is theoretically possible to place time and space as part of an utterance, it would be a far more comprehensive task to study their role empirically. This challenge will be taken up in a following study (Ongstad, submitted).

The text further returned to the generated least-common-multiple version of context. Based on its key aspects some general methodological concerns were outlined stressing the role different kinds of life-genres play when contextualising. Context had throughout the paper been presented as a relational concept. It was argued that over the last five decades or so, contextual theories had been in transition, and that this epistemological drift represented a reconceptualisation of earlier perceptions.

The idea has not been to describe in detail any context of any given focus, but to consider the contexts' possible *impact* on the claimed results. Hence, to contextualise is to validate and vice versa. Again, with the words of Goodwin and Duranti (1992, p. 31–32): "To rethink something means to recontextualise it, to take it out of earlier frames and place it in a new set of relationships and expectations."

In a methodological perspective re- and de-contextualising can be studied as interconnected *positioning(s)* (Ongstad, 2007, 2014): A studied animal is positioning when adapting its utterance to a situation. A researcher positions an animal's utterance both by the preferred theory and the chosen methods. A meta-study positions the chosen studies according to a preferred assumption. A blind review may force a researcher to reconsider, to reposition, to rethink, in short, to recontextualise in order to validate findings.

According to Fetzer (2002, p. 287) to investigate context in communication represents a complex endeavour. It not only has to account for coparticipants and their communicative actions, but also for the context, in which the communicative actions are performed to achieve one or more communicative goals:

"Moreover, coparticipants do not generally produce and interpret isolated utterances, but produce and interpret utterances embedded in yet other utterances". Her conclusion is therefore: "[…] the relational status of context requires an interactive frame of reference accounting for context, contextualisation, decontextualisation and recontextualisation" (Fetzer, 2002, p. 255).

In the process of writing this article on context I have been confronted with the importance of Umwelt theory within biosemiotics as a field. The direct lines between Umwelt and signs, or Sebeok's combination of Uexküll and Peirce, are stressed in newer studies in the field. A connection between this micro-macro combination is

most likely functional when the researched objects are concrete (delimitable). My own flagged view on signs and Umwelt is not far from mainstream perceptions within biosemiotics. However, if one studies communication between uttering and interpreting animal minds I argued that biosemiotics might do with some intermediate meso-levels that could enable more subtle relations between signs and Umwelt/lifeworld.

Hopefully, this article may have several outcomes. Firstly, to work as a prerequisite and a conceptual steppingstone for my own meta-studies of time&space as contextual in animal communication. Secondly, to contribute to general conceptual, epistemological, and methodological problematisations of context more in general, across fields. Thirdly, and finally, as an utterance searching future dialogues with other perspectives and empirical studies in biosemiotics as a field, by offering a set of semiotic, communicational concepts.

Declarations

Conflict of Interest Not applicable.

References

Adams, F., & Beighley, S. M. (2013). Information, meaning and animal communication. In U. Stegmann (Ed.), *Animal Communication Theory: Information and Influence* (pp. 399–420). Cambridge: Cambridge University Press

Bakhtin, M. (1986 [1979]). *Speech genres and other late essays*. Austin:University of Texas Press

Bar-On, D. (2021). How to do things with nonwords: pragmatics, biosemantics, and origins of language in animal communication. *Biology & Philosophy*, *36*(6), 1–25

Bateson, G. (1972). *Steps to an Ecology of Mind*. New York: Ballantine Books

Bazerman, C. (1994). Where is the Classroom?. In A. Freedman, & P. Medway (Eds.), *Learning and Teaching Genre*. Porthsmoth, NH: Boynton Cook, Heinemann

Beecher, M. D. (2021). Why are no animal communication systems simple languages? *Frontiers in Psychology*, *12*, 602–635. doi: https://doi.org/10.3389/fpsyg.2021.602635

Bemong, N., Borghart, P., De Dobbeleer, M., Demoen, K., De Temmerman, K., & Keunen, B. (2010). *Bakhtin's theory of the literary chronotope: Reflections, applications, perspectives* (p. 213). Academia Press

Bernstein, B. (1990). *The Structuring of Pedagogic Discourse. Vol. 4: Of Class, Codes and Control*. London: Routledge

Bex, A. R. (1992). Genre as Context. *Journal of Literary Semantics 21:1* (1992), 1–16

Bourdieu, P. (1989). *Outline of a Theory of Practice*. Cambridge: Cambridge University Press

Bühler, K. (1934). *Sprachtheorie* (2 vol.). Fischer: Jena

Culler, J. (1981). *The Pursuit of Signs: Semiotics, Literature, Deconstruction*. Ithaca: Cornell University Press

Culler, J. (1988). *Framing the Sign. Criticism and its Institutions*. Oxford: Oxford University Press

Duranti, A., & Goodwin, C. (Eds.). (1992). *Rethinking context. Language as an interactive phenomenon*. Cambridge (UK): Cambridge University Press

Erickson, F., & Schultz, J. (1981). When is a context?. In J. Green, & C. Wallat (Eds.), *Ethnography and language in educational settings*. Norwood, NJ: Ablex

Favareau, D. F. (2015). Creation of the relevant next: How living systems capture the power of the adjacent possible through sign use. *Progress in biophysics and molecular biology*, *119*(3), 588–601

Fetzer, A. (2002). Micro situations and macro structures: Natural-language communication and context. *Foundations of science*, *7*(3), 255–291

Firth, J. R. (1957). A synopsis of linguistic theory 1930–1955. *Studies in Linguistic Analysis* (pp. 1–32). Oxford: Philological Society

Foucault, M. (1972). *The Archeology of Knowledge*. London: Tavistock Publications

Frow, J. (2014). *Genre*. London: Routledge

Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. Berkeley (CA): University of California Press

Goffman, E. (1974). *Frame Analysis*. New York: Harper & Row

Goodwin, C., & Duranti, A. (1992). Rethinking context: an introduction. In A. Duranti, & C. Goodwin (Eds.), *Rethinking context. Language as an interactive phenomenon* (pp. 1–42). Cambridge (UK): Cambridge University Press

Graddol, D., Maybin, J., & Stierer, B. (Eds.). (1994). *Researching language and literacy in social context: a reader*. Bristol: The Open University: Multilingual matters

Habermas, J. (1981). *The theory of communicative action*. London: Beacon Press

Halliday, M. A. K. (1978). *Language as social semiotic*. London: Arnold

Halliday, M. A. K. (1994). *An Introduction to Functional Grammar. Second Edition.* London: Arnold

Halliday, M. A. K., & Matthiessen, C. (2014). *An introduction to functional grammar*. London: Routledge

Hebets, E. A., Barron, A. B., Balakrishnan, C. N., Hauber, M. E., Mason, P. H., & Hoke, K. L. (2016). A systems approach to animal communication. *Proceedings of the Royal Society B: Biological Sciences*, *283*(1826), 20152889

Hoffmeyer, J. (1996). *Signs of meaning in the universe. The natural history of signification Bloomington :Indiana University Press*

Hoyningen-Huene, P. (1987). Context of discovery and context of justification. *Studies in History and Philosophy of Science Part A*, *18*(4), 501–515

Husserl, E. (1970). *The crisis of European sciences and transcendental phenomenology: An introduction to phenomenological philosophy. Transl. of and selection from Husserl 1954 by D. Carr*. Evanston: Northwestern University Press

Hymes, D. (1972). On communicative competence. In J. Pride & J. Holmes (eds.) *Sociolinguistics*, 269–293

Høydal, Ø. A., Skytøen, E. R., Andersson, S. O., Moser, M. B., & Moser, E. I. (2019). Object-vector coding in the medial entorhinal cortex. *Nature*, *568*(7752), 400–404

Ireland, T. (2015). The spatiality of Being. *Biosemiotics*, *8*(3), 381–401

Jakobson, R. (1935 [1971]). The dominant. In L. Matejka, & P. Krystyna (eds.), *Readings in Russian poetics: Formalist and structuralist views* (pp. 82–87). Cambridge: The MIT Press

Kovala, U. (2014). Theories of context, theorizing context. *Journal of literary theory*, *8*(1), 158–177

Kramsch, C. (1993). *Context and culture in language teaching*. Oxford: Oxford University Press

Kull, K. (2009). Umwelt and modelling. In P. Cobley (Ed.), *The Routledge Companion to Semiotics* (pp. 43–56). Oxon: Routledge

Logan, R. K. (2011). Figure/ground: Cracking the McLuhan code. *E-Compós Brasília*, *14*(3), 1–13

Lowe, E. J. (1997). Ontological categories and natural kinds. *Philosophical papers*, *26*(1), 29–46

Luckmann, T. (2009). Observations on the structure and function of communicative genres. *Semiotica*, *173*(1–4), 267–282

Lyons, J. (1977). Deixis, space, and time. *Semantics*, vol. 2, pp. 636–724. Cambridge University Press

MacLeod, M., & Reydon, T. A. (2013). Natural kinds in philosophy and in the life sciences: Scholastic twilight or new dawn? *Biological Theory*, *7*(2), 89–99

Magnus, R. (2011). Time-plans of the organisms: Jakob von Uexküll's explorations into the temporal constitution of living beings. *Sign Systems Studies*, *39*(2–4), 37–57

Malinowski, B. (1935). *Coral Garden and their magic, 2 vols*. London: Allen & Unwin

Maran, T., Tønnessen, M., Armstrong, O., Kiiroja, K., Magnus, L., Mäekivi, R., N., …, & Tüür, K. (2016). *Animal umwelten in a changing world: zoosemiotic perspectives* (p. 276). Tartu: University of Tartu Press

Martin, J. R. (1997). Analysing genre: Functional parameters. In F. Christie, & J. Martin (Eds.), *Genre and institutions: Social processes in the workplace and school* (pp. 3–39). London: Continuum

McLuhan, M. (1994). *Understanding media: The Extensions of Man*. Cambridge (MA): MIT Press

Merriam-Webster (2022). *Context*. Visited 19.03. 2022

Miyamoto Gómez, O. S. (2021). Four Epistemological Gaps in Alloanimal Episodic Memory Studies. *Biosemiotics*, 1–19

Morris, C. (1938). [1970]) *Foundations of the Theory of Signs*. Chicago: Chicago University Press

Moser, E. I., Kropff, E., & Moser, M. B. (2008). Place cells, grid cells, and the brain's spatial representation system. *Annual Review Of Neuroscience*, *31*, 69–89

Nelson, K. (1986). Children's script. *Event knowledge: Structure and function in development*, 231–243

Nomura, N., Matsuno, K., Muranaka, T., & Tomita, J. (2020). Toward a Practical Theory of Timing: Upbeat and E-Series Time for Organisms. *Biosemiotics*, *13*(3), 347–367

Olteanu, A. (2021). Multimodal Modeling: Bridging Biosemiotics and Social Semiotics. *Biosemiotics*, *14*(3), 783–805

Ongstad, S. (1997). *Sjanger, posisjonering og oppgaveideologier*. [Genre, Positioning, and Task Ideologies.] Doctoral Thesis. Trondheim: NTNU

Ongstad, S. (2004). Bakhtin's triadic epistemology and ideologies of dialogism. In F. Bostad, et al. (Eds.), *Bakhtinian perspectives on language and culture* (pp. 65–88). New York: Palgrave Macmillan

Ongstad, S. (2005). Context. *Encyclopedia of linguistics*. New York: Fitzroy Dearborn Publishers/Taylor & Francis

Ongstad, S. (2007). Positioning in theory. A methodological framework for MTE-studies and beyond. In W. Herlitz, et al. (Eds.), *Research on mother tongue education in a comparative international perspective* (pp. 119–148). Leiden: Brill

Ongstad, S. (2010). Synchronic-diachronic perspectives on genre systemness: Exemplifying genrification of curricular goals. *Genre and Cultural Competence: An Interdisciplinary Approach to the Study of Texts* (pp. 35–50). Berlin: Waxmann

Ongstad, S. (2014). The Blindness of Focusing. Pragmatic theories of communication and the challenge of validation. *Reconceptualizing Educational Research Methodology*, *5*(2), 128–144

Ongstad, S. (2019). A conceptual framework for studying evolutionary origins of life-genres. *Biosemiotics*, *12*(2), 245–266

Ongstad, S. (2021a). Can Animals Refer? Meta-Positioning Studies of Animal Semantics. *Biosemiotics*, *14*(2), 433–457

Ongstad, S. (2021b). Genre Constituents in "Reflections on Genre as Social Action"– in the Light of 1980s' Genre Research? *Discourse and Writing/Rédactologie*, *31*, 86–108

Ongstad, S. (2022). Simple Utterances but Complex Understanding? Meta-Studying the Fuzzy Mismatch between Animal Semantic Capacities in Varied Contexts. *Biosemiotics*, *15*, 1–24

Ongstad, S. (Submitted). *Time and space as mental and life-genres as embodied situationality and contextuality? A meta-study of zoo-communicational research.* (Manuscript.)

Patricelli, G. L., Hebets, E. A., & Mendelson, T. C. (2019). The evolution of beauty: How Darwin's forgotten theory of mate choice shapes the animal world—and us. *(2017)* by R. O. Prum. [Review.] *JSTOR*, 73/1, 115–124

Perconti, P. (2002). Context-dependence in human and animal communication. *Foundations of Science*, *7*(3), 341–362

Popper, K. (2005). [1959]). *The logic of scientific discovery*. London: Routledge

Posner, M. I. (Ed.). (2017). *The Psychology of Attention*. London: Routledge

Power, E. M. (1999). An introduction to Pierre Bourdieu's key theoretical concepts. *Journal for the Study of Food and Society*, *3*(1), 48–52

Preyer, G., & Peter, G. (Eds.). (2005). *Contextualism in philosophy: Knowledge, meaning, and truth*. Oxford, UK: Oxford University Press

Saussure, F. (1916). Nature of the linguistic sign. *Course in general linguistics*, *1*, 65–70

Schegloff, E. A. (1992). In another context. In A. Duranti, & C. Goodwin (Eds.), *Rethinking context. Language as an interactive phenomenon* (pp. 191–228). Cambridge (UK): Cambridge University Press

Schumacher, P. B. (2012). Context in neurolinguistics: Time-course data from electrophysiology. In R. Finkbeiner, J. Meibauer, & P. B. Schumacher (Eds.), *What is a context? Linguistic approaches and challenges* (pp. 33–53). Amsterdam: John Benjamins

Schütz, A. (1970). Some structures of the life-world. *Collected papers III* (pp. 116–132). Dordrecht: Springer

Schütz, A., & Luckmann, T. (1973). *The structures of the life-world* (1 vol.). Evanston (IL): Northwestern University Press

Scott-Phillips, T. C. (2015). Nonhuman primate communication, pragmatics, and the origins of language. *Current Anthropology*, *56*(1), 56–80

Sebeok, T. A. (1976). *Contributions to the doctrine of signs (Studies in semiotics)* (5 vol.). Bloomington: Indiana University Press

Sharov, A. (2001). Umwelt theory and pragmatism. *Semiotica*, 2001/134: 211–228

Sharov, A., & Tønnessen, M. (2021). *Semiotic Agency: Science Beyond Mechanism*. Cham: Springer Nature. https://doi.org/10.1007/978-3-030-89484-9

Stella, M., & Kleisner, K. (2010). Uexküllian umwelt as science and as ideology: the light and the dark side of a concept. *Theory in Biosciences*, *129*(1), 39–51

Thomas, W. I., & Thomas, D. S. (1928). The methodology of behavior study. *The child in America: Behavior problems and programs* (pp. 553–576). New York: Knopf

Togeby, O. (2014). A model of text types and genres. In J. Engberg, C. D. Maier, & O. Togeby (Eds.), *Reflections upon Genre: Encounters between Literature, Knowledge, and Emerging Communicative Conventions* (pp. 147–176). Tübingen: Narr Verlag

Tomasello, M. (2014). *A natural history of human thinking*. Cambridge (MA): Harvard University Press

Tsao, A., Sugar, J., Lu, L., Wang, C., Knierim, J. J., Moser, M. B., & Moser, E. I. (2018). Integrating time from experience in the lateral entorhinal cortex. *Nature*, *561*(7721), 57–62

Tønnessen, M. (2015). Umwelt and language. *Biosemiotic perspectives on language and linguistics* (pp. 77–96). Cham: Springer

Uexküll, J. (1982). [1940]). The theory of meaning. *Semiotica*, *42*(1), 25–82

Van Dijk, T. A. (2008). Text, context and knowledge.Hizkuntza Naturalaren Prozesamenduari eta Zientzia Kognitiboei Nazioarteko, *5* https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.652.8455&rep=rep1&type=pdf

Van Dijk, T. A. (2009). *Society in Discourse. How Context Controls Text and Talk*. Cambridge: Cambridge University Press

Van Dijk, T. A. (2015). Context. *The international encyclopedia of language and social interaction*, 1–11

Witzany, G. (2014). Pragmatic turn in biology: From biological molecules to genetic content operators. *World Journal of Biological Chemistry*, *5*(3), 279

Wynne, C. D. (2007). What are animals? Why anthropomorphism is still not a scientific approach to behavior.Comparative Cognition & Behavior Reviews, *2* http://courses.washington.edu/anmind/Wynne-anthropomorphism-CCBR2007.pdf

Zentall, T. R., Wasserman, E. A., Lazareva, O. F., Thompson, R. K., & Rattermann, M. J. (2008). Concept learning in animals. *Comparative Cognition & Behavior Reviews*, *3*, 13–45

Yablo, S. (2014). Aboutness. *Aboutness*. Princeton: Princeton University Press

Authors and Affiliations

Sigmund Ongstad[1]

✉ Sigmund Ongstad
   sigmund@oslomet.no

[1]   Oslo Metropolitan University, St. Olavs plass, N-0130 Oslo, Norway