

## Zoosemiotics 2.0

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**Abstract** This paper discusses how major changes in methodology, ideology and the points of view of researchers have given linguistics a new opportunity to study animal semiotics and return to the “animal language” question. The article presents new linguistic perspectives from language theory but also from sociolinguistics, language development studies or the study of sign language. This paper shows how these perspective changes have scientifically modified the way linguists approach animal communication and cleared a path for new study fields such as biosemiotics and zoosemiotics. The second part of this article introduces other significant evolutions in various scientific fields, such as biology, neuroscience or ethology, but also philosophy, and how these changes are going in the same directions as linguistics’. It demonstrates how animal linguistics is without doubt a completely interdisciplinary subject where efficient research is only possible by paradigm changes in all related fields. The last part of the paper introduces some of these possible new study prospects.

**Keywords** Zoosemiotics · Biosemiotics · Linguistics · Ethology · Semiotics · Emotions

Zoosemiotics has quite a complex history with linguistics. If the latter first established itself as the perfect discipline to act as a structure to zoosemiotics, in order to provide it with research models and theoretical concepts, linguistics quickly distanced itself from that subject. Other disciplines, such as biology or ethology, took it under their wing later on. The topic of language, thought, or even soul, when it came to animals, had been a longstanding question on the minds of philosophers and theologians; however, linguists promptly considered the matter settled as far as

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they were concerned. Benveniste wrote in 1966 that “no cry of no species carries any meaning” [1]. Yet, at the time, primatologists were only beginning to study our nearest genetic cousins in the wild. There are several reasons why this partnership between zoosemiotics and linguistics failed, most of which related to the linguists’ approach of the animal linguistics issue as well as their methodology for human cases. The nature of zoosemiotics itself is not at fault—although it could also be blamed for it, as a field of study that requires such a wide array of knowledge is more easily exposed to conflicts between different viewpoints. At the time, there was a rather obtuse view of what language should be, how it should function and why everything else could not in good faith be called “language”. A groundswell occurred since then which resulted in a large change in the opinions of researchers on their subject [2]. The prospect of a reconciliation may finally be in the cards. Linguistics is not the only discipline in this situation, and the natural evolution of science means other related subjects have made similar progress that allows a new perspective on a possible semiotics of animals.

## 1 What Can We Learn from the Reworking of Human Linguistics?

One of the main reasons linguistics rejected zoosemiotics was the unrelenting refusal to view any form of animal communication as language. That refusal was strengthened by the fact that, as underlined with irony by the primatologists Roger Fouts [3] and Frans de Wall [4], the definition of language would change at every discovery from ethologists in order to find ways for it to only include humans. This was, in all likelihood, an experimental bias rather than an actual scientific premise, and it sometimes led to blatant signs of hypocrisy. For example, Benveniste would explain that spoken human language certainly had to be much superior to the bees’ dance, as we could convey information in the dark [1]. However, he never underlined that the bees could communicate despite severe noise pollution, while our spoken language would be inaudible—and therefore using that argument as proof one type of language was superior to the other was not substantial enough. This bad habit ended up turning against linguistics itself when descriptivists and anthropologists met and described incredibly isolated tribes with languages that possessed unique traits, as told by Peter Gordon [5]. Creating a definition of language so narrow as to exclude animals was now creating a risk of excluding other humans as well [6]. Nowadays, seeing language as being language not from its form but rather what it allows one to do [7]—recounting a memory, expressing complex emotions [8], teaching skills [9]—is more and more accepted. For instance, ethologists define language as something that can describe what is missing at a certain time and/or in a certain space.<sup>1</sup> This new perspective helped deconsecrating the pure form of language to focus on its mechanisms and content.

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<sup>1</sup> The French biologist and primatologist Georges Chapouthier explained that while this ability is not widely discussed, a few articles do explore it, like this recent one [10].

It is important to note that even in human linguistics, researchers displayed strong signs of orthocentricity throughout a long period of time; meaning that language could only be considered as such if it was “correct”—correct grammar, correct pronunciation, correct use of tenses. The rest was seen as erroneous language. This position was not damaging solely to zoosemiotics, as it is possible to consider it responsible for the slow but certain extinction of regional dialects [11]. That is where sociolinguistics contributed to the shift in the definition of language, presenting it not as an invariable norm but rather a code that changes from one group or individual to the next. For instance, this destabilized the notion that there was only one “proper French” and the French spoken in Belgium, Switzerland or Quebec were distorted versions of it; all of these are a type of French just as valid as the one advocated by the very strict *Académie Française*. This position supported the one held by ethologists studying monkeys using sign language, or talking birds, and saw in some of their research subjects’ creations some actual appropriations of language rather than mistakes in their use of the code: watermelons were “candy-fruit”, while apples were “bannery”—a contraction of both “banana” for the colour of the fruit’s flesh, and “cherry” for its exterior’s resemblance with that fruit [3, 12]. It seems obvious to us nowadays that if we teach a code—whether it’s through signs, typing on a keyboard or speaking—to a species so they can communicate with us, answer questions and show their cognitive capabilities, they will not appropriate that code in the same manner as us. That is due to their biology, their Umwelt [13], their connection to humans or non-humans being vastly different from ours. These various elements influence the link between the subject and the code they use, and the variations that are created as a result also are potential research subjects of their own. We must ask ourselves what produces those variations, and why? [14].

Because language is not a homogenous monolith. We are not born with a fully developed, perfect, structured, complete language anchored in our brains, with a universal grammar, simply waiting to be unveiled to the world [15]. If that theory was popular for quite a long time [16], it has since been strongly shaken to its core by research from linguists that specialise in children and language acquisition mechanisms. The progress of studies on language development in children allowed us to better grasp its complex structure and view it as an assembly of layers that depend upon different stages of development and different cognitive capacities, rather than a complete product from the start. These studies also helped us understand why this or that cerebral damage can deprive someone of some aspects—and only some—of their important ability to communicate with their own people [17]. What this progress meant to animal linguistics was new, fascinating research possibilities: by studying certain linguistic capabilities, could we discover unsuspected cognitive skills, and vice versa? This idea of a developing language also brought back an older concept that had once been dear to Darwin [18] but had since lost its momentum, including in living sciences, due to the behaviourist movement. The idea was that Man was not different from animals by nature, but rather by degrees. The newly-formed perspective gave a new start to the study of an animal linguistics by viewing it as the study of the different degrees or ways a common ability—language—developed amongst very different species.

This idea was also encouraged by another change that came from within human linguistics, which we could call language pathologisation. Until then, human language was a spoken language with double articulation, and if someone could not speak, they would use a substitution language to compensate for their pathological state [6]. However, in the last few years, the deaf community has become more visible and militant, asserting their own linguistic functioning, their own culture, and their own language. ASL—American Sign Language—and other “sign languages”<sup>2</sup> are not crutches for the language-impaired. They are real, fully-fledged languages, therefore the deaf are humans with a language. This assertion highlighted arguments relevant to the first part of this article; the “sign languages” do not often meet the defining requirements to separate language from simple communication. For example, the French Sign Language (*Langue des Signes Française*) is full of imagery and the arbitrariness of the sign is almost never respected. As for the double articulation of phoneme and lexeme, it simply is not there. The signs to spell words letter by letter could be seen as a substitute for the latter but, firstly, they are mostly a substitute for *written* language, and secondly, this system only exists for languages with an already defined written alphabet. The Japanese Sign Language, for example, is completely devoid of one. Can we truly keep basing scientific research on a definition that exclude some humans from the group of language-using beings? When faced with the absurdity of such a question, it is possible to say the changes in perspective within human linguistics could very well create a new frame of research, for a new animal linguistics.

However, this change in linguistic perspective is only possible thanks to progress from related fields, all of which are dealing with the topic of animal semiotics, and that progress made in each of their area of expertise is vital.

## 2 What Can We Learn from the Progress of Related Disciplines?

If we start with the biggest related discipline, animal biology, we can note important paradigm shifts over the past few years. Whereas studies used to be done on groups and were mainly looking for common patterns in behaviour, newer studies, primarily in primatology and cetology, focus more on the notion of individuals [19]. This notion quickly became capital in vastly varied subjects such as reproduction programs for endangered species. Cynthia Moss [20], the African elephant expert, explains that their very substantial long-term memory and strong emotional bonds between each other mean that these elephants cannot simply be replaced by another at random, and that by moving some of them between different herds to avoid consanguinity, we were actually creating large social disruptions and reducing birthrates. But cetologists have to be the ones that have extended a hand to zoosemiotics the most by revealing the existence of first names amongst dolphins—

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<sup>2</sup> Sign languages have been at the centre of a debate since their creation on whether they should be called “languages”, causing many to use that term between quotation marks. As for myself, it is the word “sign” that bothers me as a semiotician, as all languages are sign languages. In my opinion, the phrase “sign language” shows once more the issues we have with seeing our dear spoken language as simply a series of communication signs.

a fixed, unchanging signal referring to a specific subject, used only to call or address them and not in any other context [21].

Recent Russian research [22] has reached similar results that tend to prove some of the dolphins' sonar pulses constitute words made from phonemes, showing instances of dialogues with emissions followed by alternating silences to listen for a response. As the study in question is fairly recent and has panned over several years, we consider that we should await further confirmation before drawing definitive conclusions, but the interest, examination and enthusiasm it creates is understandable. If those results come to be confirmed, they would surely be a new, extremely broad field of interactions between ethology and linguistics.

These discoveries have raised two questions: are other animal species capable of self-awareness—which the mirror test, while limited, shows they likely have more self-awareness than we thought [23]—a *sine qua non* criteria in linguistics to discuss speakers, speech or dialogues? And do they have some form of emotional life? Neurosciences have made very interesting strides on these questions, revealing similar neurological patterns in both our species and others when we are confronted to events or situations likely to cause similar emotions: anguish, fear, anger, sadness [24], empathy... These emotions are fascinating because they offer remarkable semiotic entry points. An emotion is difficult to hide—it even fills the Umwelt of the individual experiencing it, who rarely wishes to hide it, as others seeing it will offer support, protection, comfort or help [25]. It involves often complex cognitive capacities, such as the theory of mind [26] or triangular processes, and taking into account the importance emotions have in an individual's life is an important step to understand those that stand before us. Ironically, these semiotic study subjects are where traditional linguistics fails: as precise and comprehensive as it is, language is quite a poor carrier when it comes to emotions that overwhelm us. Nonetheless, we exhibit plenty of signs that are very well understood by our kind. This makes semiotics the most effective field of linguistics to study emotions, and neurosciences show us that in certain species, these emotions are everywhere.

It may be ethology that used this new realisation in the most interesting way, by putting together what we now call “testing ecology” or “pertinence” [27]. Christophe Boesch [28] had long criticised tests where young humans were compared to young monkeys, arguing that, for objectivity's sake as well as to avoid a Clever Hans phenomenon [29], the young monkey would be isolated from the experimenter and left on their own with the test, while doing the same to the young human would have immediately caused a scandal. But to think the test was truly objective was completely misunderstanding the young primates, who, without their mother or a familiar human to comfort them, could only be in a state of considerable insecurity. Emotion would fill their mental world, and their shortcomings in the test were not surprising in the slightest: it was the last thing on their mind. The notion of ecology also rekindled an interest in certain types of experimentation by explaining why previous tests had failed. Next to the success of Premack or the Gardners' signing monkeys [30] was the failure of Terrace's Project Nim [31], which was often used as their counterpoint. The notion of ecology now lets us see this failure as a perfectly predictable result [32]. By putting together a very strict learning process in an overly-controlled environment, Terrace simply deprived his subject of a

reason to acquire language, while the Gardners put the emphasis on creating social links, as well as giving games and affection to their subjects to motivate them to learn. This vision is much more to linguistics than just a question of pure form: what motivates speech? Why is it so important that the others understand you? What do you have to say when you are human, a bonobo, an elephant?

Logically, these questions reintroduced zoosemiotics to philosophers, offering new problems to ponder over. A long-standing question for them was finding what the privilege of being human was. A new question emerged; why is it so important? Why have we put such an emphasis on this topic, including in hard sciences? This is an even more important question to us scientists, who are supposed to be vigilant and objective; what answer were we looking for? Philosophers like Chapouthier [33], psychologists like Boesch [28] and ethologists like De Waal [34] all agree that if an experimenter is strongly biased, the results of their experiments, whatever they might be, will only tell them what he wants to hear. It does not mean that we should stop all experimentation, but maybe it is time to leave behind the myth that scientists are permanently, irrefutably objective and look instead at the bias we all undoubtedly and individually have so that we understand how we influence our experiments. A branch in philosophy has recently been confronted with the topic of animals: ethics. While it still was seen as sensationalist until recently, it has been trying to deal with the questions that progress in other disciplines has brought up. To get back to linguistics, we could say “I do not know whether this is language, because the definition is unsteady and struggles to find solid ground [35], but I do know I am facing an individual capable of complex semiotic actions, and they are capable of it because they have something to say”. What can we say about that?

The scientific community’s opinion of zoosemiotics—as well as animal linguistics in general—has changed over the past few years [36]. Zoosemiotics has gone from a baseless question that had already been answered to a young, but promising, fully-fledged discipline filled with new inquiries and perpetual interdisciplinary interaction. That is undoubtedly one of its defining features—it is a field of study at the centre of many other branches that cannot be self-sufficient as it needs knowledge and methodologies from various sciences to produce fascinating, pertinent results. This type of research has recently been more popular, but we should not forget it has not always been the case, and studies that do not meticulously follow their discipline’s limits were discredited for a long time.<sup>3</sup> The fact that those interdisciplinary barriers are being broken down, as well as the large amount of progress we have briefly reviewed, is an undeniable sign of a deep change that is occurring in the scientific community and the way it views its research subjects. At the crossroads between linguistics and living sciences, supported by neuroscience and aided by philosophy, it may finally be time to create a new animal linguistics.

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<sup>3</sup> In October 2017, the LFDA journal published a summary paper of the author thesis [37]: it was the first time a zoosemiotics thesis was defended in France.

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