



On Mimicry, Signs and Other Meaning-Making Acts. Further Studies in Iconicity

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Abstract

In an earlier paper, I set out to apply to animal mimicry the definition of the sign, and, more specifically, of the iconic sign, which I originally elaborated in the study of pictures, and which was then extended by myself and others to language, gesture, and music. The present contribution, however, while summarizing some of the results of those earlier studies, is dedicated to the demonstration that animal mimicry, as well as phenomena of the human Lifeworld comparable to it, are in a sense the opposite of signs. It has often been observed, not only within speech act philosophy, but also by the semiotician Luis Prieto, that as sign can only function as such once it is recognized to be a sign. Animal mimicry, camouflage, and the like, in contrast, only work as such, to the extent that they are not perceived as signs. Unlike what speech act philosophy claims, nevertheless, the “difference which makes a difference” is not the recognition of a purpose attributed to the subject producing the sign. A footprint, for example, has to be recognized as a sign in order to function as such. Nevertheless, to the extent that a purpose is attributed to the subject setting the sign, it may be considered a sign, but one that hides its nature, a fake footprint. Mimicry and camouflage, however, are similar to such “natural meanings” as footprints in entertaining a different relation to the agent initiating the act and the agent perceiving it. Classical studies of mimicry distinguish its varieties according to what is rather vaguely called function. In this paper, we will investigate whether these classifications can be recuperated from a semiotic point of view, or whether a semiotically valid classification should start from scratch.

Keywords Iconicity · Ground · Sign · Sign about sign · “Fake news” · Attention · Stream of consciousness

The momentous struggle over iconicity was fought out in the field of pictorial semiotics in the middle of the last century, with only sparse references to other kinds of iconic

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phenomena. The most ferocious critics of iconic motivation were Umberto Eco within semiotics and Nelson Goodman within philosophy. This combat is long over: the state of the art was summarized, and the decisive arguments formulated, by Sonesson (1989; see also Sonesson 2016a). But if the domain of sign has thus been made safe for iconicity, an important, but rather neglected, task remains to be accomplished in the study of iconic signs: to spell out, for each kind of iconic phenomenon, “the difference which makes a difference” (to use an expression which I have always attributed to Bergmann 1960, but which others credit to Bateson 1972). In this paper, I will argue that phenomena such as mimicry and camouflage have to be situated within the repertory of iconically grounded meanings, while also being contrasted with other kinds of iconic meanings, one of which is the iconic sign. The point of view here taken is very much inspired in the work of Charles Sanders Peirce, but it is an evolved viewpoint, which has gone through not only more theoretical elaboration, but also the application of semiotics to the experimental study of evolution and development. We have taken the habit of designating this stand as being that of cognitive semiotics (see Sonesson 2009, 2012, 2016b; Zlatev 2012).

In this paper, I will bring to bear the results of my earlier studies of iconicity and iconic signs on the study of animal mimicry, with some excursions into similar phenomena in the Human Lifeworld (see Dunér and Sonesson 2016). In so doing, I will return to some of the ideas suggested in an earlier paper of mine addressing these phenomena (Sonesson 2010a), but I will essentially complicate the issue by taking into account the perceived purpose of the act of meaning accomplished. While this sounds like adopting the perspective of speech act philosophy, I will put much more emphasis on the “uptake” of the act, that is, the act as it is perceived by any subject (whether that is a human being or any kind of animal) not accomplishing the act. It is my contention that this will help us situate animal mimicry within the wide domain of iconicity, and also to spell out its specificity. In order to make more concrete the issues involved in this theoretical discussion, I will start out by offering a number of plausible scenarios.

Some Experiences of Iconicity

First Scenario You are somewhere in a desolate place, perhaps a desert, where you have no reason to think there has ever been any other person around, or at least none for a very long time. Then you come across some markings in the sand, which not only look individually very similar to letters of an alphabet you know, but which, taken together, form a message which, using the alphabet with which you are familiar, can be understood to be constituted of words in a language, familiar to you or not, which together form a sentence which, to the extent that you know the language, you can interpret. No matter to what level of recognition you attain, you have the choice to think either that the resemblance is completely fortuitous, or that you have to revise your presupposition that no being (supernatural or not) has been present at this place at some earlier moment. But I bet that you will opt for the second interpretation.

Second Scenario In the outskirts of your city you pass once again on your bicycle in front of a house which for a long time has looked abandoned, the windows having been nailed up. At earlier occasions, you have observed that there are numerous squash plants

in the garden, and you now perceive that many of them are blooming, provoking fantasies about finally finding the ingredients necessary for preparing some *quesadillas de flor* on this side of the Atlantic. But then you see that there is a human being in the midst of the vegetable field. Or perhaps it is a scarecrow. For the moment, it is better to cycle on.

Third Scenario It has been snowing, so it is easy to see the tracks of the fox rambling around your house, in particular close to your hen house. You have no doubt about these markings in the snow being fox prints, so if you want to be able to save some eggs for Christmas, you might want to follow the tracks to the fox burrow and negotiate a treaty of some kind with the fox, with or without using arms.

Fourth Scenario You are leaning against the stem of a tree, and suddenly, some part of the bark which you are touching with your body, or which you are close to touching, seems to gain wings and fly away. Where you initially only experienced “more bark”, you might have to start thinking that there was an animal hiding on the stem by means of the camouflage texture of its body. Or, again, you may prefer to think that something supernatural is going on.

Fifth Scenario In the most recent Karma round, you were transformed into a firefly, and not just any firefly, but, as it happens, a male *Photinus*, and you have just become alerted to the lure of what you take to be a female of your species signalling for attention. Since you are a firefly, you will presumably not be able to pause to consider whether this might really be the identically looking signal of a female *Photuris*, who is not interested in having sex with you, but in having you for dinner.

The first question to pose is no doubt in what way these scenarios are similar. They might all involve iconicity in some way, although, in the first scenario, this only amounts to the relation between token and type. But the fundamental question, which will form the subject matter of the rest of this paper, consists in asking, in each case, *for whom there is iconicity*.

Signs, Icons, and Iconic Signs

There are some quotations from Peirce which are curiously never cited by those who like to think of themselves as his true followers. In 1898, Peirce wrote, “I did not then [in 1867] know enough about language to see that to attempt to make the word representation serve for an idea so much more general than any it habitually carried was injurious.” Peirce 1931-58, (CP 4.3).” Indeed, it is an injury to what Peirce elsewhere called the “ethics of terminology” (CP 2.219–226), which, among other things, demand respect for any earlier usage. And, then again, in 1906, Peirce observes: “All my notions are too narrow. Instead of ‘sign’, ought I not to say *Medium*?” (MS 339, 1906, here quoted from Parmentier 1985). Medium, or mediation, as Peirce says in other passages, is no doubt a better term for what he tried to characterize. As I have suggested elsewhere, mediation in this sense can be taken to be equivalent to the notion of intentionality as defined in the Brentano-Husserl tradition (without having to enter here a discussion of the different stances taken in this tradition), that is, as an act of consciousness being directed to something within consciousness experienced as being

outside of it (see Sonesson 2009, 2013, 2015a, 2017a).¹ There will be occasion to return to the notion of mediation below, but let us start by trying to pigeonhole the kind of mediation which deserves to be called a sign.

Criteria for the Sign

In the sense of the late Peirce, the sign relation can be taken to be an instance of mediation, in the admittedly wide meaning which he gives to this term. The second question, which should immediately follow, and which is never formulated by Peirce (and even less so by those who think of themselves as his true followers), concerns the nature of the specific variety of mediation defining the sign. According to the principles of the Ethics of terminology, we should start by looking for an earlier usage of the term which demands respect, and we will find it, I submit, in the Augustinian sign, while relying on Deely's (2001, 2005, 2010) scholarship, but not following him in his reaction to the result. The interesting fact about Augustine's definition of sign, as Deely points out, is that it integrates two different traditions specifying what a sign is, the tradition stemming from Aristotle, which takes the linguistic sign, consisting of expression and content, as a model, and the sign in the sense of the Stoics, which consists of a conclusion drawn from the observation of a feature of the world, as exemplified by the physician's and the hunter's art. I must, however, part company with Deely, when he suggests that this definition has to be considerably broadened, so as to include also, among other things, direct perception. For reasons which cannot be fully explained here, I think any adequate theory of meaning must uphold the distinction between signs and the direct experience of meaning as given to perception (See Sonesson 2010b, 2012, 2015a, 2015b, 2018a).² We will see the importance of this point for our further discussion of mimicry below.

The trouble is that this notion of sign has never been explicitly defined (See Sonesson 2010b, 2018a). Elsewhere, taking my inspiration from both Husserl and Piaget, and endeavouring to amplify their intuitions, I have suggested that the sign can be minimally defined by the following properties (See Sonesson 1989, 2006, 2012, 2016a, b):

- (1) it contains (a least) two parts (expression and content) and is as a whole relatively independent of that for which it stands (the referent);
- (2) these parts are differentiated, *from the point of view of the subjects* involved in the semiotic process (the addresser and the addressee, or, as we will see, sometimes only the latter), even though the parts may not be objectively differentiated, that is, not separate instances of experience in the commonsense Lifeworld (except as signs forming part of that Lifeworld);

¹ I am of course aware of the fact that consciousness, to Peirce, is only a "sop to Cerberus", but, as I have argued elsewhere, it is a necessary sop, or we will drown in the river of nonsense before reaching the shore of understanding.

² Here and in the following, I rely on the interpretation of Augustine presented by Deely (2001; 2005; 2010). A more recent, and no doubt more complete, presentation of Augustine's semiotics is Gramigna (2018), but, as far as I have been able to ascertain, it does not contradict Deely's interpretation in any of the here relevant respects.

- (3) there is a double asymmetry between the two parts, because one part, expression, is more directly experienced than the other;
- (4) and because the other part, content, is more in focus than the other; and (5) the sign itself is subjectively differentiated from the referent, and the referent is more indirectly known than any part of the sign.

Although we cannot enter, in this context, into any detailed elucidation of this definition, some explanations are in order. Differentiation from the point of view of the subject is a feature proposed by Piaget, but he never explains how this is different from the implied counterpart, i.e. the objective differentiation. The examples given suggest that he simply identified subjective differentiation with convention (symbolicity in the sense of Peirce). Thus, to Piaget, a pebble which is made to stand for a piece of candy is subjectively differentiated (See Piaget 1967a [1945], 1967b: 134ff; 1970: 342 ff.). But, in fact, it is already objectively differentiated, because, in our common-sense world, a pebble is a different (kind of) object from a piece of candy. On the other hand, a feather is a part of a bird, which means that it is not objectively differentiated from the bird. And yet it can be made to stand for the bird in a sign relation, in which case it is subjectively differentiated. Moreover, the differentiation must be accomplished by *both subjects* involved in the act of communication, the addresser and the addressee, or the act of communication will misfire.

Without introducing this rectification to his account, the definition cannot justify the notion of semiotic function which Piaget proposes, which includes the understanding of pictures and “symbolic play” (which should really be called “semiotic play”), as exemplified by the mother-father-child impersonations performed by small children.³ We have to start out from the idea, formulated by Husserl in philosophy, and by Gibson in psychology, that there is a world taken for granted, which is the primary world of our experience, in which there are wholes which have their parts, and also some wholes habitually appearing together. In this sense, a cow is objectively differentiated from any other cow, but a cow’s head, if it used as a sign on a market stand, is subjectively differentiated from the rest of the cow. Nevertheless, there remains the question how we discover, in perceptual experience, that an experience is the experience of a sign, and not only of a further experience of perceiving the same object. We can look at the cow from the right or from the left, and from any angle in between, from above and from below, but, in normal perceptual experience, it is still the same cow. For the perception to be that of a sign of the cow, however, at least two things are required: there should not be a direct continuity between the percept experienced as expression and the percept experienced as content; and the two instances experienced must be felt to pertain, in some way, to different categories of the Lifeworld.

Perhaps this definition is not sufficient, but it will at least separate out a smaller class of phenomena within the big category of mediations. In the definition given above, nevertheless, I have only intimated that it will be necessary to adopt the point of view of the addressee, in order to safeguard the coherence of the Augustinian notion of sign.

³ Note that Piaget uses the term “symbolic” in the sense of Saussure, not that of Peirce, which makes it more similar to “iconic”, and although, in his later work, he changed what he first called “the symbolic function” into “the semiotic function”, he never seems to have followed up on that change as applied to the play aspect. On the ambiguities of the notion of symbol, see Dunér and Sonesson, eds. (2016: 13–15).

And without upholding this notion, it will not even be possible to meaningfully ask whether animal mimicry possesses sign character. Before broaching this issue, however, we have to delve deeper into the nature of meanings antecedent to mediation.

Pure Iconicity and the Iconic Ground⁴

Apart from the sign function, the iconic sign also supposes the presence of iconicity or, more precisely, of an iconic ground. The latter is a notion, sporadically, but often significantly, used by Peirce. As applied to signs, I will here suppose, iconicity is one of the three relationships in which a representamen (expression) may stand to its object (content or referent) and which can be taken as the “ground” for their forming a sign: more precisely, it is the first kind of these relationships, termed Firstness, “the idea of that which is such as it is regardless of anything else” (5.66), as it applies to the relation in question. In one of his well-known definitions of the sign, a term which he here, as so often, uses to mean the sign vehicle, Peirce (2:228) describes it as something which “stands for that object not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the representamen”. Indeed, Peirce actually proposes another term for the equivalent aspect of the object (content), but, as I have argued elsewhere (See Sonesson 2010b), this is, at worst, incoherent, and at best, unnecessary. He identifies the ground with “abstraction” exemplifying it with the blackness of two black things (1.293); but then it must be an operation applying to the thing which forms the representamen as compared to the thing which forms the object, and vice-versa, not to any of them separately. The ground joining two black things would clearly be an iconic ground, since what is recouped by the abstraction process is the identical quality of blackness.

Given these preliminaries, we may say that an indexical ground, or an indexicality, involves two “things” that are apt to enter, in the parts of expression and content (“representamen” and “object” in Peircean parlance), into a semiotic relation forming an indexical sign, due to a set of properties which are intrinsic to the relationship between them, such as is the case independently of the sign relation. Indexicality, which is a ground, and therefore a relation, is thus basically different from iconicity, which consists of a set of two classes of properties ascribed to two different “things”, which are taken to possess the properties in question independently, not only of the sign relation, but of each other, although, when considered from a particular point of view, these two sets of properties will appear to be identical or similar to each other. This is the sense in which indexicality is Secondness, and iconicity Firstness. As for the Peircean symbol, or generic sign, one may at first think that it is groundless, as least until it becomes a sign: that, it that there is nothing in the thing serving as expression, nor the thing serving as content which explains the sign relation. If so, the principle of relevance obtaining between the two parts of the signs is produced merely by the sign relation, which is why it is Thirdness. Once we admit, however, that mediation (Thirdness) is a much broader concept than the sign, there clearly must be mediations which precede the sign function, and on which the sign function may possibly build. Thus, a habit or custom could be taken as the basis for forming a symbolic sign (Table 1).

If iconicity is (a manifestation of) Firstness, but the ground is a relation, then the only solution, it seems to me, is to admit that, contrary to indexicality, iconicity is not in

⁴ For this whole section, see Sonesson (2009, 2013, 2014, 2015a, b, 2016a, 2017a).

Table 1 The relations between qualities, grounds, and signs, in the present interpretation of Peirce (Terminology as of CP 4.3.)

	Firstness/ <i>Quality</i>	Secondness/ <i>Reaction</i>	Thirdness/ <i>Mediation</i>
Firstness/ <i>Quality</i>	Iconicity	–	–
Secondness/ <i>Reaction</i>	Iconic ground	Indexicality = indexical ground	Symbolicity = symbolic ground
Thirdness/ <i>Mediation</i>	Iconic sign (icon)	Indexical sign (index)	Symbolicity = symbolic ground = symbolic ground (symbol)

itself a ground. Perhaps, to use some of Peirce's own examples, the blackness of a blackbird, or the fact of Franklin being American, can be considered iconicities⁵; when we compare two black things or Franklin and Rumford from the point of view of their being Americans, we establish an iconic ground; but only when one of the black things is taken to stand for the other, or when Rumford is made to represent Franklin, do they become iconic signs (or hypo-icons). Just as indexicality is conceivable, but is not a sign, until it enters the sign relation, iconicity would seem to have some kind of being, although, according to Peirce, it does not exist until a comparison takes place. In this sense, if indexicality is a potential sign, iconicity is only a potential ground. Indeed, in Peirce's late terminology (CP 4.3.), iconicity is a quality, which needs reaction to become a ground, and mediation to become a sign. But, as we shall see, even as ground iconicity carries meaning.

This may be the moment to return to our fourth scenario, which is inspired in what Deacon (1997: 76f, 300f) takes to be iconicity (identified with iconic signs, or icons): it is the fact of there being no distinction, the perception of the same "stuff" over and over again as in the case of camouflage, exemplified by the moth's wings being seen by the bird as "just more tree", recognition, that is, the identification of something as pertaining to a category, and "stimulus generalization", which is the tendency for a conditioned stimulus to evoke similar responses, as when Watson's Little Albert who had been conditioned to be afraid of a white rat was also frightened, among other things, by Watson's white beard, "abstracting" in a Peircean sense the white colour and the hairiness of the two items. On the face of it, none of these examples are really signs, and none are really cases of pure iconicity, for, as I pointed out in my earlier critique of Deacon (see Sonesson 2006), these are all relational statements, and whatever else Firstness means, it certainly conveys up a world (or, more exactly, a view of the world) deprived of all relations. The question is how we shall understand Deacon's (1997: 76) description of iconicity as "seeing just more of the same (bark, bark, bark...)" (Also see Maran 2017: 61 f.). If the fact of there being no distinction is a judgement, then it already involves a relation, namely a search for a dissimilarity, which comes up with a negative result. If it is the fact, experienced by nobody, of there being no distinction,

⁵ "Iconicity" in this sense may be identical to "qualia", in one of the many senses this term has taken on in recent philosophy of mind (perhaps in the sense given the term by Chambers and Strawson), but certainly not if qualia is understood as a kind of representation, which it could never be for Husserl (though his critique was formulated in terms of sense data) and not as yet for Peirce. See further Tye (2017 [1997]).

then it is not a meaning, and thus not an iconic meaning. This applies to the case of the moth, which, in the fourth scenario, cannot be distinguished from the bark of the tree. If the moth is disturbed by my leaning on the tree and flies away, a distinction can be perceived, and there is an iconic ground, if not already an iconic sign.

Signs about Signs

You have reasons to think that nobody has been at this place before, or at least not for an appreciable amount of time, but then you encounter some curiously regular and systematic marks on the terrain. What happens then can be explained in two ways. For some reason, quite contrary to your earlier presuppositions of this being a desolate place, you decide to assign a purpose to these markings, as well as the purpose that these markings should be conceived to have a purpose, and so on, for as many rounds as you like, and then you suddenly discover that the marks are letters of an alphabet, which, taken together, form a message which can be understood to be constituted of words in a language, which together form a sentence which you can understand. Alternatively, you start from the observation that the markings resemble letters, that they can be combined to form known words, which in turn build up interpretable sentences, and since you are familiar from your life in less desolate places with these kinds of markings, you conclude that they have been made on purpose, including the purpose that the first purpose should be recognized.

This is, of course, our first scenario above.⁶ Speech act philosophy, taking its origin in the work of Grice (1989) and Searle (1969), would defend some version of the first alternative. In numerous papers, the first of which is Sonesson (1981), I have defended the second alternative. I persist in thinking that it is the only plausible one. Indeed, I think it can be shown that a lot of non-linguistic cases of communication anecdotally suggested by Grice, Clark, and Sperber, are really as symbolic, at least in the sense of being based on habits, custom or other regularities, as the linguistic examples (See Sonesson 1999, 2018b). This is not to say that, when all normal means of communication are unavailable, other vehicles of communication cannot be invented, as has been shown to be the case in the kind of study for which some scholars have usurped the term of “experimental semiotics” (see Galantucci and Garrod 2011: 1), defined as the study of “novel forms of communication which people develop when they cannot use pre-established communication systems”.

Although he is basically unknown to scholars writing in English, Luis Prieto (1966, 1975) propounded ideas very similar to those of Grice and Searle, quite independently of the speech act tradition. Prieto (1966: 28ff) claims that each “semic act” involves two messages: there is an “indicative notification”, corresponding to the communicative intention, and a “significative notification”, corresponding to the informative intention. It will be noted that the terminology of intention/purpose is not used by Prieto; nevertheless, he described the indicative notification as the addresser having the intention – or being resolved – to convey a message to the addressee (“*E se propose de transmettre un message*”). The importance difference, however, is that Prieto (1966: 29) claims that the

⁶ I have attributed this example to Searle, from Sonesson (1981) onwards, but I have been unable to retrieve it in his works. Nevertheless, I am certain that he would have interpreted this example as described above.

indicative notification is conveyed by the very fact of the sign (“signal”) having been produced. It should be noted, nonetheless, that, unlike Grice and his followers, Prieto is merely concerned with what we would call signs. To be sure, Prieto never defines the sign, in the way we have done above, but he always uses examples, such as language, traffic signs, maritime signal system involving flags, etc., which are clearly signs in our sense.

Without entering at present into any other details of Prieto’s analysis (see further Sonesson 2012), I have to admit, at this point, that Prieto, like Grice and Searle, clearly thinks that the secondary message, which announces the message status of the original message, is part and parcel exclusively of what Grice would have called “non-natural meaning”, that is, meaning conveyed by language and perhaps some other resources, but certainly not by medical symptoms, meteorological facts, animal traces, and the like. Here I beg to differ. Just as we recognize that writing, because it can be identified as writing, is the result of some person having the purpose to convey some message to us, animal tracks, because they can be determined to be animal tracks, inform us about some animal being around, although this recognition does not justify us in thinking that the animal in question had any purpose in leaving those tracks. Indeed, if there is some reason to suspect that the tracks were made on purpose, we would have reason to doubt that they were animal tracks, given the way we take for granted that such tracks are produced. In both cases, nevertheless, we are involved with pattern matching, i.e. of fitting a token to a type. It just so happens that the types to which we assign these different classes of tokens justify different conclusions about their history of production.

The above argument requires us to take the point of view of the addressee, as suggested above (in 2.1.). It is an original feature of the perspective taken by the Prague School of semiotics that it defines communication from the point of view of the addressee, which is one of the reasons why I have defended this model elsewhere (Sonesson 1999; also cf. Dunér and Sonesson 2016). However, we need to take this stand, if we are going to be able to preserve the coherence of the Augustinian notion of sign. The Stoic notion of sign, which is absorbed into the Augustinian sign concept, does not necessarily have any addresser, if the latter is taken to be an agent having a purpose. This is true of the symptoms of a malady, as well as of the prints left by the paws of an animal in the sand. As we will see, taking the standpoint of the addressee is also essential for allowing us to understand the nature of animal mimicry. Our third scenario above is not a case of mimicry, but it is, in the sense defined above, a case of sign interpretation. This is so, because, in order to make sense of the animal tracks, you have to see them as signs, that is, as differentiated and doubly asymmetrical. If you do not perceive them in this way, you have absolutely no reason to follow the tracks, in order to hunt out the animal having left them behind.

The case of mimicry is quite the opposite (See Sonesson 2010a). If you perceive an instance of mimicry as a sign, it has failed its purpose. Thus, if it signals that it is a sign, it ceases to be mimicry.⁷ The scarecrow (as in our second scenario) is a case in point. It has a double addressee. If it is to work as a scarecrow, it certainly has to announce its sign character to the farmer, but not to the birds who are supposed to be scared away.

⁷ Maran (2017: 58ff) would seem to agree with me on this point. According to one reviewer, some kinds of mimicry may not answer to this formula, citing the case in which an interpreter “is familiar with its /the mimicry’s/ meaning (e.g., *pars pro toto* in eyespots), but it is still effective as mimicry (in the case of fake eyes)”. But, as far as I understand, this still requires the interpreter to take the fake eyes to be real eyes.

The very definition of the scarecrow thus supposes it to be something different when directed at different addressees. The division between two distinct groups of addressees is meant to work because the process of abstraction, that is Peirce's ground, is taken to be more reductive for birds than for human beings. This is also why, when you are rapidly passing on a bicycle along the field, you may only be able to catch the interpretation meant for birds. As Gombrich (1961) famously commented on the antique anecdote according to which Zeuxis's pictures of grapes were as realistic as being able to fool the birds into trying to eat them, given what we now know about bird perception, this would rather make us doubt the realism of the painter's art. Of course, farmers trying to avail themselves of scarecrows may have a less sanguine view of their capacity to deceive birds.

The Avatars of Mimicry

Classical students of mimicry have distinguished a number of different types. If we consider mimicry as a particular kind of meaning-making act grounded in iconicity, we have to investigate whether these distinctions still can stand. But let us start by broaching a case of deceit – or what looks like it – in the world of fireflies.

Fake News in the Insect World

A poor firefly male gets eaten by a female of another species, when everything seemed to indicate that he would get the opportunity to make love to a female of his own species. Unlike the other cases, the fifth scenario is not an instance of conjectural history, but something which can be observed to happen over and over again in the world as described by biology. I owe this case description to Charbel et al. (2010), who characterize it as a case of deceitful use of signs. I can obviously not abide by this description: I have claimed elsewhere (see Sonesson 2010a, 2014) that there are no signs involved, just as I earlier took von Uexküll to task for describing the three events experienced by a tick as being signs of the presence of a mammal (see, for instance, Sonesson 2010b): no differentiation and no double asymmetry need to be involved. This led Maran (2017: 38) to assert that, while Charbel et al. (2010) consider “that mimicry is more complex than simple iconicity”, I hold the opposite view. In fact, in my conception, mimicry is also more complex than simple iconicity (a quality), because it is an iconic ground (a reaction, or, as I would prefer to say, a relation). It is true, nevertheless, that on my view, mimicry is less complex than an iconic sign, simply because it is a ground, and not a sign (which it would have to be in order to be a “dicensign”, that is, a proposition. See Sonesson 2012, 2014, 2017a). But this is a result of my theory being overall more complex. Since I have defined the sign in a way which is not, in Peirce's terms, “injurious” to the ethics of terminology, I cannot extend the term freely to everything carrying meaning as Charbel et al. (2010) do. The question is, nevertheless, whether, instead of just being a ground, mimicry should be considered to be some kind of mediation, although not of the sign type. An argument for this, as Maran (2017: 38) reminds us, is that mimicry can “be based on law-like regularities”, which would make them symbolic in Peirce's sense. But this question goes beyond our present discussion.

There are other reasons to reconsider the case of the deceived fireflies. Precisely because we have narrowed down the notion of sign, it makes sense to ask whether, in this episode, there is not actually an embedded sign. If we forget, for a moment, the deceit operated by female *Photuris*, taking into account that in an appreciable number of such episodes, the alert really stems from a female *Photinus*, we could argue that there is indeed a sign involved. In fact, together with alarm calls, the messages emitted from one sex to another are the most common kinds of signs or sign-like notices existing in animal communication. If there is a sign here, nevertheless, it will only be the carrier of the meta-sign “sign-emitted-by-a-female *Photinus*”. There cannot be any equivalent to this when the message stems from a female *Photuris*, so in this play of deceit, the sign character turns out to be deeply embedded.

Nonetheless, alarm calls have been more thoroughly studied, and I have considered the relevance of these studies to sign character elsewhere, by relating them to what requirements they make on the stream of consciousness (see Sonesson 2015c). In that context, I started out from the model of consciousness proposed by Husserl (1966[1928]), according to which each given now contains a *retention* of the moment directly preceding it, and a *protention* of the moment immediately following, together with an ever more fading series of retentions of retentions and protentions of protentions. But such a stream of consciousness only serves to situate us in the continuity of experienced time (See Fig. 1a). Protentions and retentions are not the same thing as the independent, and actively initiated, acts of remembrance and anticipation (See Fig. 1b), the former of which has more recently been characterized as “time travelling” by Tulving (1983).

At some level (perhaps not properly described as consciousness), the *Umwelt* of the tick is already structured by time. But it is a kind of time structured according to McTaggart’s B-series, that is, in terms of before and after, not, as in the stream of consciousness, in accordance with McTaggart’s A-series, or in order words, in terms of past, present and future (See McTaggart 1993[1908]; also see Gell 1992: 149 ff.). To get from the B-series to the A-series, there must be the insertion of an ego into the time sequence, for whom there is a lapse of time before the present as well as after it, that is, a hierarchy of retentions and protentions. Nothing like that would seem to be necessary for the tick to function as such, in

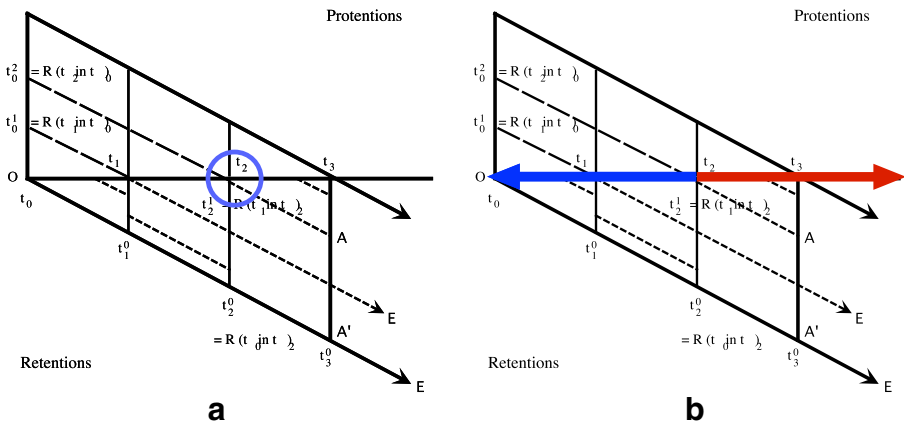


Fig. 1 The stream of consciousness as conceived by Husserl (1966[1928]) and illustrated in Sonesson (2015c). **a)** with now-point, as in the A-series (see text); **b)** with independent acts of remembrance and anticipation

spite of the putative subjectivity of the *Umwelt*. The tick does not need to remember that it has let itself drop from the bush when it starts drinking the blood of its victim.⁸

In a famous study, however, Clayton and Dickinson (1998) showed that scrub jays were capable of “time travelling”, because they remember where and when they hoarded food, and also the nature of the food stocked in different caches. This seems to suggest that scrub jays do not only possess a stream of consciousness, but they are capable of accomplishing the active acts of remembrance and possibly also anticipation. There seems to be no denying that this is a kind of time travel, although it so far seems to be limited to a domain of particular interest to any animal, food resources. It comes no doubt as less of a surprise that chimpanzees have been shown to be able to amass stones for using next day in order to throw them at the tourists coming to look at them at the zoo, and that both chimpanzees and orang-utans are capable of picking out the right tool beforehand for a task they are to accomplish later (Osvath 2009; Osvath and Osvath 2008; cf. Waal 2013). These are certainly active acts of anticipation, which would seem to involve also some acts of remembrance, and they are not as directly (though in the second case they may be indirectly so) geared to the procurement of food as in the case of the scrub jays. Thus, time travel, in Tulving’s sense, seems to be present and going well beyond the experience of the stream of consciousness.

In a study which is at least as famous a landmark study in recent animal psychology as the one of scrub jays, Cheney and Seyfarth (1990) showed that vervet monkeys used different alarm calls to signal the presence of different predators, which also required a different flight behaviour: bark for leopards, cough for eagles, and chatter for snakes. Starting out from the observations of Cheney & Seyfarth (1990), Zuberbuhler et al. (1999) studied a similar alarm call system in Diana monkeys, demonstrating that the monkeys were more upset (giving more repeat calls) when, five minutes after hearing an eagle alarm call, they heard the growl of a leopard instead of the shriek of the eagle (Cf. Hurford 2007). This shows that, in some sense, the monkeys retained the memory of the meaning of the alarm call they had heard for at least five minutes. That is, in our terms, they still experience the retentions of numerous anterior retentions of the alarm call. This is no evidence for time travel, however. Rather, it would seem to indicate that Diana monkeys have some kind of stream of consciousness, in which retentions upon retentions go on for at least five minutes. It is quite possible, of course, that another study will present evidence for Diana monkeys being capable of time travel, but this has not been shown so far.

It seems plausible that, without the capacity for realizing independent acts of remembrance and anticipation, no animate being can make use of signs (although the inverse does not follow). As long as we do not know what it feels like to be a firefly, we cannot decide whether fireflies can differentiate between expression (the emission produced by the female) and the content (the female as such), nor whether there is a double asymmetry between these instances. What is worse, we cannot know whether fireflies are capable of realizing independent acts of remembrance and anticipation. Even so, unlike in some of the cases considered above, there is nothing in the behaviour of fireflies known to us so far that would force us to acknowledge their ability for time travelling and/or using signs.

⁸ There is an extensive literature in the philosophy of mind about this distinction and the paradox to which McTaggart claims it must lead. Interestingly, this distinction has recently been taken up independently within cognitive semiotics (Hribar et al. 2014; Sonesson 2015c) and in biosemiotics (Nomura et al. 2018). Both pieces suggest that there are in fact more than two kinds of temporal experience, but whether the proposals coincide in any more fundamental way cannot be discussed here.

Just More Tree – Or Something that Stands out

There seems to be a consensus for dividing cases of mimicry into those that have a defensive function and those that are aggressive, to which might be added reproductive mimicry and a few others.⁹ Defensive mimicry, as the term announces, occurs when organisms are able to avoid harmful encounters by advertising themselves as being something else, or perhaps even as not being anything in particular (Deacon's "more tree"). This type of mimicry, where the prey acts as a mimic, with predators being duped, contrast with aggressive mimicry, where the predator is using disguise to be able to come closer to the prey. Reproductive mimicry, which basically seems to concern plants, involves some flowers looking inviting to insects, in spite of having nothing to offer from their point of view. These differences clearly are there for us, but it is less obvious whether they are there for the animals affected. It seems reasonable to say that they are, to the extent that the behaviour following upon these instances is clearly different (which is, of course, not to say that they come even close to being signs). A problem for this argument is nevertheless that, as far as I understand, these different kinds of mimicry are never addressed to the same species, so there is never any set of alternatives offered to any animal to pick from.

The real taxonomy of mimicry starts further down the classificatory tree, each type usually being named after the biologist who first observed it. Thus, we have Batesian mimicry, where a harmless animal poses as harmful (see Maran 2017: 16ff.), Müllerian mimicry, where two or more harmful species mutually advertise themselves as harmful (Maran 2017: 16ff.), Mertensian mimicry, where a deadly mimic resembles a less harmful but still awe-inspiring model (Maran 2017: 18ff, 101), and Vavilovian mimicry, where weeds resemble crops (Maran 2017: 26). Among the types of aggressive mimicry, there is bipolar mimicry (Maran 2017: 25; also see Pasteur 1982:188), also called Batesian-Wallacian mimicry, where the prey is modelled by the predator, a case in point of which is the firefly adventure recounted above (in 4.1.); and there is Wicklerian-Eisnerian mimicry, in the case of which it is sufficient for the predator not to be identified as a threat, for instance by resembling a commensal (Maran 2017: 84; also see Pasteur 1982:187). For an outsider to the study of biological mimicry, it is not altogether easy to make sense of these categories, so let me, for the time being, start from another end.

Cutting across these taxonomies, there seems to be a distinction which is more generally relevant from a semiotic point of view, which opposes cases in which the animal (whether predator or prey) tries to pose as just not being there (Deacon's "more tree"), and where it impersonates something recognizable in the *Umwelt* of the other species involved, which triggers some particular behaviour (Batesian mimicry, but also the scarecrow as a human intervention in the *Umwelt* of birds). In other words, there are two central strategies, one which consists of giving the impression that nothing new happens (that the isotopy is confirmed, as the Greimaseans would say; see Sonesson 2017b), either for the purpose of protection or as a preparation for an aggressive act; and another one which introduces a new element which draws attention to itself (an allotopy, or a rupture of isotopy), perhaps only slightly so (for instance a new commensal) or enough to cause alarm (in this case, something menacing).

⁹ Such as "automimicry" (when one part of an organism's body resembles another part), but then the criteria seems to be completely different.

Formulated in this way, mimicry critically involves the device of attention but is divided between its different operations, or to put it crudely, between attention-grabbing and no perceivable operation at all.¹⁰ According to the phenomenologist Aron Gurwitsch (1957, 1964, 1985), every perceptual situation is structured into a theme, a thematic field, and a margin. As pointed out by the psychologist Sven Arvidson (2006), Gurwitsch thereby offers the structure needed for a theory of attention. According to Gurwitsch, the theme is that which is most directly within the focus of attention. Both the thematic field and the margin are in contiguity with the theme, but the thematic field is, in addition, connected to the theme at a semantic level. When attending to the theme, we are easily led to change the focus to something within the same thematic field. Changing what was earlier in the margin into a theme, on the other hand, is felt to require some kind of outside incitement. In the margin is normally found some items of consciousness that always accompany us, such as our own stream of consciousness, our own body, and the extension of the Lifeworld beyond what is presently perceivable. But the margin will also contain all items that are not currently our theme, nor connected to this theme.

Elsewhere, I have suggested that such a thematic field may not exist for the tick (see Sonesson 2006, 2010b), at least as described by von Uexküll, and whether it exists for fireflies is an open question. The reason for this hypothesis is that, if the functional cycle works as described by von Uexküll, there is no need for any thematic field, nor any margin, and thus no field of consciousness. But the complex subterfuges involved in other kinds of mimicry suggest that many animals, and not only those we think of as “higher animals”, are equipped with at least a rudiment of a thematic field in Gurwitsch’s sense, without which so much art would not have been required. This insight could open quite a new area of research onto animal cognition, which, however, cannot be pursued here.

Conclusion

At the beginning of his new book, Timo Maran (2017: 37f) formulates very well what I think is the core issue concerning the application of the semiotic study of iconicity to animal behaviour: either you can claim that biological mimicry does not possess all the necessary characteristics of the iconic sign, or that that it is a full instance not only of iconicity, but also of the sign function.¹¹ It is my contention that, if you start out from a definition of the sign, whether iconic or not, which imposes some elementary requirements for something being a sign, it can be shown, as I think we have done already, that the human use of iconicity is very variegated, from the point of view of complexity and many other criteria. Moreover, it should be clear, although this could only be intimated in the present paper, that the uses of iconicity by other animals are of several kinds, and, no doubt, possess different levels of complexity. Thus, the interesting undertaking for the future must precisely consist in trying to pinpoint the differences between these uses, whether they overlap with human uses or not, which is a task poorly served by the taxonomy of biological mimicry existing at present.

¹⁰ This may be the same distinction which Maran (2017: 62f) makes between mimicry and crypsis, though arrived at from a quite different point of departure.

¹¹ I have rephrased the second part of this alternative, since I do not think complexity is the issue. It is rather a question of at what level of the theory you introduce complexity. See 4.1 above.

Compliance with Ethical Standards

Conflict of Interest The author declares that he has no conflicts of interest.

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