

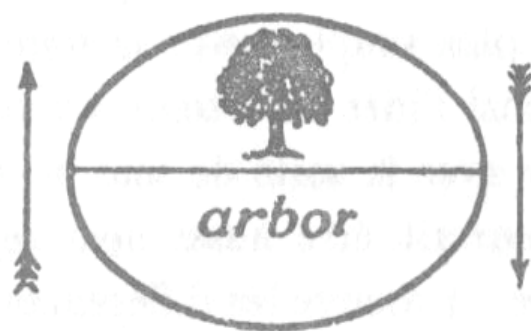
Saussure's sign and brain lateralization.

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Summary

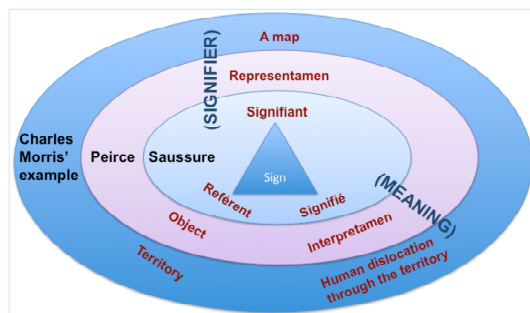
The problem of meaning is discussed in this presentation. Saussure divided linguistic sign into *signifiant* (signifier) and *signifié* (signified). He studied the relationships between signifiers and left the signified to be studied by psychologists. Several linguists assert that the signified, or meaning, is the way that creatures use signifiers, i.e. some related movements or transition of bodily states over time. In their turn, signifiers are concrete things – words, drawings or objects – with spatial dimensions. Learning is linking an object to a specific movement – a signifier to a signified. However, humans can autonomously process the signifiers in one of the brain hemispheres (frequently the left) and the signified in the other. A small gesture or vocalization is enough to produce a signifier and thus to represent the unreached world. Since signifiers have syntactic, referential and logical rules of combination, the world can be represented and processed in the left hemisphere. Jaspers described this as the passive process of thinking. He also described an active process which may be found in the right hemisphere. However, the links between the hemispheres through the *corpus callosum*, i.e., the link between the signifier and signified, is what permits us to tell stories and have self-consciousness.



This is the best known linguistic diagram, supposedly illustrating Saussure's two faces of the linguistic sign. The *signifiant* (or signifier) would be the word 'arbor'; the *signifié* (or signified) would be the drawing of a tree. However, this is a mistake. As Tino de Mauro explains in a critical edition of the *Cours de Linguistique General*, Saussure only drew the two previous diagrams, not

this one. This latter diagram was posthumously inserted by the publisher and it is apocryphal. In fact, on the same page of the book, Saussure denied the idea of the sign as a nomenclature.

This diagram has probably misled the discussion about Saussure's *signifié* and meaning. In fact, a drawing or a concrete tree is only a referent, but it may also be a signifier, (or an iconic sign), once it stands for "all the trees of the world". This latter expression – "all the trees of the world" – is frequently reported to define the concept, another word which Saussure uses to define the *signifié*. However, it is too abstract a definition to be useful in neuroscience. In short, Saussure had a vague notion about the *signifié*, which he left to be studied by psychologists. As a linguist, he dedicated himself to the study of signifiers. The relationship between two signifiers or between a signifier and its referent, is called *value* or sense, in this case, the referential sense. But it is not the *signifié* nor the meaning.



Charles Sanders Peirce also spoke about the sign, which he described as a triadic relationship: the *representamen*, the *object* and the *interpretamen*.

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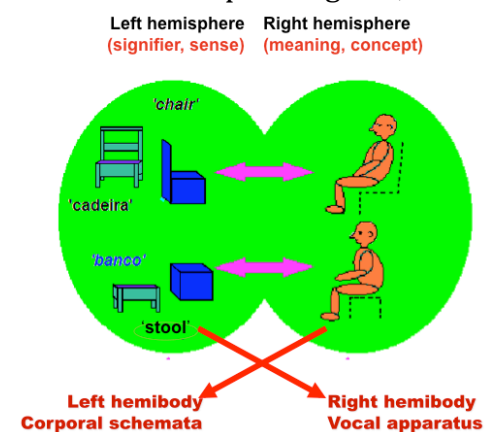
interpretamen. A disciple of Peirce, Charles Morris, gave the example of a map, which is a *representamen* (or signifier). It points to a certain territory, which is the object (or referent). The *interpretamen* (or *signifié*) would be the dislocation we make through the territory when using the map.

The human use of the signifier is frequently indicated as its meaning. Studying the ontogeny of signs, Piaget also pointed out that the signifier is preceded by the imitation of objects, while the *signifié* or meaning begins with “movements of utilization”. In fact, when we think about or find a chair – word, drawing or object, – we also think about the possibility of sitting down and leaning back. Stools can be very different from each other and similar to some chairs. However, what confers its meaning is the possibility of sitting down but without leaning back. Thus, the *signifié*, meaning or *interpretamen*, is a real or imagined dynamic experience, a change of states or a succession of them. This dynamic experience is completely different from the experience of the signifier, which is the direct perception or representation of a thing which exists in space and belongs to a certain collection or paradigm. There are now arguments to believe that these different experiences may be represented in different structures in the brain. Perhaps Saussure had envisaged this possibility.

After the discoveries of Broca with aphasic patients, we now know that the left hemisphere, in right handed people, processes words and their syntactic, categorical and referential rules. In other words, it processes the signifier part of signs. It may also process the details of images, which are also signifiers. Interestingly, aphasic patients do not lose the meaning of the words, which they can understand correctly. They may not be able to name an object (because they lose the referential rules) but they can use it correctly, and can also describe its usage by gestures or other words.

In contrast, patients with damage to the right hemisphere have no difficulty with words and their relationships, sometimes becoming more talkative and fluent, but they frequently misunderstand the consequences of their speech and mistake the use of objects. They also have a number of symptoms which point to the loss of meaning. A patient reported by Oliver Sacks could describe the colour, texture and shape of a glove, but claimed that it served to keep coins of different

sizes in. Only after putting it on his hand, did he discover that it was a glove. Thus, only after the appropriate use, did he grasp the concept.



activity when cognitive decisions have to be taken. The anatomical and functional asymmetry of the brain and the consequent left/right handedness is

inherited in humans. Timothy Crow asserts that the genetic accident that gave rise to this asymmetry occurred with the beginning of language. We may also speculate that this asymmetry conferred some advantage in manufacturing and using primitive tools. The specialization of one side of the body in manufacturing, drawing and writing may have pushed the representation of the signifiers to the contra-lateral hemisphere, where they acquired some independence of their meaning and uses. This gave us some advantages.

In fact, drawings and sounds can be easily produced with small movements of the body. They can also be produced by simple imitation of the environmental world and reproduced once they have been learnt. If they are learnt, these small products not only imitate the objects, but can represent them when they are absent. Moreover, if they have rules of combination, as with written or spoken words, they may be processed in a sequence independent of their meaning and of the presence of environmental objects.

Animals can also link objects, drawings or even abstract signs to a dynamic experience which is their meaning. Learning is no more than this. However, the dynamic experience is dependent on the real presence of the significant object because animals have no way of representing the absent world. Moreover, signifier and signified are mutually dependent because there is no possibility of autonomously processing a regulated sequence of signifiers.

The production of a sequence of signifiers, independent of their meaning and according to their rules of combination, is what Karl Jaspers called the passive process of thinking. In right handed people, it may be processed in the left brain hemisphere. Jaspers also proposed an active and purposeful process of thinking, related to governing ideas, goal-formation and determining tendencies, in other words, meaningful thinking. Such a process may also occur independently but in the right hemisphere, giving way to daydreaming or imagining.

However, human thinking needs both hemispheres, which are linked by the *corpus callosum*. Thus, the chain of signifiers needs to resort to the right hemisphere in order to know if a story has a link with common experience, if the reasoning corresponds to its objective or if we want to grasp a deeper signification. In its turn, the activity of the right hemisphere only becomes self-conscious if it resorts to the words and signifiers in the left brain hemisphere.

Furthermore, the production of signs and sentences in the left hemisphere, can be a grid to perceive the world; it can also represent the absent world; and finally, it can duplicate the inner and outer world. This latter function is essential for reflection and self consciousness. Thus, when we are looking at a stone, we can know that we are looking at a stone, as another person can know, and we can also know that we know that we are looking at a stone.

We cannot always make the most of both hemispheres. One of them can assume the leadership. This is why you, when listening to my speech, may not understand all the meanings, in spite of recognizing the signifiers and their intrinsic rules. Never mind, because the left hemisphere is economical and does

not constantly importune the right brain. If it did so, a lot of time would be spent on this, and you would not catch my words. However, if you later remember or speak about this presentation, new meanings will appear.

On the other hand, if you are tired, your right brain intends you to sleep or makes you daydream; in this case, new words or images may be superimposed on and confuse my speech which your left brain is trying hard to listen to.