HONORATA KORPIKIEWICZ

NON-VERBAL COMMUNICATION VS. AWARENESS

1. Verbal and non-verbal communication

Non-verbal communication is innate and widely used by all animals – and as the recent study showed – by plant species. Once the human nerve routes have been developed /responsible for human speech – verbal communication, the language of words/ the non-verbal communication did not disappear; however it seems to fulfil a slightly less important role when compared to other species.

Non-verbal communication happens to exist with some people as a feeling of empathy to other creatures, 'the process of identifying oneself with nature' via hypothetical parapsychological abilities /e.g. telepathy, clairvoyance/ but also via the most abstract forms of the world's descriptions – formal scientific structures / the language of mathematics or logic/.

Most often the issues of communication research are limited to aspects of phonetic communication, man in general / human verbal linguistic competence/, whilst the problem in itself is highly more complex. Language itself is not only the way of communication of different ethnic groups, but above all it is the manner of

communication of people from various scientific backgrounds. It is as well the way of communication among different species, that is their gestures, body movement and sending their smell, sound and even electromagnetic signals. The wide comprehension of the language is connected with an enormous, sometimes even unnoticed number of issues – beginning with recognition of the exterior reality with the help of senses, reason, mathematics, logic and verbalisation of the recognition outcome /the inner reality may be recognised and experienced in a non-verbal way, however language proves to be helpful/ – and finishing with sources of the living creatures' awareness.

Is communication between representatives of different species more or less the same, or maybe it possesses some common features like the ones we notice in human verbal communication?

It seems as if the worlds of science and animal behaviour /ethology/ were completely different from each other, still there must be one common feature for those two distant poles. Many researchers claim that even mathematical and logical structures may not be free but highly specific, the best of all the kinds which happened to develop in our brains during the process of phylogenesis. A. Einstein was one of those who also shared that opinion. The various reasons for that adequacy lay in human conception of the world, human brain structure determining recognition manners. Among other possibilities we should mention the one which reaches far beyond the real world of ideas as described by Platon, and currently by a physicist R. Penrose.

At the same time there are linguists such as N. Chomsky who believe that all the languages created by a human being in a natural, spontaneous way /there are also artificial ones/ despite their diversity, carry common features which exhibit specific brain structures. The brain itself when under the process of philogenetic development helped to comprehend and learn the language via ontogenesis.

That is why we wonder whether it is possible for the language itself to reflect the brain's functioning process of a living creature and their response to an interaction with the world?

2. Awareness vs. Communication

The question as to who is responsible for the language competence seems to be unanswered. Is it the ability acquired only by *Homini sapientis*, or perhaps it is equally available to other species. Yet, the concept of a language ought to be clarified first. There are different forms of a language: linguistic, body language, language of dreams /e.g. *The forgotten language* by E.Fromm/, biological brain languages

/*Brain vs. Awareness* by J.Trąbka/, language of the nature /*Nature and language* by B. Andrzejewski/.

Evolutionists – supporters of the continuity theory, claim that the language competence does not occur in philogenesis suddenly, but develops slowly out of different forms of communication such as sonic and ultrasonic. Therefore, the linguistic abilities are widely available not only to humans but also to other species which happen to communicate with one another without much difficulty. What is more, such

communication might be observed on the microscopic level: cells functioning with each other in a tissue must be able to comprehend their needs somehow, that means – they communicate.

The continuity theories are based on the assumption that the language is limited only to *Homo sapiens*, when the ability appeared suddenly in the process of evolution and independently from the inherited animal ancestors' capabilities of non-verbal communication.

Language definitions are formulated quite arbitrarily, depending on the opinions. They do not help to solve the problem but are only of secondary importance. Linguists stress the importance of verbal communication and language symbolism whilst etologists – communicative skills.

From now on I will understand all the communicative capabilities /non-verbal communication/, leaving the idea of verbal communication to spoken languages, in accordance with etymology /*verbum* – a word, an expression /from Latin//. The problem of language definition was discussed in previous studies /Korpikiewicz, 2000/.

Philogenetic development produces new features in the process of Darwin selection among various species. Many researchers believe language to be one of them. At the same time they oppose the theory of saltacionists' who claim that the human speech happened to occur suddenly as being too complex. It was created in comparison to vision abilities, in a slow process of changes which took place in some complex nerve routes of human brain, as pointed out by Gazzanig *(Gazzaniga, 1997).*

Anthropologists believe that human ancestors' skulls had to have proper capacity so as to manage language complexity. Such capability appeared around 2 million years ago, whilst human linguistic skills were reached about 200 000 years ago *(Ingram, 1996).* However, some happen to think that speech was created in past, that is about million years before Pleistocene*(Gazzaniga, 1997).*

Neurophisiologists' research /D. Hubel, T. Weisel/ on visual cortex helped to believe that cat's, ape's and man's cortex are alike. What is more, cortex structure of a grown cat is present even in a new-born kitten. It shows how genes influence the transmission process of visual features.

Such a highly complicated speech process was expected to have genetic origins. Indeed, the study confirmed the expectations. N. Chomsky's experiments showed that although children do not learn the language, they still possess the knowledge of how it functions. Therefore, their abilities must be innate. They are able to operate the inborn inductive system when classifying certain objects, take advantage of an innate ability to select the right hypothesis when dealing with objects' important features which helps them to learn the object's name. It allows us to comprehend the mystery of children learning so fast, acquiring even a few dozen words a day. Chomsky proved that among 4000 languages existing in the world there are few common features to all of them. Therefore, he came to a conclusion that human brain is equipped with a mechanism determining those features.

Neurophysiologists' studies on patients suffering from brain fission after surgical hemisphere division / brain's joint being cut off/ and people who underwent local brain disorder led to a conclusion that both hemispheres differ from each other in roles they play. Area responsible for speech /Broc's area and Wernicki's area/ is mostly found in the left hemisphere where the *interpretation system* is found as well. It helps us to

streamline some weird phenomena. Thus, many researchers tend to associate the interpretation system with language e.g. Gazzaniga *(Gazzaniga, 1997)*, and even with awareness / Eccles, 1977/. Still, there is no doubt that there are thoughts not expressed with speech. One could mention e.g. graphic representations, mathematical thinking which was once proven by Hadamard and currently by Penrose: *"[...] mathematical thinking is of graphic/picturesque character and uses non-verbal concepts [...]" (Penrose, 1996, pg. 465).*

It is also pointed out that it is possible to have the left hemisphere surgically removed, still the patient's consciousness returns. However, there are areas in the brain structure which when disordered, cause the consciousness to disappear permanently *(Trąbka, 1983).* These are the oldest philogenetic areas of the brain which also occur with fish and mammals. Would awareness be restricted not only to humans?

Research study based on patients who suffered from total *aphasia* / they did not understand the words / shows that such people think nonverbally. They do not comprehend the meaning of the words but understand what is being said to them! Sometimes when one wants to prove their aphasia, one must use a computer voice synthesiser. Otherwise, other speech features such as tone, stress, modulation, face expressions, spontaneous movements etc. help to understand speech without understanding the words. It leads to a conclusion that normal speech does not rely only on appropriate structuralized words but also on non-verbal factors *(Sacks, 1994).*

Animal research on animals learning human language, leads to similar conclusions; parrots may be taught to produce word utterances, whilst apes – sign language. Only then are the animals ready to articulate their thoughts. It would be pointless, however, to assume that only at the moment of acquiring the language did the animals begin to think, or become conscious. Thus, it must be taken into consideration that thinking process may exist effectively without words. Those animals had already had their own language before and only contact with a human being let them verbalise their thoughts.

The above remarks force us to believe that it would be unreasonable to associate consciousness with verbal language usage.

Fission brain analysis, especially the one of Gazzanigi, led to surprising conclusions: he obtained two separate 'selves'. Two independent identities – brain personalities – were able to contact the researcher. The left hemisphere found it quite easier via the help of the language, but it was noticed that the right hemisphere was also ready to use the speech. Was only the left one conscious? Definitely not. What is more, Gazzaniga noted even more 'selves' in the brain, around 7. Those experiments correspond to observations of patients suffering from hysterical neurosis or to experiences with hypnotic trance, when patient's other personalities occur /either spontaneously or via the experiments/ *(Jakubik, 1979; Korpikiewicz, 1992).*

Having localised the speech centre /Broc's and Wernicki's areas/ in the left hemisphere, there has been an opinion that awareness is connected with using the verbal language, its understanding. Many researchers proved it to be unreasonable. It would mean that only the left hemisphere was conscious, which is unsustainable in the light of Gazzanigi's experiments.

Brain surgeon W.Penfield, a distinguished brain researcher believes that experiencing consciousness is not connected with late philogenetic endbrain / human pride/ but rather with some brain structures which are highly older philogenetically. That opinion is

widely shared by many researchers. It would mean that all the species of the similar brain structure /such as fish, reptiles, mammals and birds / are equipped with consciousness. It is highly inappropriate then to assume that only man is capable of being conscious, even though only he is able to use a particularly defined verbal language.

Etology proves that animals use a very advanced means of communication, which is not necessarily equal to a human one. What is more, it is noticed that people do use a non-verbal means of communication when needed.

Therefore, all the evidence shows that animals are conscious. Human mental abilities, his/her capabilities of being aware and conscious, people's feelings, thinking were all inherited after his/her animal ancestors, although being under a constant change and development.

3. Communication between the species

Man, to some extend, is able to communicate with different animal representatives of other species, especially the domestic ones. It is often based on animals being trained – when made to react automatically under some circumstances, rewarded and thus reinforced. But even an aware/conscious animal is willing to communicate with a man, which might be used to learn their language of gestures, behaviour and sounds.

The fact that there is some sort of communication between different animal species, the domesticated and all the rest ones seems to be quite surprising. A dog and a cat living together in a house are very quick at learning their gestures and articulated sounds. That is why it is difficult to treat some scientists' opinions seriously when trying to prove that cats and dogs do not like one another as the same gestures mean something totally different to each of them. Raising a paw means agreement, whilst for a cat it as a sign of aggression. The same happens to horses when speaking about their gesture of covering their ears; it is said that this sign should be interpreted as being dependant on man, whilst horses' ears are always covered *(Morris, 1997)*. Such an explanation does not bear criticism. Simple observations show that animals are very good observers and imitators, thus learn the meaning of other speech and sound signs quickly either from their masters or different animals. It would be pointless to assume that animals assign the same manners to humans and animals as to horses.

Many birds understand the alarming sounds of a magpie or a blackbird. Antelopes living close to apes are learning fast their voices symbolising danger.

Animals communicate with each other in different ways using both, voice channel like humans but also gestures, body movements, miming, touching, colour or smell changes, using vibrations or magnetic field.

A very intriguing form of behaviour is an apology ritual observed in many species. For instance when a monkey attacks an ally, does not help or takes a better piece of food for itself, it must redeem its actions. Monkeys apologise with touching, kissing or delousing . That ritual was observed not long ago and the author suggests it does not occur with other animals *(Dunbar, 1996)*.

There are many more similar observations. In the pack of wolves, an animal lower in the hierarchy when eats something on its own, later has to apologise to stronger wolves by crawling in front of them to show that he does not want to take over the higher position in the pack *(Morris, 1996)*.

Apologies are often combined with satisfaction. Bernard Grzimek presents a case of a chimpanzee, which was playing with him when suddenly it bit him. After calming down a chimp tried to squeeze the edge of the bleeding wound *(Lorenz, 1996)*. Is it possible to apologise without empathy? In my other studies I try to show examples from my own observations *(Korpikiewicz, 2001)*.

Before 1980's animals had been denied from thinking. It was stated that they were capable of learning only simple rules of behaviour. However, such opinion did not bear criticism. In order to survive an animal must be able to foresee the mode of actions, so it is ready to formulate generalisations and simple causal hypothesis. At the same time an animal is taking advantage of ... a scientific method which is also used by humans (!) *(Dunbar, 1995)*. Both people and humans accumulate some knowledge of the world in simple behaviour rules, which are taught automatically and often mindlessly.

People, however, form representations and accumulate the knowledge in the form of hypothesis, which helps them to solve the problems by concluding and forming generalisations, but above all – to be aware of the cause and effect relations. If animals relied only on innate or learned behaviour we would have to exclude their concluding abilities. The fact that some animals are capable of creating abstract concepts was exemplified by R. Herrnstein's studies on pigeons which learned the general concept of ''a tree'' and consequently recognised it in different situations, even when shown in fragments *(Herrnstein, 1985)*.

Similarly, P.C. Holland's and J.J. Straub's experiments on rats show that animals without any doubt can conclude and on that basis form relations with the world. In the experiment rats were taught to associate lighting of the light with serving food. Later on they were taught to associate food served in one place with nausea / they were given harmless amounts of chloride of lithium/. If rats were guided only by learned forms of behaviour they would be expected to approach the table after switching on the light. Thus, associating nausea with a cage rather than with food. If they use hypothesis and conclusions, rats might associate two things: lighting of the lamp with food and food with nausea. Therefore, having switched the light on they could be waiting for nausea and refrain themselves from approaching the cage. Consequently, many rats ignored the light whilst the rats from the controlled group ran to the table *(Holland, Straub, 1979)*.

After such experiments conclusions ought to be drawn rather carefully. There was a rat running down the hall and the door to food was marked with geometrical figures, whilst the other ones with different symbols. The psychologist stated that the rats did recognise symbols when after a very short time they ran into the doors with food. However, the fact that animals also learn by trial and error was not taken into account: when watching the film in slow motion, it was seen that the rat tried to open the door with a very quick tap but finally stopped in front of the one which opened *(Dunbar, 1996)*.

I would say that when a problem is relatively simple, an animal similarly to a man tries to use the process of trial and error, but when it turns out to be more difficult – it begins to think.

If an animal collected its knowledge in the form of behaviour principles, it would be able to find food in the learned way and feed its offspring, whilst a domesticated one

– surrender itself to the man's will, otherwise it would be punished. However, it would not be able to apologise to another animal of which it is not afraid / it requires empathy /, find or produce tools, trust a stranger only because other animal trusted him. Such actions require being able to draw conclusions, thus thinking and collecting knowledge in the form of hypothesis.

At least some animals form hypothesis and consequently manage to foresee what the result might be. Still, we do not know how the process really operates. They might probably associate temporary correlations between the events. Such associations have always been the basis for scientific knowledge and helped to explain the correlation. Do animals understand the simple correlation, or perhaps they also grasp the reason of them? Is a rat aware of the man switching the light on? One can have some doubts in this case. But certainly, a rat is conscious of the fact that the door opens not only *after* touching it but *because* a rat touches it.

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Summary:

Awareness is often associated with verbal language competence. As exemplified by many researchers that opinion is unreasonable, otherwise we would have to assume that only the left hemisphere is conscious /where the speech centre is focused/. In view of Gazzanig's and Penfield's studies such an assumption seems to be unacceptable. It should be admitted that awareness originates not in endbrain but rather in the philogenetically oldest part of the brain structure. Consequently, however, we end up with a conclusion that awareness is also characteristic for other species.

Animal observations show that they communicate using gestures, body movements, sounds, smells, changing colours of their fur and humidity as well as changing their magnetic or electric field around the bodies. Animals are able to learn the messages sent by other species' representatives. Experiments show that many of them associate stimulus-response connections and form their relations with the world on the basis of conclusions drawn afterwards.