Differences and similarities between human and animal language psychology essay

Animals can and do communicate, but humans are the only species that use language. What is it about our species that enables us to acquire language For many years philosophers have tried to find out the way in which humans and animals communicate. They also tried to compare the differences and similarities between human language and animal call systems. They examined various animals for example birds, chimpanzees, dolphins and others and how children learn language. Below we will see some research that they did and have a better idea of what language is and how people can acquire language.

To begin with, some researches showed that apes can use sign language and they can name objects and actions. However apes were not able to go beyond two or three words organization and that showed that they lacked in grammatical organization (Grodzinsky, Y 2006: 4). Furthermore, one animal, kanzi, the bonobo was reported that he manage to reach a level of comprehension of spoken language, as a two year old child could do, also he remembered and he could describe a spot in the woods (Shettleworth, S. J 2010: 15). However is visible that are many differences in language abilities between animals and humans (Anderson, S. R 2004: 6). Some other species that have language are honeybees which are using dance to provide information to the other bees, where they can find apian life as nectar, pollen or potential location for new colonies (Anderson, S. R 2004: 9).

The animals systems are either discrete or continuous. If they are discrete means that are made up of small number of possible signals, on the order of five to fifty signals that are not semantically recombinable. If they are continuous, they have different messages which are correspond to different values on some dimension. The meaning of ‘ continuous’ comes from the mathematical meaning of the word. It refers to a physical scale, like direction or distance with the property for any two values, there is always at least in principle another possible value between them (Anderson, S. R 2004: 29).

Another animal that may have language, as the researches showed are birdsongs, which are shared an important property with human language. Like human babies innate adults the three of the twenty seven orders of bird songs are develop in a way that require interaction with early experience, and not entirely innate, like human language development. The lessons that can be learned from the way of birdsongs develops provide valuable precedents for study of the same questions in human infants. Is not that answers are exactly the same, language and birdsongs are very different systems in most respects but are strong similarities exist to make the comparison more informative (Anderson, S. R 2004: 129). Some other similarity with birds and human, are that both have two hemispheres, Lesioning says that only the one side of the birds brain have different overall effects in song depending on the hemisphere is affected. In canaries, for example the HVC result in the birds sitting up on his perch, fluffing out his feathers, and opening his beak as is sing, but not sound comes out. This effect is puzzling; birds have two distinct hemispheres in the brain, but are few anatomical distinctions between them. In addition, the bird's brains do not have a corpus callosum like humans that connects the two hemispheres. The two avian hemispheres are largely independent, although a few connections exist (Anderson, S. R 2004: 143).

Birds communicate with other birds with calls and songs. The song systems of birds are uncrosses, so the left hemisphere control the motor activity on the left side and the right hemisphere control the activity on the right. Since birds syrinx has two parts we could say that the left syrinx controls by the left brain hemisphere and the right syrinx by the right. In reality, the physical coupling between the two sides increases the complexity of the matter. The bird with their muscles one the one side affects the configuration of the other as well, with that we can see that the different interrelated parts of the songs can be each controlled separately by the two hemispheres. As well, the nerve controls the left side of the syrinx so if is cut, the bird cannot sing, but it can breathe normally. If you cut the nerve on the right side of the syrinx the bird has no effect either breathe or sing. Some crucial aspect of gestural coordination in the song must be contributed by the left side, while it has effects on both sides. Is clear a kind of lateralization, is not the same we can find in humans (Anderson, S. R 2004: 143).

The birds whose song is learned have not one but two neural pathways which are involved in song production. One of this it seems that involved in learning, because it becomes redundant once song is fully developed. Consequently, specialized brain physiology is intimately connected with the learning process, which the specific song to be learned is not (Anderson, S. R 2004: 144). The learning of songs in birds and the learning of language in humans are very similar. Each comes in the world with the strength to learn pattern within a particular range. Each makes use models provided by early experience to determine a particular instance from within that stage, as a set of songs and a specific language. Birds and babies are both capable in principle of learning any patterns typical for their species, though a number of these patterns are available by the species biology varies widely (Anderson, S. R 2004: 150).

However we should concentrate on the development of language in children if the born with language. To start with normal language acquisition in humans and song in birds it takes place in preferentially learning is function of its species specific biology, so human are able to learn their first language is certainly determined by our genetic program (Anderson, S. R 2004: 156). As they say children are like sponge they can easily learn words because there head is clear and they develop easier, the only that u have to do is to expose them in an environment with language. But philosophers for many years were trying to find exactly how brain works, if it comes from the brain. Although was difficult to find out because they did not have the appropriate materials. After some years they invention the microscope and the finally had the ability to examine the brain and find out if language comes from the brain.

The idea that language comes from the brain was not implausible to the ancients, and was based in irrefutable evidence, some of them were that spoken output was generated in brocas area, and heard input was preceded in Wernickes area. The scientific community instantly undertook the study of the brain (Loritz, D 1999: 7). The seventeenth century whereas Leeuwenhoek invested the microscope and in one generation the Broca, the scientists where trained on the brain. In 1873, Camillo Golgi, invested that chromium silver salts would selectively stain brain cells, which make them visible in microscope. Santiago Ramon y Cajal using the method of Golgi, he charted the microstructure of the brain in encyclopedic detail and in twentieth century was established scientific fact that mind was brain (Loritz, D 1999: 7).

In more details, Ramon y Cajal believed that every cell was separate cell, and that wholly bounded by its cell membrane had no connection to its neighbors but he could not prove it because his microscope was not powerful enough (Loritz, D 1999: 7). On the other hand Chomsky argument was that “ language was not a thing like stimulus or a response, punishment or reward. That language was a unique and uniquely module of mind” (Loritz, D 1999: 9).

The result that philosophy generated has depended heavily ‘ generative deduction’ and the basic form that could be given was the follow: “ The human brain is finite, but infinity of sentences exists, which can be generated by rule, providing language is infinity”. However, the normal human children can quickly and easily acquire language, even if the language is not teach to young children, and only human children do acquire language. That means language is innate and it is not so much learned as it is ‘ acquired’ (Loritz, D 1999: 9). The sociolinguistic functionalism argues that we learn language from the social environment. But biologists have often attacked premise, the human uniqueness of language, by using the dancing bees and singing apes as evidence of the evolution and learning of language in other species. However if the animals can communicate and the language are using, is not the same with the human language (Loritz, D 1999: 13).

With lots of researches and arguments in locally convincing, none of these attacks has proven fatal to the generative deduction, and could not be added an alternative theory of thought or language. However forty years later after the idea that children have innate language acquisition device, generative philosophers until now there not able to place in human language. Chomsky become defensive and said that “ no one knows anything about the brain” (Chomsky 1998: 755 in Lorits, D 1999: 13) and he was asking: “ how can a system such as human language arise in the mind/brain, or for that matter, in the organic world, in which one seems not to find systems with anything like the basic properties of human language?”. That problem sometimes brings the cognitive sciences in crisis. Is a problem for biology and brain sciences that they cannot provide any basis to be quite well established conclusions about language (Chomsky 1994: 1 in Loritz, D 1999: 13). In 1906 Ramon y Cajal won the Nobel prize for showing that brain is a massively parallel processor and Von Neumann declared that “ the nervous system is a computer machine in the proper sense, and that discussion of the brain in terms of the concepts familiar in computing machinery is in order” (Von Neurnann 1958, 75 in Loritz, D 1999: 14).

Another aspect will should examine was the researches the scientists did to understand how children learn language, if they born with language or if they imitate their parents on the environment that surround them. A child in his first months is babbling through several stages and is parallel with those observed in the vocal babbling of hearing babies. Between ten to fifteen months, hearing children have arrived at a selection of vowel and consonant types appropriate to their native language. Babbling can remain, in the production of nonsense repetitions, generally with the appropriate intonation., but stable words start to show up in the end of their first year, infants start to use consistent phonetic form to refer to an object. Between twenty to twenty four months, most children have a vocabulary between 250 to 300 words and they begin to combine words with meaningful ways and produce their first sentences (Anderson , S. R 2004: 162).

Although infants even before birth, respond to auditory input, they can recognize changes in the sounds and reacting preferentially to the sound of the mother voice. At birth infants can recognize sounds along all the dimensions used by the world's language. They can also detect the changes in the tone of voice and can recognize the sameness of speech sound despite variations in intonation (Anderson , S. R 2004: 162). In a stage at or shortly after birth, infants can show preference for the existing intonation patterns of their mother tongue. Tuning in to this kind property can be based on general characteristics of the auditory system which are common to the nearly primates. However the cotton top Tamarin monkeys can discriminate sentences from Dutch and from Japanese (Anderson, S. R 2004: 162).

Up to age of two months infants show no right ear advantage for speech but they do show a left ear advantage for musical contrasts. By three to four months the advantage of the right ear of speech emerges. The primary language areas of month humans are in the left hemisphere, which the right ear provides the most direct access (Anderson, S. R 2004: 163). By the age of five months the infants can make some connection between visual and auditory information. Around six months show a preference in speech containing vowel sounds of the language spoken around them. At the same time they are able to detect the prosodic cues for the boundaries of clauses in different languages, but they want long time until they can actually produce utterances that could be structured into clauses (Anderson, S. R 2004: 163).

Around eight to ten months, sensitivity to prosodic organization increases, and babies can be shown sensitive to phrase boundaries clauses. This ability is critical if they are in the position to impose a syntactic organization on their linguistic input. Even though babies might do not produce stable words, but they can be shown to prefer word forms of their native language (Anderson, S. R 2004: 163). At the age of ten months infants have the ability to discriminate sound contrast that is not used in the language spoken around them. The phonetic perceptual virtuosity they born with will continue as they acquire their native language. For adults is harder hearing contrasts around them that are not present in their native language. Japanese speakers cannot distinguish easily [r] from [l], and English speakers have difficulties hearing French or Spanish because of the [p] as opposed to [b], contrasts that all could discriminate as babies. When the same acoustic dimensions are presented in a non speech signal, adults perceive them with roughly the same accuracy regardless of native language. It is specifically linguistic perception that becomes preferentially turned to the dimensions of contrast utilized in a particular language (Anderson, S. R 2004: 163).

Above we saw the following course of development. At birth the child perceptual system is capable of range of auditory discriminations in speech and general in auditory processing have roughly the same capacities. At the first months of life the quality of speech is a result of the child tuning perception system of speech which starts to focus on the kinds of sound that were found in language (Anderson, S. R 2004: 163).

Broca and Wernickes are known through 19th century to be concerned with speech. And it seems that damage to these areas is defect spoken language and in deaf people the ability to communicate by singing. Broca called articulated speech and is one of the most famous parts of the human brain and is featured in virtually every introductory anatomy and linguistic courses.

Studies indicate that brocas area participates in several othe neorocognitive as mirror drawing ans aspects of musical analysis (Bookheiner 2002; Dronkers et al., 1992; Gruber, 2002; Maess et al., 2001; Patel, 2003; Rizzolatti et., 1992 in Grodzinky, Y 2006: 4). The language areas were able to coordinate words and some sequences of words. Language areas originated from primitive working memory device involved in the imitation of complex utterances, which served as a template from which brain organization for modern language evolved. Language processing requires a very efficient working memory system, in terms of phonology, syntax, and meaning. additional working memory circuits were subsequently recruited in the evolution of human communication, producing the structural and semantic complexities of modern language (Grodzinky, Y 2006: 5).

In addition human brains are rewired to encode linguistic knowledge, the origin of language makes it virually certain that it builds on pre-existing abilities which evolved for other purposes for example: the photo-phonogical capacities which has the ability to produce and recognize sounds and to coordinate complex mptor routines involving the articulators, the pro-semantic capacities which has the ability to categorise percepts and to construct complex concepts, the capacity to form cross modal associations and finally the ability to store and retrieve pairings when is require (Dabrowska, E 2004: 62).

Human speech is under voluntary speech, which means we can decide what to say in a situation or not to say nothing at all, that means that it control over the oral musculature and is shifted to the cortex. The cortical control had two more consequences, is gave us the ability to learn new vocabulary and it made it possible to harness other corical systems for use in communication, and also enable us to combine simple vocalizations to form more complex ones and to establish foundations for syntax (Dabrowska, E 2004: 65)

The broca area as I say above is one of the most known part of the brain, it plays a vital role in syntax, in speech motor control and is programming sequences of manual movements (Fox et al. 1988; Kimura 1993 in Dabrowska, E 2004: 65). The broca aphasia is frequently acoompanied by constructional apraxia which is responsible for coordination language use and purposive manual movements overlap. Grossman (1980) noted that " even in the absence of apraxia, broca's aphasics have a selective deficit in reconstructing the hierarchical organization of an abstract diagram from memory" (Dabrowska, E 2004: 65).

In conclusion human can acquire language because of our brain, as long as human gets exposed to language before the age of 5 they can acquire it. Animals may have some similarities with human, they can communicate but they do not have a specific part in their brain to function language. As we saw above it took many years to find out how brain works and I believe after some years new researchers and discoveries will come in the light. And as Deacon (1997) points out: " language need humans more than humans need languages" (Dabrowska, E 2004: 67).