

The Psychology of Language
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Module No. #01
Lecture No. #01
Animal Communication and Human Language - I

Hello friends, welcome back to this new course on Psychology of Language. This is my fourth course on, NPTEL MOOCS. Prior to this, I have had courses on Cognitive Psychology, Consumer Behavior, and on Human Behavior, or Introduction to Psychology. So, I decided to start a course, on the psychology of language. The question is, why did I think of, a course on language, or the psychology of language. One basic difference between us humans, and animals, is the fact, that we can communicate with each other, we can talk to each other.

And, we can express our ideas in ways, which are far behind, far ahead, of what animals can comprehend. We can pass messages between us. We can think, and we can comprehend things, talk among each other, and generate ideas, and do a lot of other functions, which animals cannot. One primary reason, the animals are not capable of doing these things, or generating good ideas, coming up with new patterns, evolving in the in the in the chain of life, is because, they do not have a way effective medium of communication.

Having said that, it is not that, animals do not communicate to each other. They do. But, the way, they express each other, they talk to each other, the past messages among each other, is a primitive form of language. So, at the very outset of this course, let me give an explanation, what is the difference between communication language. So, communication is a way of expressing ideas, or sharing ideas, between groups of people, using basic symbols, which convey limited information. Most of these communication are non-structured.

And, only a few bits of information, can be passed on, from one person to another. Also, communication cannot be productive. In the sense, that messages, which are passed through communication, are very limited in scope. In contrast, language is a form of communication, where messages are passed between people. And, these messages, can be productive, can lead to newer ideas, can lead to newer understandings. And, it can mean, a number of things. The same message, can mean, a number of things, can transfer a number of ideas.

And, it can generate us the same 26 letters in English, can generate a whole lot of information, which is passed between people. And, so I thought that, if language is at the so essence, and the so basic of, the distinguishing between us humans, and non-humans, which animals, why not take a course, do a course on, the psychology of language. So, here I am, with this course on, the psychology of language. What we will do in this course, is we will look at, how communication language is different, how language developed.

And, what are the fools, various rules of language? How these rules are used, by people in communicating ideas? What are the foundation of a language, and several other features of language? For example, how is speech produced, how is speech perceived, how are letters written, what are words, how are they expressed. And, so a number of things, that we are going to study in this course. Now, since this is a very first lecture, what I will be doing is, I will be starting off by defining, what is an animal communication.

How animals communicate? And, how this communication? What is the need of this communication? And, how they are different from, the language that humans use? What is the primary differences between them? So, what I will do is, I will try and bring together, these two features, and do comparison among these. So, as I explained, communication is a way of expressing ideas, between group of people, animals, or whatever they are. So, it is um a way of expressing ideas, or spreading ideas. Animals have a very basic way of doing this.

It could be, in terms of bird songs, which are calls by birds, which mean very specific things. Animal communication could also be, the wiggle dance of honeybee, which we will discuss further. It could be the squeaking of a crow. The strange sound, which squirrels make, to alert other squirrels in in the herd. The meows and the barks, that are done by certain animals. And, communication is just not only limited, to animals. Humans also, or earlier humans also, used to form, or used to use, some form of communication.

For example, the smoke, signals, which are used for communicating certain kind of information, relating to predators, are a form of communication. And so, prehistoric humans, also used to use communications. So, language basically, is a medium of communication, which is a very recent development, so over the years. This science, which studies the psychology of language, is called psycholinguistics. And, that is what we will be focusing on, in this course.

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ANIMAL COMMUNICATION

After studying this section, you should be able to:

Discuss the four *main purposes of animal communication* systems.

Describe well-studied *animal communication systems* such as the honeybee waggle dance and vervet monkey alarm calls.

Discuss the ways in which many species use *vocalizations to maintain social structure*.

Explain the four *key characteristics of animal communication* systems.

So basically, let us start discussing on, what is animal communication. And, so I have here, at the very outset, a few outlines, of what is that you are going to learn, from this part of the lecture. So, after studying this section, or this lecture, anybody who is interested in studying language, should be able to discuss, or should be able to know, the four main purposes of animal communication system. Why do, I mean, animals communicate? So, they will be able to pinpoint this particular fact.

Other than that, they will be able to describe, well-studied animal communication systems such as, the honeybee waggle and the vervet monkey alarm calls. So, they will be able to distinguish, these communication systems. The two different communication systems, that we are going to take explicitly in this lecture, is the honeybee waggle, which is the honeybee dance, as it is called. And, alarm calls, which certain kind of monkeys in Africa, do. And, these calls are basically, to one other people, to want other members of the herd, of certain predator calls, certain predator arrival, or dangers that can come from environment.

Another thing that you are going to learn, after reading this section, is discuss the ways, in which many species, use vocalizations to maintain social structure. So, you will also understand, how communication is used by certain animals, or certain species of animals, as vocalizations, as a way of maintaining social structure. One good example is, cows. If you look at them, they move. And, this moving, actually makes the herd, makes them come in a herd.

Or, sheep's, which actually have a certain kind of a sound, which makes them come in a herd. And, certain moving's also tell about, the hierarchical structure, which is there in the herd. And,

at the end of it, you will also be able to explain, the four key characteristics of animal communication system. So, what are the major parameters? What are the major characteristics of Animal Communication System?

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Studying Animal Communication

Ethologist

- Scientist who studies animal behavior

Communication

- Behavior intended to influence another organism

Conspecific

- Member of same species

Four Fs of animal communication

- Food
- Foe
- Friend
- Finding a mate

So basically, then Ethologists are the people, who are given this chance, or who are responsible, for studying animal behavior. Now, as I said, if we want to study human language, or the psychology of human language, we have to first start focusing on, non-human languages, basic languages of animals. Because, that will give us the fuel, the basis on which, modern day language was created, and how modern day languages progress, or they work.

So, Ethologists are the people, who actually study, animal behavior, and animal communication systems. And, they point out that, the communication system in animals, is intended, to influence other organisms. So basically, the animal communications, are ways, are certain behaviors, that animals do, to influence other animals, or other members, of that particular group. It is also related to the conspecific members of the same species, are also influenced, by these communications.

So, this Ethologists, they give the reasons, or they point out, that there are basically four factors, why animals use communication. So, four basic reasons, which most Ethologists suggest, that animals use communication are, for finding food, for finding an enemy or foe, for finding a friend, or for finding a mate. So, four different things, or four different reasons, facts, factors, why animals use communication system, or animals use communication. So, what is communication then? Let us first describe, what communication is?

Communication is described as, any behavior on the part of an organism, which is intended to influence, the emotional thoughts, or behavior of other organisms. What this says is that, if we want to influence, or if we want to change, thought patterns, behaviors, emotional vocalizations, or other factors, of other organisms, we should use communication. And, so communication is the way, how you want to change, or how you desire to change, other people, or other members, of a particular group, that you belong to, or maybe other group. How you want to change these features of these people?

So basically, it is a medium of exchange of ideas. It is the medium of flow of information, between two members, or many members. Now, this communication, which is a behavior, which is defined as a behavior, which a member of a group does to influence the behavior pattern, the thoughts, the emotion of other members of the same group, can be of four different types. So, as I said, communication is a behavior. Now, what are the forms of this behavior? In what ways, this behavior are acted up? And, so there are various forms.

It could be a vocal behavior, in terms of the moo's, the barks, the dogs do, the moo that the cats that the cows do, and several other vocalizations. The birdsong vocalization, and so on and so forth. So, it could be vocal in nature, this behavior. This behavior can also be, facial in nature. So, certain type of communications, are facial in nature. Just by looking at, certain facial or facial activities, members, other members of the group, can understand, or can decipher, what a particular member of a group is feeling, or what a particular member of a group is expressing.

Generally, nonverbal behaviors, are expressed, in this way. So, whether somebody is angry, somebody is sad, or in in terms of animals, by looking at the face of another animal, the kind of twitches that it does, can communicate certain kind of information, to other members of the group. Communication behavior, or the behavior that we call communication, can also be in terms of body posture. So, certain kind of body postures, by one member of a group, can express certain information, can express certain kind of, or can elicit certain kind of behaviors, on other member of the group.

So, one behavior, or one kind of behavior through which, communications can be passed on, is the body posture. And finally, we have odours also. So odour movements, or smell, can also be

one way of communication. So, cert. We have seen dogs urinating, on car tires. And, so this is one way of communicating. So, it is not a random thing.

They basically pass along the message, that they have been moving through this place, or they have been visiting this place. And, so odours are also a kind of behavior, that animals do, for passing out communication, or for sharing communication, passing messages among, other member of that particular species. Now, let us start looking at, the four f's, or the four primary reasons, why anima. Animals communicate. And, so the first one is called food.

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Food: Honeybee Waggle Dance

Austrian ethologist Karl von Frisch (1967):

- Systematically changed location of nectar source
- Found that waggle dance conveys direction and distance

Dance performed on vertical surface of honeycombs

- **Direction:** Angle from vertical indicates angle from sun
- **Distance:** Length of waggle correlates with distance from hive

Now, Austrian Ethologist, Karl Von Frisch, 1967, was one of the first group of scientists, who first described the honey bee waggle dance, with a communication about resources. And so Karl Frisch was one of those leading scientists, who actually described that, food could be one of the reason, or food is one of the reason, why animals communicate. And, what Karl Frisch described in detail, or the medium that he used to describe, the model that he used to describe, that food is the reason, why anima. Animal communicate is the honeybee waggle.

Now, what he said is that, honey bees, they systematically change location, of nectar sources. So, within the honey bees, the sources of nectar are not constant. They keep on changing, as flowers keep on changing, as there are different regions in the field. And, so there will be different regions, where there will be nectars. And, so the honeybees, actually have to find, where the nectar is. And, so these nectar sources, with seasons, or with periods of time, with changes in the environment, they keep on changing systematically.

What he found out is that, if a honeybee, there is there is in in the honeybee honeycomb, or the place where honey bees live, there is something called, the queen bee. The queen bee does not do anything. She is only responsible for reproducing. The other bees, are actually responsible for collecting the honey. So, the way, that these honey bees, or one of these honey bees, when she gets to know, a nectar source, how does she communicate, this information to other bees of the honeycomb.

That is what, has been described by Karl Von Frisch. And, he believes that, this kind of communication was, or this kind of communication, this kind of behavior, that they do is, that is the honeybee waggle, that they do is because, they want to communicate to other members of the honeycomb, that this is where the source of the nectar is. So, suppose a honey bee, goes to a particular region, and she finds nectar. How will she communicate this, to other members of the group?

And, what Karl Frisch found out is that, there is a particular kind of dance, that this honey bee, who have actually found nectar, she does to communicate the location, the source of this particular nectar. So where is it, this source? Where this source actually lies, the direction, the angle, and the exact source? To relay this information, this honeybee has found the source of the nectar, she produces a kind of a dance. And, this dance is called the waggle dance. Now, the dance which is performed, on vertical surface of the honeycombs, it reveals two things.

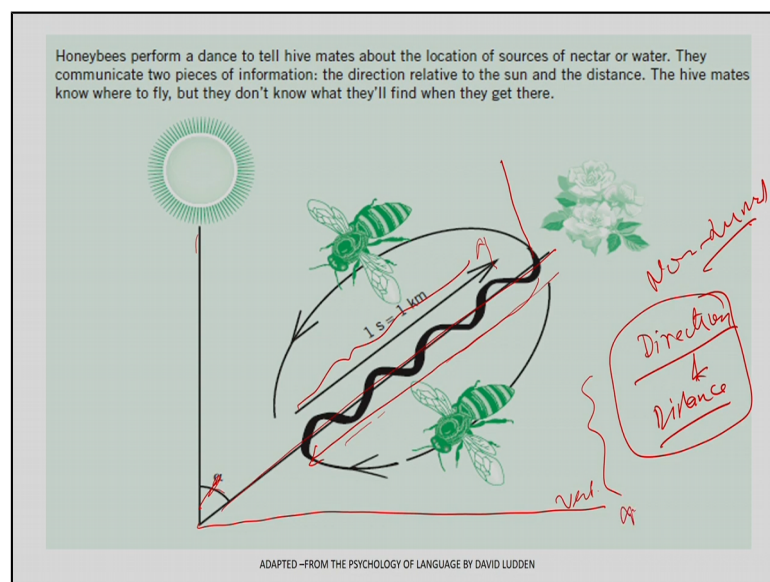
One is, the direction. Angle from vertical indicates, the angle from the sun. So, the kind of direction, that she is going on to. And, the other is called the distance, the length of the waggle, correlate with distance from the hive. So, generally the waggle dance, the dancing that the honeybees actually do, is that they will wiggle down. They will first wiggle, twist their bodies, run, turn to the right, to circle back to the start. And then, they will do again a waggle run, turn to the left, and particularly going back to, again the same starting point.

Now, this kind of movement, that they do, this kind of eight movements that they do, is actually indicating, where, or which side, from the honeycomb, they are going to find, the other honey bees are going to find the source of the nectar. The direction of the waggle, the dance, to vertical axis, the axis on which the honeybee is wagging, provides direction, to where the source of the nectar is. Example, for example, straight up, is towards the sun. So, if the

honeybee is dancing, at an angle or straight up, it is towards the sun, there the source of the nectar is

And likewise, for any angle, subtending with respect to the vertical axis. So, if the honeybee is dancing, and she moves straight up, then the direction of the nectar is towards, straight up. Or, any angle to the vertical axis, in relation to the straight up, to the perpendicular to the vertical axis, is will give you the direction of, where this particular nectar source is. Another interesting thing, from this dance, is the length of the waggle, that they do. How far from the centre, or the dancing point of the centre of the start point, is the honeybee actually dancing. The more the length, the greater the distance of the nectar is.

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Let us have, a look at it. And, so this particular diagram is adapted from David Ludden's book, which I have been using for making these lectures. And, as you can see, this is the waggle dance, that we have. So, as you see, it starts moving in a particular waggle. The way, the height that it is making, to this particular angle, this particular angle. Because, this is my perpendicular. This is 90 degrees. This is my vertical axis. And, the angle, that it is making to the vertical axis. And, in this case, this is my vertical axis. The angle that it is making to the vertical axis, will tell you, at what angle, the source of the nectar is.

Also, the distance that, this dance is, will tell you, the direction. So, direction and distance are two things, that this honeybee waggle will actually represent. And, so this is one interesting thing to look at. And, this proves that, communication, or primitive language, as we would call it, is done by animals or non-humans. I would not call them, animals. I would call them non-

humans, to communicate ideas, or to communicate information, about food. So, one reason is, for food. And, this kind of dances basically, or this kind of behavior suggests that, honeybee waggles are done for food.

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Foe: Avoiding Predators


Alarm call

- Warns conspecifics about approaching predators

Squirrel chattering is an alarm call, it is used to warn members of group about approaching predators

Vervet monkeys have three alarm calls:

- "Eagle" (Carry away offspring)
- "Leopard" (Attack)
- "Snake" (Bite them)



The second primary reason, why animals communicate, or the reasons for animal communication, is letting other people of the group, know of a predator, of a foe of a predator. And so, within this category, what one comes to know, is alarm calls, which animals like squirrels do. You have seen a squirrel, Alvin and the Chipmunk, and that kind of movies, and you see that, that particular creaking noise the squirrel that makes. And, this noise is exactly. There are different kind of noises, which are there. Some of these noises, are to warn other squirrels, of a foe which is coming, of a predator which is coming.

And so, what alarm calls actually do, is they warn conspecifics, about approaching predators. Conspecifics are, people of the same species. So, these calls, these squirrels, quick links actually tell, other squirrels, that a predator, maybe a snake, maybe some other predator is approaching, and what they should do. So, squirrel chattering is an alarm call. And, it is used to warn members of group, about approaching predators. Another interesting study, or model system, which has been used to look at the reason for, I mean, animal communications, are vervet monkeys.

And so, vervet monkeys like this, they, how to interact with the off-springs. And, what are the kind of vocalizations, that they have. And, what do they mean, was also studied. It was found that, vervet monkeys have three types of alarm calls. One is the eagle alarm call. And, this eagle

alarm call, actually warn the other members, or senior members of the group, that an eagle is coming. What do eagles actually do? Eagles take away the smaller off-springs. And, so this call is made, to warn of an eagle.

So, in terms of squirrel, they have just one or two types of vocalizations. In terms of the vervet monkey, there are four, three or four kind of vocalizations. And, one kind of vocalization is very specific to the eagle. And, this is to warn the senior members of the group, that an eagle is there. And, what this eagle is going to do, is take away the offspring. They also have something called, a leopard call.

Now, the leopard is known to attack the vervet monkeys, and so this kind of call is made, to make other members of the conspecifics of that particular species, that a leopard is at loose. And, this leopard mate might attack them, and eat them up. And, so that, that is one of the reason, or one of the kind of calls, that the vervet monkeys have been done. There is a third type of call, or there is a third type of action, vocalization. And, that is too aware of other conspecific members of the species, that a snake is there.

And, what is the snake going to do. The snake is going to bite them, and they will die. And so, there are three different call of, or three different types of call, that is there. Now, there is a lot of research, which has been done. And, by varying the different calls, and producing artificial calls, and seeing how animals actually understand, or vervet monkeys actually understand these calls, and how do they respond to it.

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Friend: Finding your Place in Society

Dominance hierarchy

- Social system in which each member knows who ranks above and who ranks below

Vocalizations in mother-infant bonding

- Rat pups emit ultrasound when they fall from nest
- Human infants cry out for their mother

Social grooming

- Picking fleas and dirt from fur of conspecifics
- Builds friendships
- Form of communication because it influences other's behavior

One another reason of animal communication, has been in terms of, finding friends, finding your place in society. So, animals also communicate, to find friends. Dominance of hierarchy, is one type of animal communication system, or animal communication output, I would say so, social systems in which, each member knows, who ranks above, and who ranks below, is also expressed by, certain kind of calls. And basically, the cattle, they express a variety of emotional states, through vocalization.

So, this kind of mooing, that cows do, or cattle's do, is basically, these mooing actually tell, or these mooing actually express, the kind of hierarchies, that different cattle's have, or different breeds of cattle have, or different kind of members of that particular cattle have, within the structure. Also, certain kind of vocalizations in cattle are done, to express mother-infant bonding. For example, rat pups, they emit ultrasound, when they fall from the nest.

And, these ultrasound, or these vocalizations actually tell, the mother cat, or the parent rat, that the pup has fallen from the nest, and they should be taken back, or they should be cared about. Also, human's infants cry out for their mothers. And, this kind of crying that human infants do, actually warn the mother of a state. If you have seen small babies, they cannot talk. So, if they have stomach ache, or if they have certain kind of problems, they cannot talk.

And, it is their cry that they do, the different kind of crying that they do, which gives us some hint, or maybe paediatric doctors, to what is actually happening. So, whether he is crying out of some pain, or it is stomach ache, or so on and so forth. And so, this kind of things also happen in humans, is basically expressing the kind of discomfort, that they are doing. The laughter, the

crying, all these kinds of things are certain kind of communication. Also, social grooming is expressed through animal communication.

For example, picking fleas and dirt from fur of conspecifics, is one way of making social bonding. So, you would have seen these in certain kind of animals, where they pick out fleas, from the skin of other animals. And, this is a kind of a social grooming. It is basically making friends. And, that kind of act, that kind of behavior, is actually communicating the time your friend. It is also used for building friendships. And, it is a form of communication, because it influences others behavior.

So, without saying anything, just the act of doing this, make these animals come together, or come near each other, and act as friends. And so, one way of expressing, or one reason of expressing communication, or using communication in animals, is finding friends, either finding a social grooming, or finding dominance in hierarchy, or a vocalization in as an infant mother bonding. So, animals and humans, they communicate, or animals generally communicate, for also finding friends.

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Finding a Mate: Getting your Genes into the Next Generation

Males advertise their genetic prowess to attract mates

- Peacock feathers
- Bullfrog croaking
- Birdsong
- Firefly lights

Females also advertise sexual interest

- Mating rituals ✓
- Pheromones (scents) ✓

And, the fourth type of communication, or fourth reason of communicating, is finding a mate. And, that is the most necessary thing in animals, getting your genes into the next generation. So, males advertise, male's communication for a mate, is done in specific ways. So, males advertise their genetic prowess, to attract mates. For example, peacock feathers. If you look at peacocks, they are males, they have these feathers. And, they dance that they do, the kind of act that they do, is basically for attracting females, so that they can reproduce.

Peahens do not have feathers. Pea peacocks do have feathers. And, peacocks are actually males. So basically, the kind of dance that they do, peacock dance that they do with their feathers, is basically attracting mate. Similarly, bullfrog croaking. The croaking of the bullfrog, you would have seen, or you would have heard bullfrog croaking on a rainy day. And, that is because attracting females, is the reason for that kind of a communication. Bird songs. You have heard bird song, singing birds, different kind of birds singing.

And, so the reason for these bird songs, is attracting females. So, hearing these bird's songs, hearing this cry, the wails of birds, is basically for attracting the member of other gender, to reproduce, to bring up the newer generation. Similarly, firefly lights. The lights on a firefly, are basically a medium of communicating, to a mate of the other gender, and to reproduce. So, it is not only males, these are, these four types of communications, were through males.

But, it is not only that, males communicate for reproduction, the other thing is that, female's also produce certain kind of communication systems, or have certain communication systems, which attract males for reproduction. And, one is the mating ritual. So, there are certain kind of mating rituals, you have in dogs, in certain kind of other animals. And similarly, the pheromones, which are scents through certain molecules, the water molecules, are also used by females.

For example, female dogs, or certain kind of the monkey, this kind of pheromones are produced by females, to attract males, so that a reproduction can be generated. So, basically then, this animal communication system that we have been discussing, is basically for four different factors. That is what, mostly ecologist believe. And, these four factors, are for either finding a friend, or either for finding food, or finding a predator, warning people of predators, or finding a mate. And so, basic reasons of animal communication have been outlined, this way.

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General Features of Animal Communication Systems

Limited range of expression

- Vervets communicate about three different predators and nothing else

Holophrases

- Vocalization or gesture refers to entire situation, not specific objects or events

So then, having said that arriving, given you an explanation of, what are the various forms, or what are the various reasons of animal communication system is, can we then, find out the general features of any communication system, or animal communication systems, so the very primitive communication system. Looking at, various animal communication systems, some basic features, or some basic characteristics of such communication system, exist. The very first is called, limited range of expression.

If you look at vervet monkeys, they communicate about, three different predators, and nothing else. Right. So, the expression that these animals can do, the kind of information that they can express to their behaviors, which is called communication, is very limited in nature. And, if going back to the idea of what vervet monkeys do, or squirrels do, is that, since vervet monkeys have been studied in detail, so we are taking that example. And, it is found that, they have only three calls. Either, it could be eagle call, it could be a predator call, of a lion, or it could be a snake call.

And, these are the three communications, or these are the three behaviors, that they can do. And, they cannot express, more than that. So basically, most communication systems, in animals are limited by, the range of expression, that they can do. Another interesting feature of animal communication systems, are that, they are holophrases. The utterances that these animals produce, are holophrase in nature. What does it mean? Vocalizations or gestures, they refer to entire situation, not specific objects or events.

So basically, if you look at the waggle dance in honey bees, they can tell you about the entire situation, where you are going to find something. You are going to find, some kind of source. Right. That the, dance will tell you, where is the source, and which direction it is, and what is the distance. But, it is not going to tell you, that if you go to the source, whether you are going to find honey, or you are going to find water, or you are going to find something else.

So, it will not tell you, the specifics of what is going to, what you are going to find there. Or, what kind of flower it is there, what kind of nectar is going to come out of it, those things are not there, if you look at the waggle dance. And, so holophrases are vocalizations, which refers to the whole situations, and not the specific.

Ah so, they can give, this communication systems, animal communication systems, tell you about a situation in total, and not the specifics of the situation of, what, why, where, how. Those kind of features, are not present in, animal communication systems. And, that is why, they are holophrastic in nature. So, two basic general features of animal communication system is, limited range of expressions, only limited features can be expressed, and holophrastic as the whole situations can be expressed, and not the specifics.

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General Features of Animal Communication Systems

Little ability to combine symbols to express novel ideas

- Bee dance combines direction and distance information, but nothing else

Always about the here and now

- “Leopard” here and now, not “leopard” yesterday by the river

Another interesting feature of animal communication system, is little ability to combine symbols, to express novel ideas. So, novel ideas are new ideas, are combining different symbols, to form a new symbol. That is not possible with, animal system. Bee dance, they combine direction and distance information. But, nothing other than that. As we have looked at,

that only specific information can be given to you. Only some information can be given to you, not all kind of information's.

So, this symbols that are there, the animal communication systems are there, they can be read, as it is. They cannot mean, something else. As with human language, the words, which are being expressed, and the meaning of the word are different. For example, the same word, Dog, Inu, Hoon, Kutha, all of them mean the same four-legged animal, but they are different, different words. And so, different, different words, may make the same meaning. So, different symbols, different letters, make the same meaning, at the meaning level, although letters are different.

That is not possible with, animal communication system. Also, most animal communication systems are about, here and now. They express situations, that is happening here, that is happening right here, and right now. So, when they express an idea, it is about the present situation. Animal communication systems, I am never going to tell you, what happened yesterday, or what will happen tomorrow. Or, those kind of things, it will never predict about future.

It is just in the moment kind of a thing. It will tell you, what is happening right now, what is going to happen right now, that kind of a thing. And, they are able to communicate, here now situations. For example, if there is a leopard call, by the vervet monkeys, it will tell you that, the leopard is here right now, or the snake is here right now. It will not tell you that, a leopard has come here yesterday, or will come here tomorrow, or what to do with it, when he comes tomorrow. That kind of information, is not passed on.

And so, the four different things, or four different general features, of any animal communication system, is their limited range of expression that they can do. The utterances are about, the whole situation, and not specific parts of a situation. They lack the ability to combine the symbols, to give novel ideas, or newer ideas. And, they are always about the present situation, and do not give you any idea about, what will happen before, and after a particular kind of a situation.

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HUMAN LANGUAGE

After studying this section, you should be able to:

Discuss three important features that distinguish language from other communication systems.

Explain how duality of patterning gives language its expressive power.

Describe the basic levels of linguistic structure, from phonemes to discourse.

Explain how displacement differentiates language from other communication systems.

This is about, animal communication systems. But, for us humans, things are a lot different than, what animal system is all about. We are different. Humans can produce language, can communicate in various languages. And, this gives them the ability, the freedom, to do a lot of things. To express ideas. To come up with newer thoughts. To come up with, newer meanings. To generate, so many thinking patterns, thoughts, ideas, through certain, or which are generated, or which are passed on, through certain symbols. And, these symbols are arbitrary in nature.

So, human beings can communicate among each other. And, they can communicate not only about certain things, they can communicate about specific ideas. They can communicate, ideas within ideas. And, that kind of a thing is there. So, let us then look at, in this section, after learning about human language, what would you be able to do. So, after studying this section, most people who was taking this course, should be able to discuss, the three important features, that distinguishes language from other communication system.

So, how language is distinguished from, other communication system, that is the first thing that you would be able to do, when you read this particular section. Also, you will be able to explain, the duality of patterning, which gives languages expressive power. Duality of patterning is a feature, which most modern languages use. And, this gives us, this gives any language, its expressive power. The power of it to express, various ideas, novel ideas, create new ideas, and so on and so forth.

One should also be able to, describe the basic level of linguistic structures, from phonemes to discourse, if you are able to clear the section, or able to read the section. And, once you are able to do the section, once you are able to read the section, you should also be able to explain, how displacement differentiates language, from one other communication systems, from one other communication system. So, let us start, by look the section by first looking at, some of the basic important forms of human language.

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Laughter

Laughter

- Evolved from labored breathing of rough-and-tumble play
- Means playful intent in both chimpanzees and humans
- Has typical features of a communication system

*Some calls
Laughter*

Laughter and language

- Involve same vocal apparatus, can't do both at same time
- Alternate between laughter and language in conversation

So, for humans, language is replaced by vocalizations. In humans, language replaced the vocalization, that we see in animals. Now, we communicate with language. But, when emotional language shuts, emotional language shuts down, with emotional thoughts, language shuts down, and animal vocalizations and face expression persist. So, although we use language, and we are advanced by animals, in this particular feature, when an emotional situation comes in, when a certain emotional expression is there, the language ability shuts down.

And, so what happens then, is that we use basic primitive forms of animal vocalization and face expression, to generate emotions. So, emotion basically is a form of communication system, is very akin or close to the animal communication system. Language, provides the emotion, or provides emotion of particular base, to express itself. Now, one basic form of language, that humans use, is laughter. It is a, laughter is basically a social vocalization, which we share with chimpanzees. We use it together, with conversation, to enhance social interactions.

So, language is a form of social vocalization, that actually humans use. And, language is something, which helps us to enhance the kind of conversation, that we do. Now, when we are talking to someone, and we laugh with at that person, or we laugh in response to certain acts of that person, it is not that something funny has been conveyed. People laugh because, they like that person. And, they want more of that person. They want that person, to speak more. And, that is what they laugh.

And so, laughter is a way of communicating. So, laughter basically has evolved, from labored breathing of rough-and-tumble play. It is come from, this kind of a thing. Now, it means playful intent, in both chimpanzees and humans. So, what is the meaning of laughter, as we discussed before? Laughter actually means, a playful intent. It does not really mean that, we are laughing at certain information, that the other person is providing. It is an intent. It is an intent of interest between, people and chimpanzees, and as typical features of a communication system.

So, one of the basic features, or one of the basic facts, social facts, or social acts, that humans have, is laughter. And, this is the form of communication system, or this is the one of the form of communication system. Laughter and language, so how they are connected. It involves the same vocal apparatus, cannot do both at the same time. So, language and laughter, they use the same kind of localization, same kind of vocalization, but both of them cannot be at the same time. So, when you are laughing, language cannot come in.

When you are producing a language, laughter cannot come in. Because, they are using the same verbal apparatus. Alternate between laughter and language, in conversation. And, that is why, we alternate between laughter and language, in a particular conversation. So basically, then laughter, actually encourages a conversation. Right. Ra laughter, the way we laugh, the reason why we laugh, in one-to-one interaction, or many-to-one interaction, is because, it encourages certain conversations. Also, as we discussed before, laughter and language, they share the same vocal apparatus.

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Laughter

Language communicates most of the content in an interaction

Laughter signals interest in continuing the interaction

Language communicates, most of the content, in an interaction. Laughter is just a, is a just a process of, is just a way of vocalization. But, most information in any language, is communicated through language. And, laughter signals interest, in continuing through the interaction. So, when in a conversation you are laughing, and you are speaking, the language is communicating, most of the information, in that particular conversation. And, laughter is, what it is doing is, it is signalling the interest of continuing the interaction.

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Speech!

Modes of Human language

- Speech most resembles vocalized communication systems
- Writing has taken on its own forms and conventions
- Sign languages are full-fledged languages independent of spoken languages

Primacy of speech

- Virtually all language use is in the spoken mode (Hockett, 1960)

Another interesting fact of language, or another interesting form of language is, speech. Now, there are different modes of human language. Speech, mostly resemble, vocalized communication system. The way we speak, the way our vocal cords vibrate, and produce speech, it resembles a vocalized communication system. Also, writing a stain has taken on its own form of conversations. So, basically then, then, various modes of human language, or

various ways in which we can communicate, our human language is, one is speech, which is a vocalized communication.

The other is writing, as it is it is also mod mode of communication between people, or mood of passing ideas between people. The third form of language, or the third form of communication, in humans, is the sign language. So, with animals, the form of communication is very limited. But, with humans, this is very far advanced. And, we have, many ways of communication. So, speech is just one way of communication, among people. Speech is one form of language. Another form of language is writing.

And, the third form of language is also sign language, which are full-fledged language, independent of the spoken languages. So, in sign language, all information is communicated, in various forms of information is communicated. Since, signs and symbols mixed together, to give newer forms of information. And, they are communicated, without using the spoken language.

So, sign language is a form of communication, that that is used by humans, where information is passed to members, to conspecifics of the same species, but they do not require any spoken language. The primacy of speech. Virtually, all languages use it in a spoken mode. So basically, all languages use the spoken mode of, although written language and spoken languages are there. But mostly, most forms of animals and humans, they use the spoken form of language.

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Three Important Features of Language

Rules

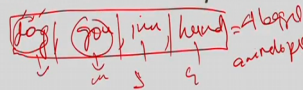
- Components are combined according to rules

Structure

- Components are combined within a structure

Arbitrary symbols

- Words are symbols bearing no resemblance to what they refer to



Animal communication systems may have some, but not all, of these characteristics

Now, there are three important features of any language. And, these important features, are what distinguishes, human language from animal language. So, we should be concentrating, as we saw that the animal languages, or the animal communication systems, have four different features, which are there. Similarly, human languages have three interesting features, or three features, which distinguishes it from, any other communication systems, which exist out there.

First, human language, it follows certain rules. What are those? Components are combined, according to certain rules. So, and these rules are called, the grammar. So, the grammar actually tells you, what kind of information, or what is the way in which, various parts of a communication, or spoken, whether it is spoken, written, or a sign language, how they should be combined together. And, these components then, when they combine together, to give meaning.

So, if a language, does not follow a rule, it will not generate any meaning. It will not mean, anything. So, rules are very important for any language. And so, most in la human languages have certain rules. And, why these rules are necessary? These rules are necessary because, if you follow these rules, or then, and only then, it will produce any kind of meaning, any kind of communication of ideas, any betterment better communication of ideas. Also, languages, human languages, have a structure.

So, not only they follow rules, which says that, how components are combined. They also have structures, which says that, components are combined within a particular structure. And, this is called the syntax. The way communication, the way certain components of the language, how

they combined together, in which format they combined, and this basic formats of combination actually tells you, what it is going to convey, or what a particular language is going to convey.

The third form, of any animal, a human language is that, they are, use something called arbitrary symbols. Words or symbols, bearing no resemblance to, what they actually refer to. So, when we look at human languages, there are certain words, that we use. But, the idea is that, these words, actually do not point to, what the meaning of a language is, or what the meaning can be derived from the language. For example, let us look at, the arbitrariness of the word.

So, if I write, Dog, Gou, Inu, Hund, if you look at them, all of them have, different words and different combinations. Right. And so, these words are arbitrary in nature. Because, all of them, this is English, this is Chinese, this is Japanese, and this is German. And, no matter what you do, no matter what these words tell you, they actually point to, a concept of a four-legged animal, which is a pet, and which we keep in our house, and they bark. And so, all of them, actually refer to the dog.

So, different languages have, different symbols, different words, which are combined together, to give a different, different vocalization. But, these vocalizations ultimately combine together, to form the meaning. The meaning for all four languages, whether it is Chinese, Japanese, German or English, all four, they use different, different arbitrary symbols. But, they combine together, to give rise to one meaning, which is the dog. And, the dog is the same for, all four languages. Now, animal communication systems, may have some, but not all of these characteristics.

So, animal communication systems, actually borrow some of these information, from the human language. They borrow some of, may be is the structure of arbitrary symbols. for example, some arbitrary symbols, which are used by animals, and animal communication system is, they have iconic symbols. Certain kind of iconic symbols are used. And, these iconic symbols are arbitrary in nature. But, they are expressed by, or they are read by the conspecifics. So, animal communication systems, they have some, but not all of these characteristics, that the human language has.

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Duality of Patterning

Structuring process that

- Takes units at a lower level
- Combines them according to rules
- To form new units at a higher level

Small set of simple elements (such as speech sounds) can be combined to form complex structures

Gives languages virtually limitless expressibility

Also, the human language is conveyed in, three different modes. One is, the vocal mode, which is the spoken language, as I said. Human languages can be conveyed in, three forms. One is the vocal mode, which is the seen in spoken language, that we have. The manual mode, which is the sign language, that we have. It is often used in the American sign language, which is used. Or, in sometimes, in Doordarshan you would see, sign language news, which are used for dumb and deaf people.

And, they can, they do communicate everything, every idea, which is out there, which the actor wants to convey to people, who are listening to it. But then, he does not have any spoken language. And then, there is a visual form of communication, or visual language in humans. And, that is called writing. So, writing, speaking, and sign languages, are three modes of communicating, or three modes of language, that humans have. Then, we also have, human languages also have, something called, duality of patterning.

And, what is duality of patterning? Duality patterning gives languages, expressive powers. The expressive powers that language have, the way it expresses, the kind of expression that he does, is what is duality of patterning. It is a process, that takes units, at a lower level, and combines them, according to rules into new units, at a higher level. So, duality of patterning says that, basic level sounds, or basic level components, or basic level units, are taken together, and they are combined to combined to give, higher level units.

Now, there is no relation between, basic level units, and the higher level units. Because, higher level units, when basic level units combined together, to they give a different kind of a, or

altogether a different kind of an expression, altogether different kind of a meaning, which is there. And, how has this comb combination done? So, they combined, the basic level units, into higher level units, according to rules, into new units at a higher level. By repeating this process, many times, a multi-layered structure of great complexity can be built, out of small set of simple elements.

Look at the human language, basic speech sounds are combined together, to form words, which then combined together, to form sentences, which then combined together, to form meanings of sentences. Right. So, you have, there are 40 phonemes. There are basically, 40 speech sounds out there. And, these 40 speech sounds, then combined together, to form the 26 letters of the alphabet, which then combined together, to form multiple multitudes of words, which then combined together, to form a sentence.

And, the same letters, 26 letters, and the same 40 phonemes, can mean everything in this world, can mean whatever you want to read in this particular world. So, structuring process. So, duality of pat patterning then, is basically, a structuring process, that takes units at a lower level, combined them according to rules, to form a new unit of higher language. Right.

So, basic duality of patterning is, and then why duality of patterning is, because the lower level, the speech sound that that that combines to form the word, and then the word that they combine to form the sentence, they have no relation to each other. These words, will never predict what the, so speech sounds will never predict, what the word means. And, the words will never predict, what the sentence means.

And, the sentence will never predict, what the meaning of the whole structure, or the whole paragraph is. And so, that is how the duality of patterning is. Now, small set of simple elements, such as speech sounds, can be combined to form, complex structures. Given language virtually limit. Given languages, this particular duality of patterning gives the language, virtually limitless, egg expressibility. And, a whole set of expression, or a whole set of words and ideas, can be actually expressed through it.

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Pyramid Scheme

Phonemes

- Meaningless speech sounds, fundamental building blocks of language

Phonology

- Rules for combining phonemes to form morphemes

Morphemes

- Basic units of meaning (root words, suffixes, prefixes)

Morphology

- Rules for combining morphemes to form words

Words

- Minimal stand-alone units of language

Now, the building blocks of languages, are phonemes. The first step, or the first form, or the first structure of any language, is called the phoneme, which is a meaningless speech sounds. The ba, ma, pa sound, are the basic sounds, which are there. And, they form the, these are speech sounds, which form the, these are meaningless speech sound, which from the first level of any language. Phonemes, they combine to form morphemes. So, these phonemes, these speech sounds they combine to form very small words. For example, ing. For example, ly.

So, kind, kindly. Or, noun-ending, for example, run, running. So, these morphemes are combining this phonemes, to form very simple words, which have no true meaning as such. So, phonemes combine to form morphemes, which are the basic units of meaning. And then, morphemes combine to form words. Now, these morphemes, they combined to form the whole words. And, the words combined to form phrases. So, these words then combined to form certain phrases.

Phrases are actually sentences or parts of sentences, which have, which are not complete, but they can stand on their own. And, phrases combine to form sentences. And, sentences form to form discourse. So, sentences actually lead to discourse. And, the sentences are formed of something called, words and phrases. And, these phrases are combination of words. And, the words are combination or morphemes. And, the morphemes come from phonemes.

So, that is how the, the whole idea of language comes in, or the whole idea of this, the way human language is defined. Now, what I have done today, we will look at the pyramidal structure of how language is organized, in the next class. And so, since this is the very first

class, so let us do a quick recap of, what we have been doing up till now. What I did in this class is that, I try to introduce you to the psychology of language.

And, I gave you enough reasons of, why we should be studying psychology of language. What is the need of studying language at all? Now, study of language is required. Because, it this is the only way, we can understand, how people communicate. Now, whether you are an artificial intelligence, scientists, or whether you are one of those people, who are designing computer programs which can read, you need to understand, how languages are structured, how languages operate, and how do they communicate ideas.

And, so an understanding of how human languages or animal languages work, will give you an idea of designing intelligent systems, which can understand deeper. The google translator that you use, the google assistant that you use, these are modern, these are forms of, these are developments in human languages. And, they came by, because machines are now able to understand human languages. With humans, if two humans are communicating, they can understand the language, and they can understand the reason behind the language.

But, machines will not be able, never be able to feel, the emotion behind any language. So, machines will be able to carry out order, but they will never able to feel the emotion behind the language. And so, there is the psychology of language, or that is the reason, why you should be able to, or why you should be coming to this course, and studying the psychology of language. So, we started off by looking at, what is the difference between communication and language.

And, we focused on, what is communication, what are the characteristics of communication. Then, we started off by looking at, basic communication systems, which are animal communication systems. And, we looked at, why do animals need these communication systems. And, we found out, it is for food, it is for predators, alerting somebody of predators, or it is for finding a mate. And, these are the reasons why, animals actually need a communication system.

And then, we looked at the characteristics of such a communication system. We then moved on to study, what is human language. And we started looking at, what are the basic formats of human languages. So, we looked at vocalizations of speech, we looked at laughter as a medium of human language. And, that is that is where, we dealt with. These are the primitive forms, or

these are the basic forms of language, which have been using. Then, we do discuss, some of the characteristics of human language, and what these characteristics actually mean.

And, from there on, we started looking at, the structure of language. We also looked at, something called duality of patterning, which basically says, how language, what are the features of language, or how this arbitrariness of symbols of a language, how they combined together, basic level units into higher-level units, which do not actually interact in reality, but then they form the basis of meaning of any word, or phenomes, or any expression, which the basic unit is actually giving you.

So, what we did in this class is, we started off by explaining to you, why we should be studying language, and some basic reasons, or some basic primitive forms of language. And, how these primitive forms of language combine together, to form the actual language system. Next time when we meet, I will be explaining to you, how the pyramidal structure of language exists, and how human languages function, how human languages are built, how do they function, and what is its role in evolution, and what is its role in expressing ideas. And, so the course will progress, in that particular manner. So, for now, from here, it is Goodbye, Thank you.