The Psychology of Language

Prof. Naveen Kashyap. PhD
Associate Professor of Psychology
Department of Humanities and Social Science
Indian Institute of Technology-Guwahati

Lecture-09
Dynamic Braking of Induction Motor, AC Dynamic Braking, DC Dynamic Braking

Hello friends welcome back to this lecture number 9 on the series on the psychology of language. Now this is from this lecture onwards we are moving ahead into the complex world of language. Now when I say that what do I mean, so basically what you doing is your switching gas and moving to another aspect of language, up till now 1 to lecture number 8 we were discussing the basics of language developing at how language is formed when we looking at speech production.

From this lecture onwards till minimal lectures to come will be looking at the complex aspects of language in terms of how the speech that reproduce they combined to form the language itself. So we looking at those aspects of language. So will start of by looking at words, then looking at what are sentences and looking at sentence comprehension and this course and many more things to do with other language itself.

And towards the end of these course series we will look into some social aspects of language will since this course is not focus on to the social aspects of language and may be it will try and cover a couple of lectures on that. So this is a kind of a breakpoint where we are moving for switching gas into the language itself. So before we start today's lecture it is a very interesting lecture because when we dealing with words up till long we will be dealing with speech sounds.

And how these speech sounds combined to form morphemes or consonants and vowels, today we look at how the consonants and vowels they combined to form words what is the meaning of word and things like that quite interesting, but before we do that let us take a look back at what

we have done up till now. So will going to small journey and review what we have done up till now, because that will give us a shot of a context in which will present today's chapter.

So we started off in the first 2 lectures by looking at the nature of language, what is it and why should be used and for that purpose we started off by looking at the very basic language which exist out there which is called the animal language and so animal language is generally are categorized under something called animal communication system. For the first thing that will it was we separated or we distinguish between what is a communication system.

And what is language and very basic definition is that communication is the core form of a language. Language can do more than communication, so if language is **is** universal set a communication system is a subset of that particular set. So we looked at some forms of animal communication system, we looked at certain model animal communication system. For example honey bee waggle or the white monkey calls, or the squirrel calls.

And these will try to define through this how animal communication system is built up and what are the characteristics of a system like that. We further moved on quickly into understanding the human language system and looking at the properties of human language system and then following that looked at how the human language is actually arranged in terms of the for name the morpheme, the word the sentence and the discourse.

And then we have something called syntax which is the structure of language and the grammar which is the rules of language. So we looked at how this and also the face structure rules. So basically how languages structure the human languages structured, basically in the English language. So using the English language model system we looked at how the language system developed.

Now one that was clear we moved a little bit into the history of language of how human language came forward, so we started looking at the (()) (04:56) the homo sapiens and now the development of language came from those people and so there we looked at the continuity and discontinuity argument of how language developed. So that is another thing that we looked at

and finally we look that some reasons of how the basic language is called the proto language of the are great great grandfathers which were chimpanzees and monkeys.

How that evolved into something call the present daily language and away have look at several evidences to that in one big evidence or one supporting evidence to the process of gradual development of language from the proton language that are great great great grandfathers used to have is the idea of a pig in which stands in between lenses how this development would have progress. So that is what we did in the first section.

Now once we are clear of what language is and what it does, we started looking at various methodologies of doing research on language and so the second section or lecture number 3 and 4 what we were discussing is how to do research in language, we looked at the premise of a language research cycle or basically the research cycle. So we looked at how theories lead to hypothesis which leads to observation to reach which leads to conclusions.

And how this conclusion lead back to theories, so from theory to hypothesis to observations is basically sort a inductive reasoning, detective reasoning and then the way back from observations to conclusions and then back to theories inductive reasoning and so we looked at how these 2 types of reasoning are how this process goes through. So we looked at what are problem statement, how a theory leads to a to a development of a hypothesis.

We look at what is hypothesis, what is a theory and how they are related then we looked at how these hypotheses leads to generation of a problem statement or a problem that can be worked out that can be solved. We looked at something call experimental designs which are the road map of doing the particular experiment. So since we are focused in this course on the psychology of language we focused on experiment based or lab experiments in language.

So we are binded as our self to those of experiments, so what we did is we took number of research which was done in psychology and taking those as model systems try to explain the whole process of doing research, in language specifically and in behavioral sciences in general

form. So we looked at all those and the things of how to develop hypothesis, how to develop the research design.

What kind of designs are there we looked at the between subject, between subject designs and then we also looked at what do we measure the idea of independent variable, independent variable and how they will been variables are actually manifestations of independent variable. So that is what we did and we took model systems to explain that, towards the end of that section or that portion on doing research we look at the brain areas which language is connected to and we focus was mainly in the world he came broca area, broca area which is responsible for speech production.

The wernicke area which is a responsible for perception of speech or generating meaning of research that is what we were doing and towards the end of this particular section of research we looked at newer technologies which are used for doing the research in language, for example EEG MRIF, MRI and eye tracking, how these techniques help us in doing this research on language. Now once these 2 patterns were clear we describe what a language is and how to do research in language.

We jumped into the fact of how do we hear language. So when somebody is producing language or somebody is producing a sound, how do we know it is language and what apparatus is that really involved and so we started off by looking at the language apparatus system in the human brain. We started off by first looking at what are the primary items or what are the primary materials needed for hearing.

And so those are sound waves because sound travels through to wave propagation medium, or it travels as a wave. So we looked at the properties of wave and we specifically focused on 2 properties of wave one is called amplitude and the other is called frequencies. We looked at how these amplitude and frequency are in total describe a wave, because sounds traveling ah these wave properties.

So, we looked at that and then we looked at properties of the fundamental frequency property and the word tones and those kind of things that we looked at, once we are **very** very clear of how what is the raw material of the language of hearing the language the sound, we looked at apparatus which actually hears language, or which help us in hearing language, which was the ear.

So we did a look into how this ear is made up and how it picks sounds. Once we clear about that, we looked at how the basic vowel and consonant sounds are produced. So we looked at that and then we looked at several variations of it. For example looking at the parliament, the sovereigns and looking at cricket teams and cricket and those kind of things. So, we looked at how these producer how these some the of the basic sounds of speech are perceived.

And one way of looking at the perception of these spaces around is to the spectrograph. So, we look to the method of spectrograph, how these speech sound are produced and so that was work that was where we were looking at the production of these particular things. So, we also looked at how this what the speech came transits of as I described before the (()) (11:36) and so on and so and we also looked at how speech perception is done right is believed that speech is single, or it is continuous in nature.

But when we look at the spectrograph, we see areas of high activity and areas of no activity. So we explain this finding in terms of categorical perception. And so we looked at how you woman's actually undergo something called categorical perception and what is a need for categorical perception. Now, towards the end of the section we looked at how the development of speech perception happens in small children.

And the newborns or infants and we dealt with several issues there of how this really works and how the small children developed the ability of hearing speech or looking at the various factors of speech spoken, and we ended the section by looking at several theories of speech perception and 3 theories that we discussed in detail was the motor theory, which says that speech production .

The speech perception happens through something called either the motor theory, the general auditory framework theory, or the idea of direct realism, that how speech is perceive. So motor theory says that speech perception happens by looking at the gesture, certain gestures that you do by producing speech. And it is really the speech especially the origin framework theory would reject that.

And to say that no speech is not like that, speech is not special rather what is happening is that the speech that we produce is a general auditory, it matches the general auditory signal, it is not special at all. And then the idea of direct realism, which basically says that the sound which hit our ears that has all the information needed, and the human being do not have to do anything on their own to perceive the speech.

So that is the way looking at the speech apparatus, or how humans perceive speech, how do they hear speech, how the speech perception happens. Now once that was clear, we started looking at how speech is produced first of all, now we are not sure that how to hear it, but we wanted to see how speech was produced. And that is what we did in lecture number 7 and 8, we looked at the apparatus and the system which produces speech.

And so we focused on to the vocal cords, we looked at the vocal box, the vocal track and speech perception systems, and how consonants and vowels are produced. So we looked at how vowels are produced in terms of the the jaw movement and the lip movement. And so the triangular theory of our production the eee oh, which is the basic vowels which are there, and we also looked at how components are produced.

So, consonants basically if you produce vowel you do not constrict, you do not stop the air which is flowing out of your vocal cord and that is how vowel is produced, now only way and so the air which is coming out uninterrupted from the vocal cord, it is directed to the mouth and changes in shape or the jaw or the tongue is what leads to the different vowels each other. The moment you constrict the air which is coming from the vocal cord, it is a consonant which is producing.

And so this consonants are produced are there different kinds of consonants first of all, and they are produced by blocking there at different places. So there are 3 types of blocking it could be the manner of articulation, it could be the place of articulation. So, manner in which way it is blocked, the place of articulation where it is blocked the air and the third is a voicing. So, what is the space or what is the time difference between the production of the consonant.

And vibration on the vocal folds and that is called voicing and invoicing. So, we looked at how these things really work in reality, then we looked at the speech areas of the brain, we looked at a detailed idea of the wernicke geschwind model which basically says that the broca area and wernicke area connected and so how they lead to the perception and production of speed and we looked at several other cortical areas, which are involved in the production of speech.

Once they were done with that, we looked at several models of speech production. And so we looked at the different models that we looked at was the feed forward and feedback model. And so we looked at how the feed forward and feedback model. Feed forward model controls the vocal articulators and the feedback model through the auditory feedback or the somatic sensory feedback mix the correction to the vocal cord or the way the speech is being producer.

So we looked at that and we also looked at the dual stream model in comparison to the feedback model, whichever we were looking at how the winter stream and the dorsal stream 2 different streams are involved in production of speech. We also looked at the computational diva model. Now further to that we added or we added the development of speech productions, so how speeches develop.

And we looked at the frame content model and some other models of speech production of how babbling leads to the actual production of speech in infants. And we ended the section by looking at some social aspects of speech production. So that is where we ended the last section which was lecture number 8, and this is lecture number 9, where we will start dealing with more basic issues of language. And we will start with the words because that the word itself or word as it is said, this is the basic of language.

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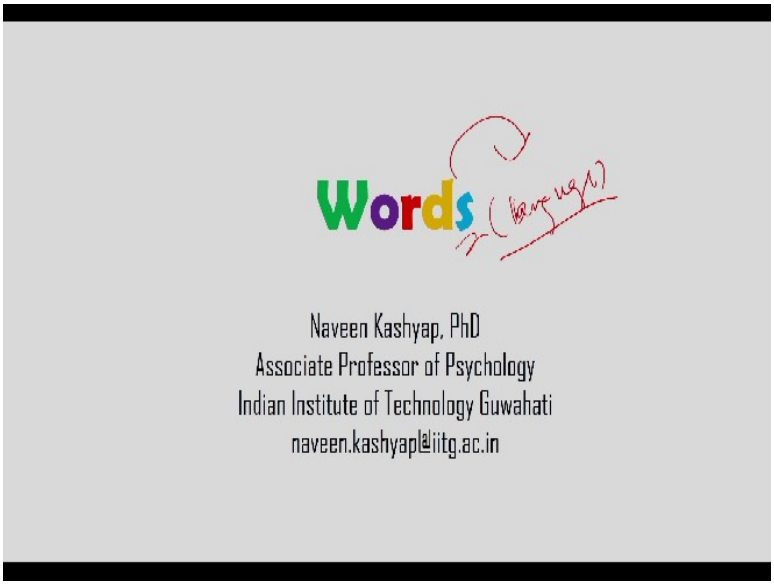

So let us start looking at what words and what are the various characteristics and peculiarities of this word. So basically what are words, the basic speed sounds are phones, and you combine them you get them morpheme, which are part of words, but they are not word in itself. What is the special thing. What is a special character or what is a special item, which can express some idea through it and that is what words are. So basically words are generally believed to be the minimal units of meaningful speech.

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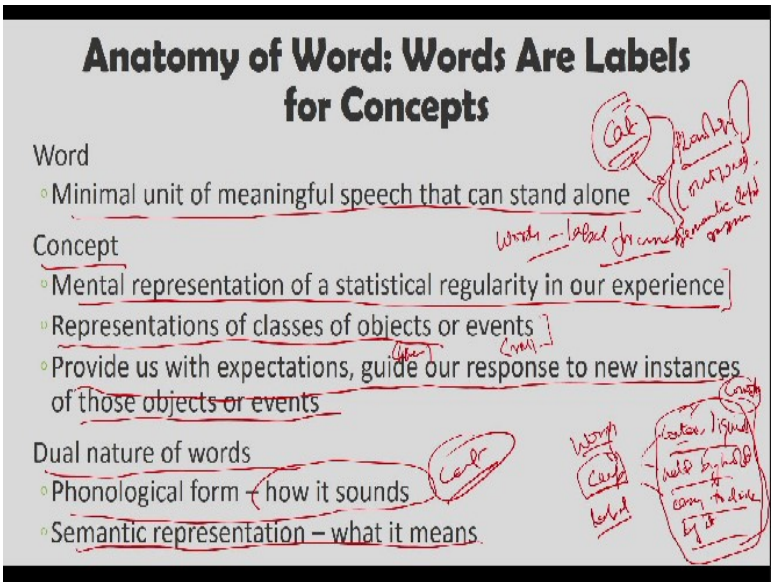

So any speech as you can see, the words are the minimal unit of any meaningful speech that can stand alone. Although we talk about morphemes like ing is morpheme, they cannot stand alone. So they do provide some kind of support 2 sentences, but they cannot stand on their own. Morphemes combined with basic speech sounds to form a structure, but they are not words because they cannot express meaning. So words are basically then minimal unit of meaningful speech, that can be producing isolation or they can stand alone.

Now however, words generally occur within large utterances and their form is influenced by the context in which they occur. But generally speaking, you never hear single words, right and so words generally occurring larger sentences or larger utterances. And that is how the meaning of what keeps on changing, the idea is that word to generally never see words alone. They occur in sentences.

And because they occur in utterances or sentences, or longer utterances, the basic form of the word keeps on changing, or you get different forms of the word or the way the word is there, for example, boy or the boys are playing, which is the plural. So basically the boy is the lemma, which is the core word and the boys is basically a plural of boy. So, that is the form of using it.

So, basically, what I want to tell you is that you generally do not encounter single words you hear them in utterances and these utterances the context in which they were heard, that changes the meaning of the word. Now words have something called dual nature, most words have dual nature or they have 2 aspects any word has 2 aspects or 2 nature. One is the phonological form of a word which is the outward form.

And then you have the semantically present of word phonological word, this is the inward form, now phonological or outward form is how a word is pronounced, when you pronouncing a word for example, you are pronouncing a cat. I mean you are pronouncing cat the way you pronounce cat which is a mono syllable word with 3 phones cat, that is the form of the word. So writing CAT and pronouncing it as cat, a single syllable word, a monosyllabic word.

This is basically what is the phonological form, but what it refers to is called the semantic representation and that is the inverted resemblance. So cat the 3 letters combined together to represent a feline animal. And that is what the semantic representation is. So each word has a phonological form which is how it is spoken. And then a semantic form which is what it is representing to right or the underline thing.

And so then we come to that what are words good for. So, words basically are something called label for concepts, word actually are this word cat here is a label for a concept and the concept here is a feline animal, cat is a feline animal and so, the concept is cat within the cat you can have several other kind of cats you could have the cat calico cat or the some other forms of cat which might be are there.

But then within that particular thing you can have the cat is the concept and within that you can have different forms of cat or feline animal is one another concept which is higher than the cat because within the cat itself, you could have a cat or some other feline animal and that is what the word represents. So words are then generally what are words, these are label for concepts. Now once I say words a label for concepts, let us try and understand what our concepts.

Concepts are mental representation of statistical regularity in our experience. Now if we look at, so words are minimal unit of meaningful speech that can be stand alone. For example, if I talk about Apple, or read, these are words, so words are, then it is a unit of meaningful speech, which can stand alone. Now at a more abstract level words are label for concepts. So what our concepts now as we saw these are meaningful representations of some sort of statistical regularity in our own experience.

For example, let us look at so I will give you 3 or 4 definitions and of a concept and let us see if you can understand what it is, so contains liquid, this is one definition and held by hand you can hold it by hand and then you can it is easy to drink from it, even talking about these 3 features of an element of a concept, you can quickly come up with the word cup here, which is a label for this concept.

Now these 3 things characteristics that we are defined is basically defining the concept or these are properties of the concept and cup, which is the word which represents this concept is a label for this concept and that is what words generally are. Thus so as I said these are the properties of the concept and this is the label of concept. So, this is a word and this is what it is and so these are group of words that is defined the characteristics of a concept any concept.

And the concept that I was looking at here for us was the cup and what is the cup, cup is it is falling under other higher note which is a drinking vessel, but cup itself is a constant in the higher than that there are other concepts than the cup construct. For example, it is a vessel for drinking and then it is so on and so forth you can move forward. So basically here copies the word, are the label for the word, label for the concept that we are defining.

And these are the properties of the concept. So then concepts are representations of classes of objects. So what are concept these are representations for classes or objects or events. So, classes of objects for example, let us say cheese, which is a class of object or events, for example, roll and they provide us with. So, the concepts are representations of certain classes of objects or events, and they provide us with expectations.

So, what do they do, of course, their representation of classes of objects and events, and how does they help, they provide us with expectations that guide our responses to newer instances of those objects and even. Let us say that the concept of cheese, now cheese is something that is food that is made up of milk and a certain properties, now let us say tomorrow. And there are several varieties of cheese.

For example, the shedar cheese, the normal cheese, goat cheese and so on and so forth. The different kinds of cheese are there, if you ever visit Germany, or any European country, you will see and hundreds of varieties of cheese which are there. The same amul cheese that we eat here, there are various varieties of cheese out there. So basically, let us say tomorrow we come up with a new kind of cheese or a new kind of item which is made to be eaten with the bread.

And has some salty taste, how do we get or how do we know that this is cheese. The concept help us in identifying or categorizing this new thing as cheese because it will have certain properties . The new item will have certain properties and if these properties match the properties of the concept, we categorize them into that particular concept and we call it a cheese. So let us say the same thing that goat cheese is that if it is made from some other animals milk.

And it is provide the same taste and it is used for using for eating, then we can use these 2 concepts to say that this is a particular kind of cheese. So, these are representations of classes and objects and they help us in expectations are they give us expectations to guide our responses to newer incidents if it however occurs. Now, sound concepts, now, it is not always the concepts have a label.

Sometimes you have concepts which have no label itself, for example there are several objects in this world which have no label as such for the right now I do not remember but there are other concept there are some concepts which have no label the concept of I will come up with the word I will let you know. So there are several concerts which have no label of which have no definition.

So we know it exists, but we cannot provide a label to it. And it could be because it causes a number of abstract properties into it and so they are not clear matches into universal, it could be that our concept can have no label itself. Now words are believed to have the dual nature as we have said before, what has the phonological form it is how it sound, as I said in cat, this is a mono syllable word which is sounding like ka aa and t.

This is the various phones which have been used producing this, and it also has a semantic representation, which is what it means. So what does cat mean, It is a feline animal, which is used as a pet and then it eats it runs after mice and so many definitions which are there. And so that is what most words are there. So it sounds and what it means are the 2 basic forms of any words. So, these are what is word, so word is a meaningful speech in it, which are basically labeled for concepts and then it has 2 different forms.

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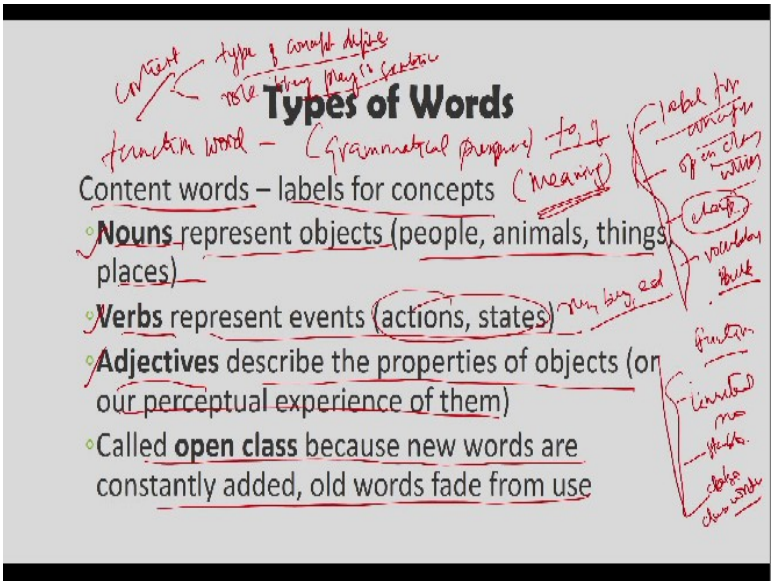

Now, having said that, this is what words are, there are different types of word, so let us have a quick look at what different kinds of word exist. Now we have something called content words. Now what are content words, content words are those words which are labeled for concepts. So content words actually are meaning. So those words which represent meaning are called content words. And similarly, those words, so we have the content part.

And then we also have something called function word. And what is function word will reach will talk about function word in a moment, now what are function word, these are those words which are used for grammatical purposes. For example, to off these kind of words are used for grammatical purposes, though have no actual meaning as such, but those words which are used for meaning are called content words.

Now what are content words, content words are labeled for concepts. These are open class. So content words generally are label for concepts, they are called the open class words. You can have changes in that, so it can change from singular to plural for example, boy boys, dog, dogs, and goose, ghees, so you can have changes in them. And then normal vocabulary or most part of our vocabulary, bulk of our vocabulary are made up of content word.

So let us start looking at that. So there are 3 type of generally content words, you have something called a noun, the verb and the adjective, let us when we look into that one by one. So let us first define what are content words. So content words are those words which have meanings and they have they are so content words have a label, they are open class in nature, they can change their forms and they have vocabulary bulk of the vocabulary is made up of content words.

Similarly function words. So, what are function words, these are those words which are limited in number. So limited number of words are function words also they are stable, so you do not see changes in that. For example, of, to and, you know so plural of and is not ands right is the same and which is used and so they are stable in nature and these are they called the close class words, that is the difference between the function words and the content words.

And also content words are type of concept that defined and the role they play the type of role they play. So, basically the content words are of 2 type, one is the type of concept that they define and then content words are also those words, which are represented by role they play in a sentence. These are content words, they are defined by what concept they are defining, or in terms of what role they are playing in a sentence.

And so they are different type of content words you have the noun, you have the verb, you have the adjective, let us look at that, what is a noun, a noun represents an object, people, animal things, places and so on and so forth. And so it is a content word, it is describing a label or is defining a particular kind of concept. Verbs, it represents even action states and so, they are defining the role that they play.

And so sometimes, or most of the times you have the verb which are action words, for example, run, buy, eat, these are defining action. So action states are different states is different states of action or different states of the body that is what basically are the verbs and between the nouns in the verbs you generally have something called the adjectives and what are adjectives. Adjectives lie in the border of or these describe the or they are used to qualify the noun or basically enrich the noun.

So, they describe the properties of an object. So, either adjective defined the property of an object or our perceptual experience to them. So, either it qualifies the noun. So, adjectives are used in that way or it can adjectives can also define our experiences perceptual experience to a particular extent. For example, beautiful lady, so, that they are defining are lavender smell flower.

And so in this case is what is happening is they are they are defining the perceptual experiences. So, either they can define the properties of an object or they can define the perceptual experiences related to that, and so generally most content words called close class, because new words are constantly added and old words free from using. So, I have labeled here for you what content words and what are functional words.

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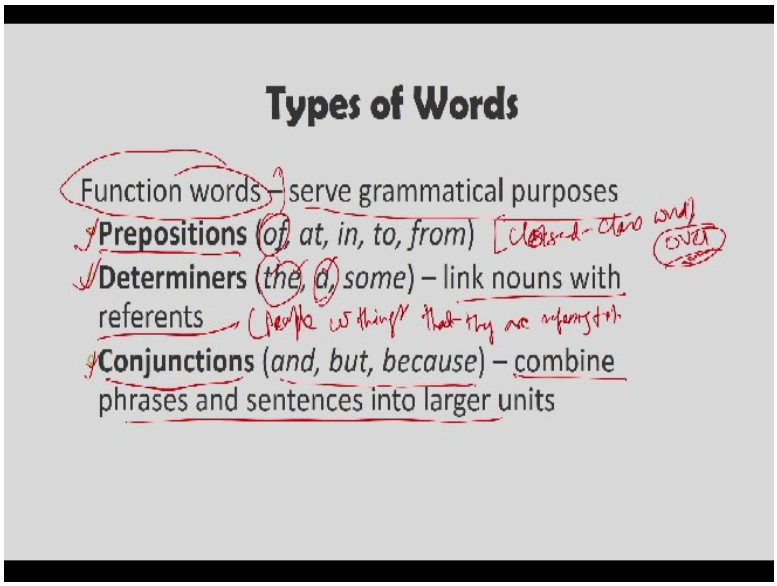

Now in addition to the noun, verb and the adjective, we also have the preposition, now the preposition, we have looked at the content word let us start looking at what our function words, they stopped grammatical purposes and as said mostly content words are those most functional words are those words which are there only for the purpose of serving grammatical purposes.

And in that the first line is or the first class of word is basically called the preposition. So what a preposition, these are closed class words, all the prepositions are closed class word, which lie in the boundary between the content and the function words. So basically preposition is cannot be

said as a true function word, the line of the boundary of the content word, and the function word. They either have literal meaning.

So, sometimes they have very less meaning for example, look at of, or it could also be in terms of having meaningful for example, over when I write the word over, it has more meaning of has no meaning, but over means it us of is kind of word which has no meaning it says a sentence connected, but when I say over it represents the state, it represents something is above something, over something.

So, and also over will take its meaning depending on the utterance that is there. So over the yonder or over the table are 2 different ways of looking at the same word, so it is meaningful, and it contributes to the semantics. So prepositions are closed class sports, and they fall into the boundary of the function words in content words, and they can have either full meaning or it can have more meaning or it can be a totally non meaning kind of a word.

For example as a definition for example of has no meaning as such, but over the word has more meaning. So, these are what prepositions are and so they contribute to either the semantics or they contribute to nothing at all. Now with the prepositions which is a kind of function word, you have something called determiners and so, what are determiners like noun to people or things they reflect to, they are used to link the noun with a reference for.

Then these references are people or things since noun or people and things that they are referring to. So, basically that is what it is determiners. And so we have the determiners a for example, is always used to introduce a new noun and noun which is being introduced for the first time and the determiners the is always used to a reintroduce a noun. For example, when you are introducing a noun with the determiner, which means that the noun has come for the first time.

But if you use determiners the it basically noun has been referred to somewhere else and the second references with the. So a introduce a new noun and the falling noun has at least already been mentioned and then in terms of determiners you have something called conjunctions. And

as the name suggests, what does convention do, it joins together various sentences to form larger sentences.

So, they combined phrases and sentences into larger units and so and but because are conjunctions and so these are function words. So noun, verb and adjectives are content words, because the referred to certain meanings and preposition determiner and conjunctions are function words because they are grammatically serving grammatically purposes, but position is a special class of word, which can either mean they are closed class words.,

And so sometimes they can generate meaning or sometimes they may not be able to generate meaning. And so that is what the different types of words are.

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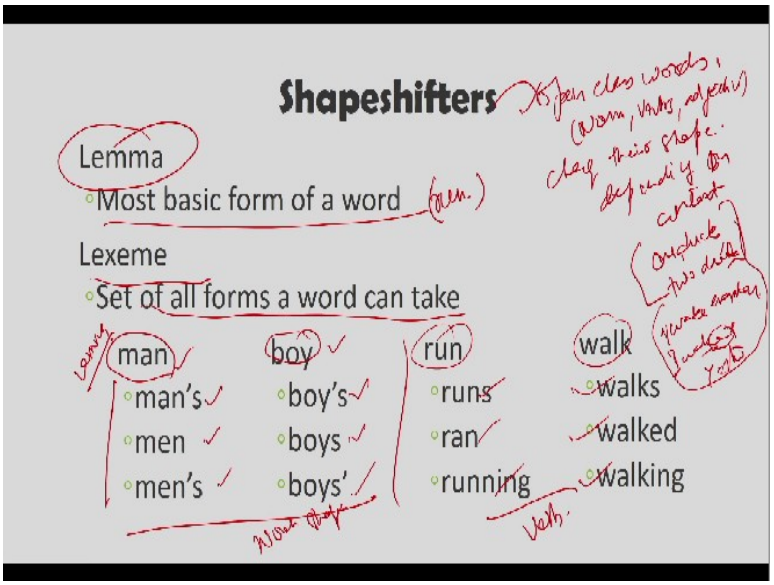

But then you also have some kind of word which are call shapeshifters. And so what are those, these are open class words. For example, what are certain open class words, for example, nouns, verbs or adjectives, they change their shape depending on context, and so they are called shapeshifters. So, open class words which change the meaning depending on context are called shapeshifters.

For example, I can see one duck but when I say a plural of it, or more than one, I say 2 ducks. And so the same that has changed it shape, or I say in terms of word, I say I walk every day. But when it is specific time I say I walked yesterday, I do not walk yesterday, I walked yesterday,

since this ed, and this ed represents tense time. So when it is representing time, verbs are changing it form. And so this is what the differences and this is what shapeshifters are basically.

So here shifters are closed class words will change their meaning depending on the utterance or depending on the context in which they are used, but the basic form of a word, any word, the basic form of any word is called lemma, which is the most basic form of any word. For example, the word run, the word run is the basic form and other forms of it is run, runner, running, runs, all these words are the lexeme of this word.

These are the ways in which can be used, the root word is still run. So, lemma is the basic form of any word, which again to the form in the dictionary, and then lexeme are all forms of what can take, for example, look at man. So the word the lemma of this particular sequence is man, and the lexemes are man's, men, men's and so on and so forth. Similarly, the lemma here is the boy and the various lexemes are boy's, boys, boy's and so on and so forth.

And similarly here run, runs, ran and running, and walk, walks, walked, walking, and so these 2 are the adjective sorry, the word shapeshifters and these are noun shapeshifters right clear that is how we actually go into looking at differentiate shapeshifters in different words.

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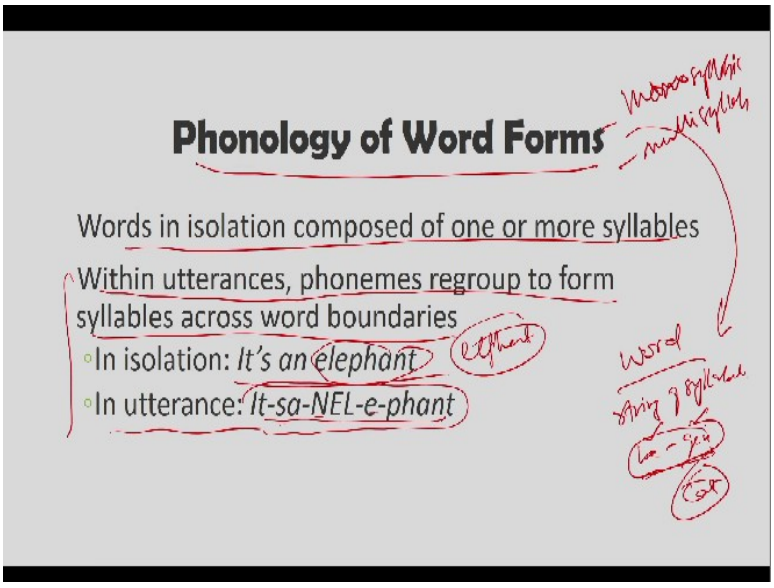

Not phonology of word forms. in isolation the words are composed of one and more syllable. So what is generally any word is a string of syllables. Example look at begin, now if you look at

begin, it is composed of 2 syllables or any form of word has generally a word could have one syllable or it could have multiple syllable for example, if you look at begin it has 2 syllable.

And if you look at the word cat, it has just one syllable. So, most words either produce in isolation with one syllable or it could be composed of one or more syllable for example, the word begins. Now words either monosyllabic in nature or it is multi syllable most words are mono syllable or they could be multi syllable and as I gave an example this is a mono syllable word, and this is the multi syllable word within utterances, phonemes regroup to form syllables across word boundaries.

So, if you and this also changes the way the word is pronounced, the syllables are pronounced, it also changes in utterances. So the same word in isolation would have different pronunciation. But when it comes to utterances, or when the same word plays a role in an utterance, the way that they are spelled or the way the volumes are there, they regroup, sometimes the phonemes regroup, and the syllables of the word boundaries may change.

For example, in isolation, we can say it is an elephant, then an utterance when you say is an elephant is what actually you say. So it is an elephant. But when you are looking at in isolation, it is an when you say it is an animal or you say elephant that is how it should look like. But in na utterance this is what we actually say it is an elephant. And when you are saying it that is what you are actually saying.

And so here what has happened is the phoneme has regroup to form syllables across what different syllables across word boundaries.

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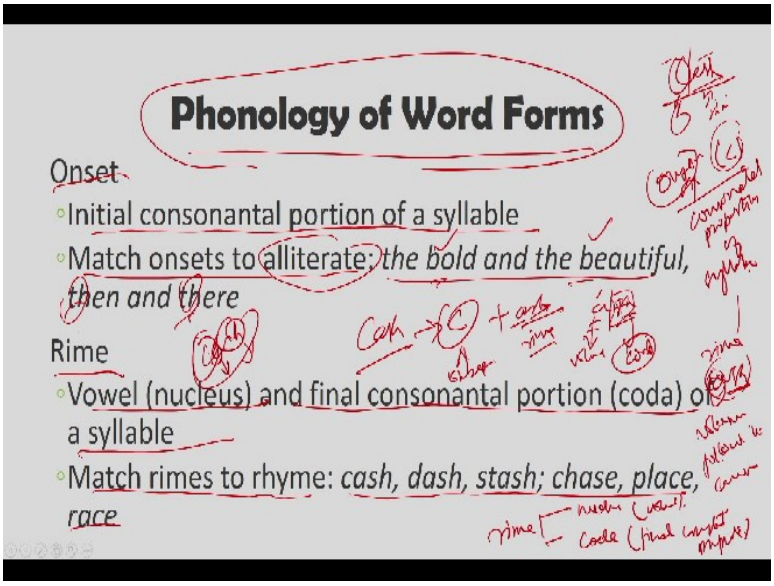

Now let us look at the most the how does the phonology of word describe. The phonology of a word is generally described in terms of its onset and it is a rhyme, the most words are as I said, they either monosyllabic and, and multi syllable, those so the way they pronounce it described in terms of their onset and their time and so what is the onset. Let us look at the sample word cash.

Now this cash has 2 parts there is a multi syllable word and so they had 2 parts, the first initial consonant and then the consonant proposition which are all this is called the initial consonant and then this is called the rime, we look into that right and so, the cash word cash has an onset, which is the c and this is called continental proportion of syllable. So, this is the answer, this is how the word starts, you start speaking the word cash.

So, you as soon as you start speaking the word cash, you start with the c. And this the pronunciation of this consonant c is called the consonantal proportion of the syllable and this is the c and following it you have something called the rime which is the word ash here. Cash, and so the ash is the rime here and this is the vowel following that consonant, so a is the vowel and sh is that consonant that to have here.

So vowel following the consonant and so most words follow this kind of a phonological word form. Now of course the rime is also further divided but let us look at it in the sequence or most phonological word pronunciation or word pronunciations they have a a beat multi syllable or

mono syllable. Most words are pronounced in this format. You have the first the consonantal proportions. If it is a vowel it could be also be vowel for proportion and then you could have a rime to it.

Now onset the initial concentration proportion of a syllable is basically what is called the onset the onset and it matches and one has to match this to provide alliteration, right and so what is the initial consonant proportion of a syllable in this case, in our cash c is the one which we are looking at and when we want to produce alliteration, which is the same type of word we which is repeated for example, look at here.

The bold and the beautiful, so, what we are doing is we are matching these words the B word or then in there in this case th is the sound that we are matching and so for producing alliteration which is a form of grammar, where the same kind of speech sounds are match, we need this kind of an onset of we use the onset and then you have the rime, now, any spoken word as an initial consonantal proportion as the onset.

And following it we have the rime. rime in our cash example, the c is the initial consonant onset. So, this is called the onset and the ash which follows is called a rime. Now, what is a rime, rime is a vowel nucleus and final consonant proportion which is the coda of the syllabus and so it has the ash. So, the a sound which is the vowel and the sh sound which is the consonant and this is called the vowel nucleus.

And this is called cord or of because this has the consonant here and so that is what it is. So when I say cash, it has the initial onset, it has the middle vowel and this is the cord of, now matches, rimes match rimes to rhymes for example, cash, dash, stash, chase, place and race and that is what it is all about. So, the rime generally, that we are talking about, it has 2 parts, it has the nucleus, which is the vowel.

And then it has the coda are which is the final consonant proportion. So, then any word spoken phonologically whether it is multi syllable or uni syllable or multi syllable, it generally has an onset and it has a rime, the onset in our cash is the consonantal proportion of the syllable which

is the c here, and then the rime here is the ash, which has the new verbal proportion middle vowel promotion, which is the a word here, and the assets which is the final consonantal proportion.

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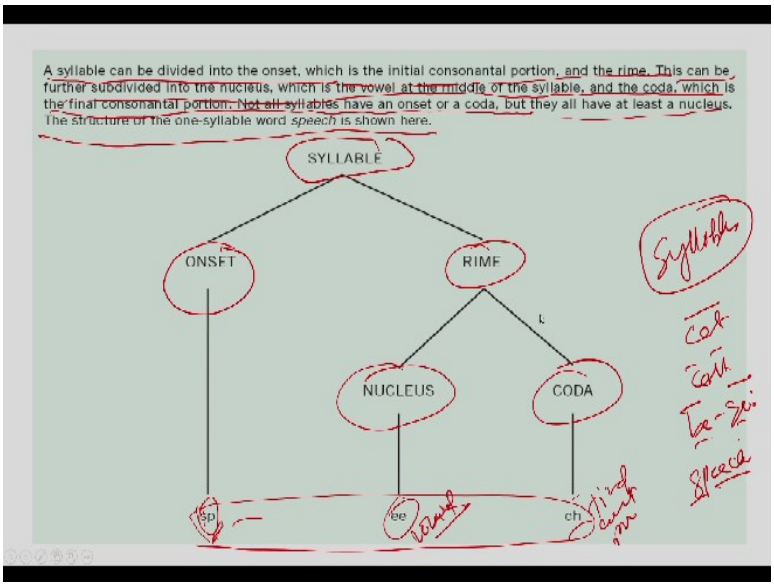

So, then, most syllable that you have has an onset and rime and the rime is then further divided into a nucleus and a coda as you can see, a syllable can be divided into the onset, which is the however the word spoken the phonology of word, and the phonology of word is depend upon the syllable, the way the syllables are pronounced. Now, cat has a single syllable word, but cash is a multi syllable word or begin is a multi syllable word the v and the game.

And so basically the stress on this kind of stress that you put into these will define how word is spoken, now syllable can be divided into its onset, no more syllables. Since we are taking the word speech here, which is a multi syllable word, we are looking at how they pronounce. So there is an initial consonantal proportion and the rime. Now this can be further subdivided into the nucleus which is a vowel and the middle of the syllable and coda, which is the final consonantal proportion.

Not all syllables have an onset or a coda, but they all have at least a nucleus, the structure of the one syllable speech is shown here. So, basically what it says is, it is it could be possible that also labels may not have a coda, or they may not have a onset. So, sometimes the syllables may not

have an onset or they might not have a coda. But then generally most syllables do have a nucleus the middle rime which is there.

And so, if you look at the syllable how speech is pronounced we look at the onset which is the SP sound, speech and the ee which is the vowel the middle vowel pronunciation and then the final consonantal proportion, which is the cha sound so speech, ch ch ch speech that is how basically these are mapped.

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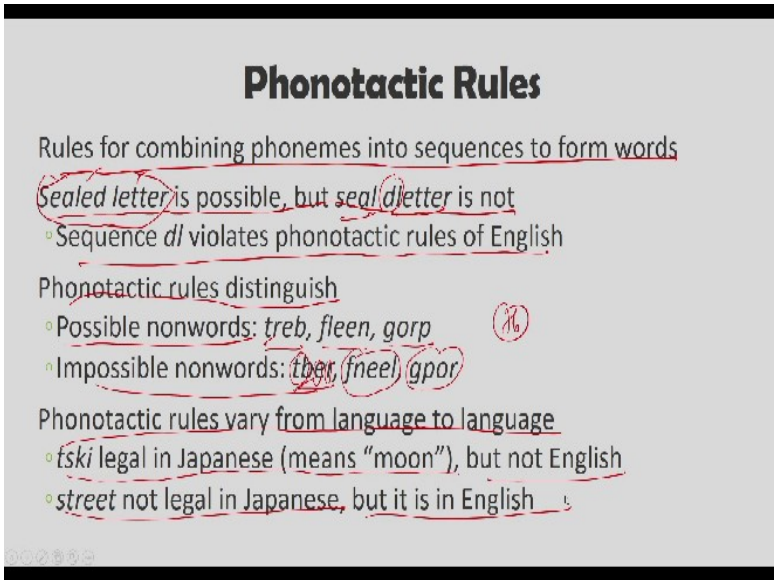

There are several phonotactic rules that we use in we are using words. Now the rules for combining words. Now phonemes are generally the building blocks of phonological word form. But all combination of phonemes do not result in word, phonotactic rules helping combining phonemes into sequences to form word, generally phones are the basic speed sound as what is or what are necessary for producing the speed sound right.

But then all combinations of the phones may not result in words sometimes you have combined certain phonemes and they may not be a word at all. So, then to form legal words we use something called the phonotactic rules and what is phonotactic rules actually say, they help us in combining phones into sequence to form different kinds of words. So rules for combining phonemes into sequence of from word.

For example, sealed letter is possible, but seal dletter is not possible and if we look at this sealed the way the sealed is, sealed letter is pronounced. Now, the thing is that, if he just simply command combine we can have the sealed letter word, but we cannot have this kind of sealed thing. We cannot have sealed the letter. The reason is that no word in English starts with dl, so sequences that dl violates phonotactic rules in English.

Also phonetic rules distinguishes between possible non words, for example, treb, fleen, gorp, are possible words but impossible words are tber, because no word in English starts with a tv right or so, this is what it is a tr is allowed but tv is not allowed. And as you can see this the nucleus the final consonantal proportion and initial consolation proportion or the onset. Similarly, fneel is not possible and gpor is not possible.

And so this kind of the phonotactic rules, generally speaking are all grammatical rules, but most people who actually speak a language, they have an implicit idea of this rule, so, you may not have a written rule for it, but you do have an implicit idea of this kind of rules. Also, phonotactic rules vary from language to language. For example, the tski legal in Japanese means moon but not in English. Also street not legal in Japanese, but it is legal in English and so phonotactic rules will differ across different languages.

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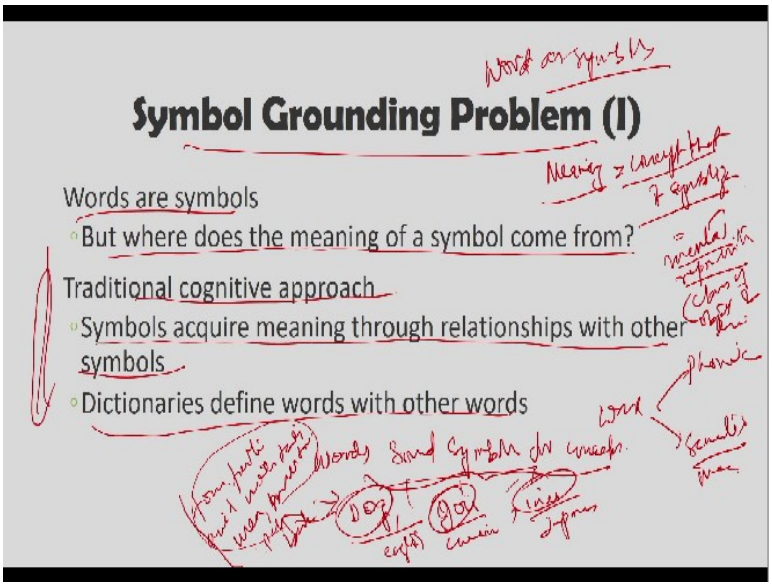

Now let us look at since we have looked at word as as the one property of word in terms of phones. Let us look at word as symbols. As I said word has 2 properties, anyone can have 2

forms, it can have the phonetic form of how it is produced, or how it is spelled, or how it is said. And then it can have the semantic form, which is the meaning of it. So let us look at the word as symbols, word has meanings.

Now word is sound symbols for concepts. The words are generally sound symbols for concepts, example, look at the word dog, which is English, the word boy which is Chinese, and the word inu, which is Japanese now all these words the dog gonu and the inu they use different pronunciation, they have different pronunciation, but at one level which is the level of the meaning they point to the fact that they are representing a 4 footed animal with tale and man's best friend and our pet and so on and so forth and they can bark also.

So, in terms of meaning all of them are representing the same concept, but in terms of pronunciation, if you look into it they have different pronunciation. So meaning of a word is concept is symbolizes. So the meaning of any word is equal to the concept that it symbolizes. And the concept that is symbolizes, then is equal to the mental representation. This concept are actually mental representations of classes of objects or events.

So meaning are basically concept and this concept are basically mental representation, how it is represented in the mind. So, concepts are symbols. So, meaning of a word is the concept that it is symbolizing, and the concepts in itself which are symbols, they are the mental representations of certain kind of events or objects in the real world. Now, where does the meaning of a word come from. As we looked at the every word has a meaning.

Now where is the meaning of a word coming from that is the basic question, how does a word acquired its meaning, as we saw that different pronunciations are there and they refer to the same concept, which is the dog and 4 footed animal as I described, and the mental representation of it is in terms of this form. Now, the thing is that each word has its meaning, each word acquire meaning.

The problem is that do words acquire their meaning from and this is basically called the symbol grounding problem. So, what is the symbol grounding problem, the symbol grinding problem

explains that where do words acquire the meaning, so, words are basically symbols, but where does the meaning of a symbol come from. So, as I said, meanings are concepts and concepts which are symbols, they are the mental representation.

So, words basically are meaning as we said, and meaning is basically the concept. So basically, where do words acquire the meaning that they are, what is referred to certain concepts of they refer to certain ideas. So where do they get this idea, that is very the problem is, and that is what the symbol grounding problem is. Now, there are several explanations to it. There are several ways of looking at this problem.

And the traditional way of looking at or the traditional approach looking at it is called cognitive traditional cognitive approach, which provides an answer to the problem of where do symbols come from. And that is all the symbols grounding problem. And what do they say symbols acquire meaning to relationship with other symbols. So any symbol they acquire meaning by relating to other symbols of symbols like that.

That is what the cognitive approaches, so one symbol when it is expressing another symbol, and that is how they acquire their meaning they get the meaning. So basically and they gave an example of dictionary, when you take a look at the dictionaries that define words, in other words, look at any word in the dictionary for example look at train, train is defined in terms of some other word, look at watch, the idea of watch is the what watches define us in terms of other words.

And so when word is defined terms of other word, or one symbol is defined in terms of other symbol that is how the symbols attain the meaning. But then there is a problem to that.

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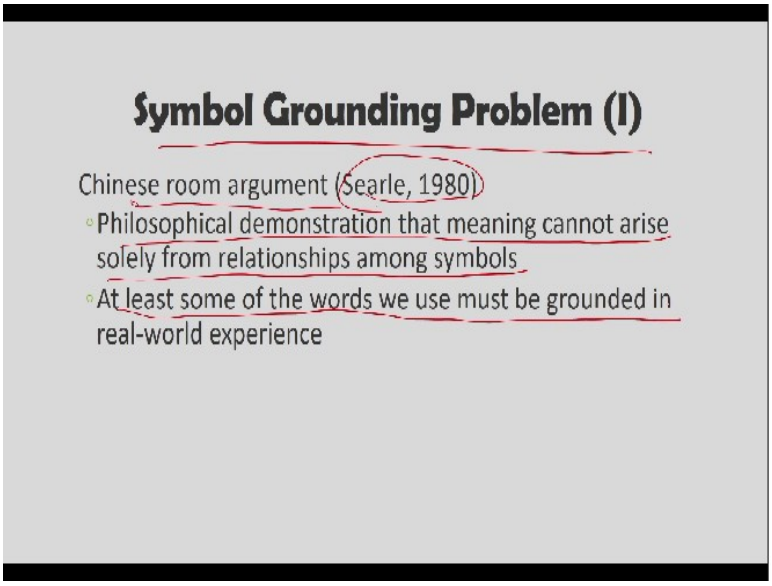

And the problem to that is basically proposed by someone called john Searle, John Searle in 1980, he provided, or he produced the basic problem with this kind of approach, and that is called the Chinese room argument. And so what is the Chinese room argument. The Chinese room argument basically says that, let us say that the traditional approach says that by defining words as other words defining symbols in terms of other symbols.

We acquire meaning into it. Let us take this and test case using the Chinese room problem. But let us say that you go to China and then you are for some reason you have you have been kept in a room or you have been enclosed in a room, now and then when enclosed in a room you have been given a Chinese dictionary. Now, within the dictionary you will have several words. And these words we define as Chinese symbols defined in terms of Chinese symbols.

Now, each word that you look into in the dictionary will be defined in terms of other symbols which are there, but by study you may might be able to learn the whole dictionary and all words out of it, but then you will never be able to learn the Chinese language or what each word is actually saying. And so this is the problem with this symbol grounding problem or the cognitive approach to it that symbols can same symbols express themselves in other symbols.

They attain the meaning out of that, that is the problem with the approach which is taken by simple people or in terms of the early cognitive view. And so what is the Chinese room problem,

it is a philosophical demonstration that meanings cannot arise solely from relationship among symbols, I had that will possible if I give you a Chinese dictionary I do not know Chinese.

And I looking at the dictionary of how one word is defined in terms of other words, or how one word symbol is defined in another word symbol, you should be able to learn Chinese. But that is not, happening. So at least some of the words we use must be grounded in the real world experience. And so this basically says that to start with we should actually have some words, which should be expressed in terms of real words, or real life words or real experience.

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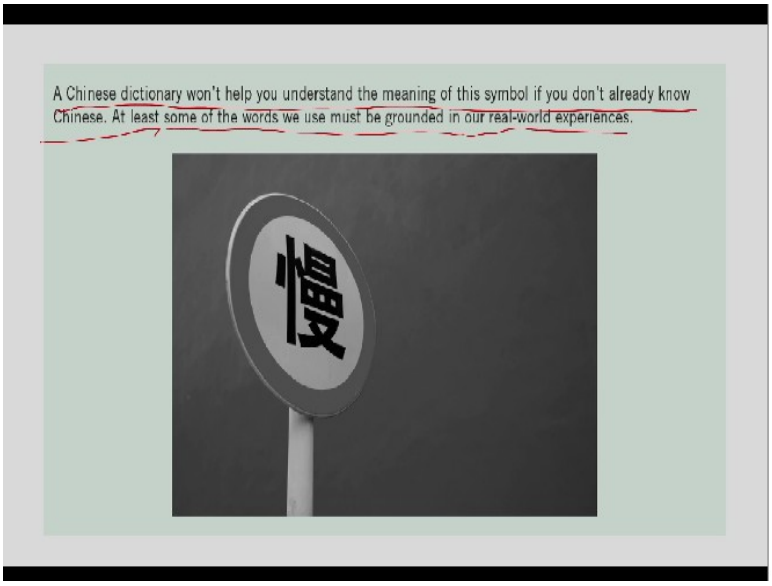

And that will not possible, then we may not be able to define how word attain symbol. For example, look at this. The Chinese dictionary would not help you understand the meaning of this symbol. If you do not already know no Chinese at least some of the words we use must be grounded or relative. So you should have some kind of a baseline words right and so this is what it is the symbols rated symbol and the relationship gives the word and John Searle's idea of the Chinese room.

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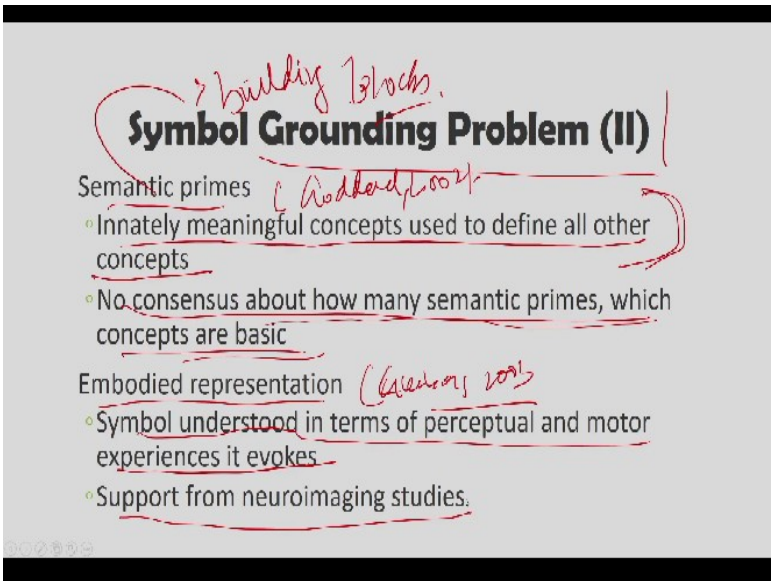

So, then how do we solve this problem, the cognitive approach is not working. So, how do we solve this problem. The solution comes to the solution to symbol grounding problem is in terms of the fact of semantic problems. So, another solution which has been provided to the symbol grounding problem is in terms of semantic primes, so what is this, the semantic primess are a set of innately meaningful concepts that are used to define all other concepts.

Now Godard this was defined by someone called Godard in 2002. And so, what he says is that the symbol grounding problem can be only explained as in terms of some basic concept which already agree which exists, which can define which can be used to define other words, and these are called semantic prime. So what are semantic prime, these are innately meaningful concepts used to define all other concepts.

And no consensus about how many semantic primes are there or which concepts are used, so what a semantic primes, semantic primes are the building blocks right, now, these are semantic prime and so there are certain building blocks or certain primes which are use certain kind of words which are used to define all of the words. And that is how the definition is all about or that is how there is one solution.

So, you have certain building blocks or certain concepts which are there to start with and based on that concept you come up with other concepts and how that is how words attain their

meaning. But the problem is that there is no consensus about how many semantic primes are there and which concepts are basic concepts and which concepts are not basic concepts. The other way to look at it is in terms of embodied representation, which says that embodied representation it is a symbol that is understood in terms of perceptual and motor experiences, it evokes.

So symbols are experienced or the meaning of a word is experienced in terms of the perceptual and motor experiences that it is going to evoke, and this is by Glenn Burke in 2003 and so, what they say is symbols are understood in terms of the perceptual and motor experiences that it is going to evoke. For example, if I say angry or any other word for that matter, the kind of perceptual experience if I say Apple the kind of perceptual experiences and motor experiences that evoke is how you are going to understand that particular symbol.

And it has support from your imaging studies are certainly imaging studies actually also support this particular theory.

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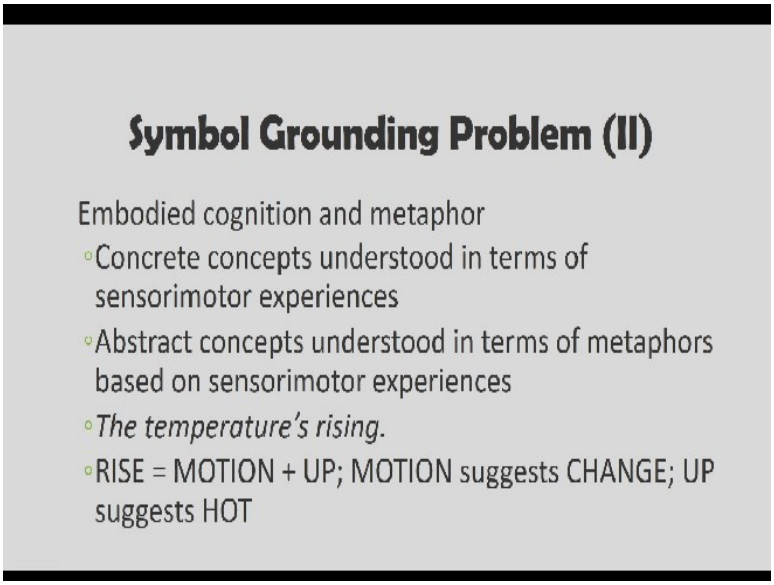

For example, if and the example that has been given to this is in terms of look at Apple. Now, if I look at Apple, there is a perceptual experience related to it and what is the perceptual experience the shape, the texture, the smell and the taste. So, these are the perceptual experience with Apple and that these embodied cognition actually help us in defining the symbol of eating or the meaning from eating or the word e sorry, the meaning of Apple, the word apple.

Similarly, if we have the word eat, it defines the motor movement. How do we eat and so this motor movement defines the symbol or meaning of the word eat or any other word, it could be any other word, but then the meaning of this particular word in English and any other language how this is defined in terms of the motor movement that you do in eating and for Apple, the meaning is described in terms of the perceptual experiences in terms of shape, texture, smell, and so on and so forth.

Now embodied cognition and metaphor. So, basically concrete concepts and are understood in terms of sensory motor experiences, abstract concepts are understood in terms of metaphors based on sensory motor experiences. So, concrete concepts are understood in terms of sensory motor experiences and abstract concepts. For example, if you look at the concrete example of Apple, now, this is expressed in terms of sensory motor experiences.

But if you look at abstract concepts, these are understood in terms of metaphor. So both concrete eating an apple a concrete but let us look at the temperature. Now temperature is basically an abstract concept and how is this concept experience so, if we have sensory motor experience, if we have perceptual or motor movement expressing a particular concept, then these are concrete in nature.

These concepts are concrete in nature, but we also have some abstract concepts. And so, how are we are able to understand this abstract concept. For example, the concept of temperature, how do we understand that or how do we generate meaning out of it and that we do in terms of the metaphors and what metaphors do we use in terms of temperature. So temperature we use, for example, for the temperature rising.

If you are using the word rise is in terms of motion, which is up and motion suggests change and ups are just hot. So, when I say temperature rising, how do we understand temperature or what is temperature in terms of rising now rise is a motion which is there and say it is an upward motion and the motion whenever we say motion it suggests change. So, rising is basically changing.

So, temperature is changing and where it is changing in the upward direction and this up generally suggest hot, the way up is there, dead so, basically these are the metaphors which have been used. So up metaphor is use for hot, the change metaphor is been the motion is being used for change. And the app is again in one way it is used for motion in the other way it is and the same metaphor has been used for a different kind of variety.

So up what is being represented up is used to represent hot or hot is represented through up, change is represented through motion, and then motion is represented to up and that is how we define some we use certain metaphors, metaphors or certain sequences that we use a certain kind of words that we use, which actually defined a particular abstract concept. So basically, then what we did in today's lecture.

Let us take a reminder of what we did in today's lecture. We looked at what are words to start with, and not only that, we looked at what are words, we also looked at what is the form of a word, what kind of classes or words are existing, we looked at the content words and then we also looked at the functional words. Now once we are done with that we looked at the 2 basic forms of what which is the phonological form and context form.

So, we did that with looking into or then we looked at several forms of word which are called shapeshifters, we looked at what are the shapeshifters and how the shapeshifters actually work. Then, we focused on since I said that most words as to form the it has the phonological form of how it is pronounced and it has a meaning form. So, we started looking at the phonological form or the varieties of phonological form of how the philosopher word exists.

And we looked at the word in terms of the rime in the onset, right. So, the onset being the rime being further divided as nucleus and coda, and then we looked at certain phonotactic rules which are used by which are innate tools, but they used by people to understand a certain kind of a word, further to it, we looked at the second form of a word or the second part of in which a word is expressive that is the symbol.

So, we looked at how words are expresses symbols. And then we look and then this is the main problem of how the words are related to symbol we looked at the symbol grounding problem and several solutions to the symbol grounding problem and how this symbol grounding problem actually work in terms of words, now when we meet in the next lecture will continue from here. And we look at sound symbolism, which is how words are learned and how this word learning progresses.

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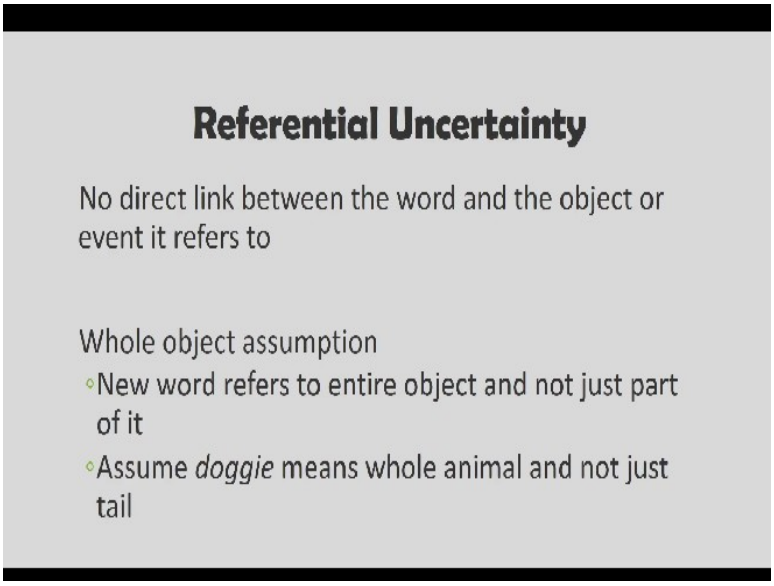

And what are the issues to be dealt there.

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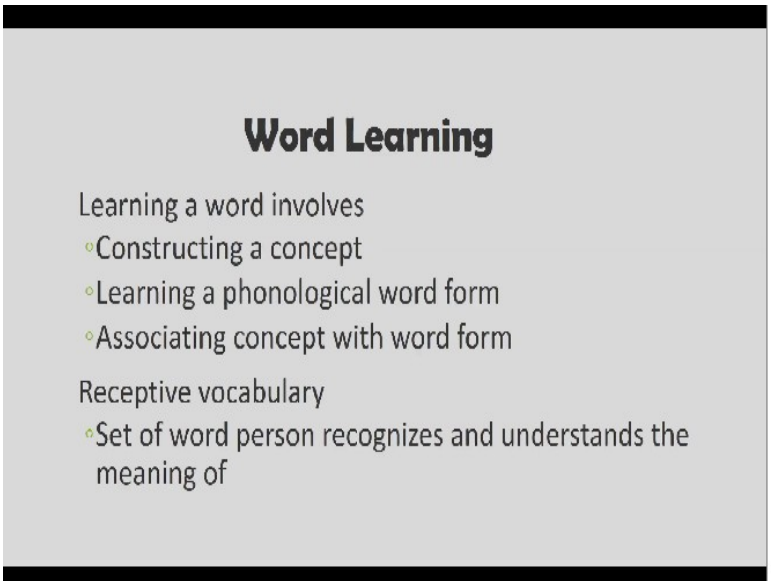

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How words are learned: On a Curve

S-shaped learning curve
- Until 18 months, word learning is slow
- Vocabulary spurt during preschool years
- Word learning tapers off somewhat in later childhood

Reasons for the vocabulary spurt
- Naming insight
- Mastery of phonology
- Improved memory
- Increased social engagement

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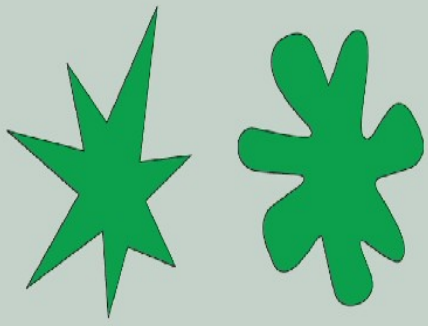
More than 95% of adults agree on which is the *bouba* and which is the *kiki*. What do you think? Search online for the answer.



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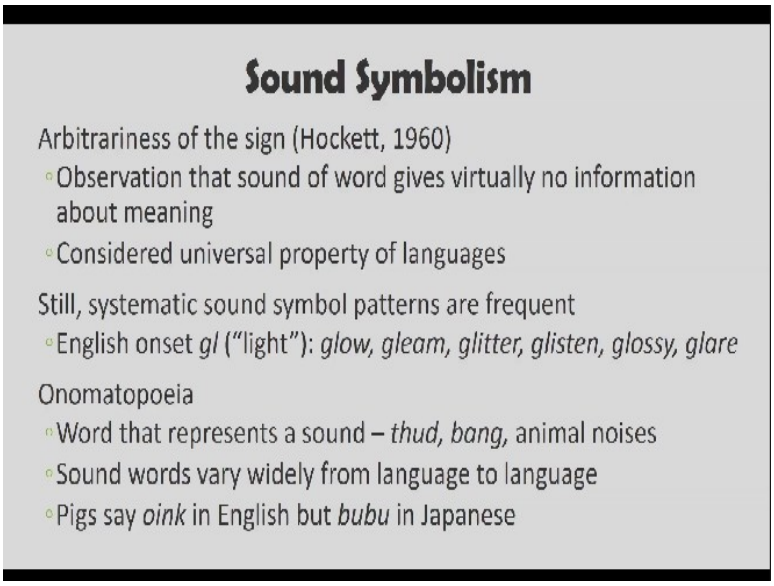

So till we meet again in the next lecture, it is thank you and goodbye from here.