The Psychology of Language
Dr. Naveen Kashyap
Department of Humanities and Social Sciences
Indian Institute of Technology Guwahati

Lecture No 18
Bilingualism

Hello friends, welcome back to this lecture number 18 on the course on the Psychology Of Language. Now the 18th and 19th lecture, which is this lecture and the one which is supposed to follow this would be the last lectures in this particular course. And we will have a 20th lecture will round off everything and give you a detailed overview of what the courses all about and what the subject matter of the course is.

Now since we have ventured through most of the aspects of language, and the psychology of it, an interesting topic I thought to include into the course as the last lectures is the idea of bilingualism. So why bilingualism? Why did I think of this topic? Truly speaking, in our research as well in the one that I do in my laboratory, when we doing language related research, one problem that we face is a pure language person.

When I say a pure language person, I am referring to someone who is called a monolingual. So monolingual is a person who has learned only one language. When a country like India, we know that most people come from different states, and so they have at least two or three languages that they know. On top of it do not know the English language, which is a language for communication, which is a language for scientific, methodology and science, and which is a language for exchange of ideas or use in any public offices, as well.

So I included this section of bilingualism to give a detailed view of what is being bilinguilistic, what are the features of bilingualism, what parts of the brain get involved in by bilingualism, the cognitive factors affecting it and an overview of bilingualism for that matter. Now, before we start today's lecture, on bilingualism, what I will do is I will do a small recap of what we have done up till now, how we started the journey and how we crossed several landmarks and reached this point of bilingualism.

So, the story of our journey starts with looking at what is language for that matter, what does it mean and for studying language, the first thing that we needed to know is to look at the

very primitive form of language to strip everything from language and look at the bare borne language. Now, there is a distinguish between language and communication. And language as we know, by definition, is a medium of exchanging ideas.

So, the basic form of language is called the communication. So, I focused on my first two lectures, on to what is communication. Now, even human communication is a little bit difficult. So, for understanding the basics of language, I started off by looking at animal communication system, which is a very, very basic and primitive form of communication system.

So, we looked at the animal communication system, what it is, we looked at some examples of the animal communication system. For example, the waggle dance of the honeybee or the calls of the vervet monkeys and so on and so forth and described the characteristics of a system of language used by animals. Now, that gave us an idea of what a language should have and what they should not have. And so we proceeded next, into understanding the human language system, with all its intricacies and bells and whistles.

So, we started of by looking at the language in terms of its phonemes, that combines to give morphemes and then moving up ahead into the level of the word. Then word making sentences, sentences making discourse and so on and so forth. And looking at rules, syntactic structures and rules for using the language. So, what we were interested is in finding out how the human language system or to what extent the human language system is different from the animal language system.

We proceeded further and started looking at the evolution of the human language system, the language for that matter, we looked at how the existence of the language gene or the continuity, discontinuity theories, they gave a basis of how language would have evolved from the ancestors that we had, and lastly, we looked at some evidences or some fossilican evidences that give us an idea of how language would have evolved for us or how language would have provide some basis, would have had some scientific basis or some predecessor to its evolution.

So, those steps, those milestones which described how language would have evolved. Now, once we had described all these things, once we had had a little bit of history of language a

little bit of definition of what language would mean and what language exactly is, the next step obvious was looking into how languages dealt in scientifically. So, we looked at the scientific procedure if doing research in language.

The first step of course, was defining the scientific method for doing language starting from body of theory, to deducing hypothesis out of it, and then producing destined this hypothesis based on some data and then formulating a solution and testing the solution against the theory to either verify or falsify the theory. So, we looked at this process of how this theory leads to data, and the data again, either extends that theory or falsifies it.

We look at the whole idea of what is the scientific process. We looked at experimental designs, various kinds of experimental designs that we use in doing language research in the laboratory, within subjection between subject designs and a little bit into other kinds of designs, which are used in doing research on language. The next thing that we looked at is various kind of behavioral techniques of doing language research and two important measures of any language research or any language related research is the latency or the reaction time and the second being the accuracy or how correct a response in language.

So, we looked into detail how this latency and accuracy form some of the behavioral principles into doing language research. And lastly, we looked at how language and brain are related. So, what are the different areas of the brain, the Broca and the Wernicke area, what are the different mechanisms, different equipments, which are used for measuring brain responses and language and how the brain and language ability is related to each other.

Particularly, we yesterday in the Broca and the Wernicke area. Now once we had an idea of how to do research in language, the next obvious thing was to understand how language is perceived or how somebody perceives language. And so, we started a journey into perception of language, by first describing what is auditory perception. So, we started looking at auditory perception, for example, what is a wave, what is amplitude of a wave.

Because language generally is understood in terms of, the basic form of language understood in terms of the spoken language. So, we started looking at what are waves, what are the different forms of waves, and how to measure it and so on and so forth. Further to it, we also started looking at how the language is perceived using the ear. So, we looked at dynamics of

the ear, we looked at the structural and dynamical format of the ear and how the ear receives these sound waves, which are produced as a language output and makes meaning out of it.

We ventured into the idea of the speech stream, which is measuring the wave which is output in terms of the spoken language and looking at characteristics of it, in terms of vowel and consonant production, the production of **(()) (8:36)**, the idea of continuity of language, the idea of how brakes are there and so on and so forth. And we did all these by using something called the spectrograph, which looks at how these wave formats, which contain language, spoken language for that matter, what does it contain and what are the meaning of it.

The next thing of importance was the development of speech perceptions and how speech perception starts and children acquaint themselves to the mother ease and other forms of conversation, other forms of attachment process through the caregiver and the small child and he develops the idea of language perception. And lastly, we looked at some theories of language perception, starting with the idea of motor theory, then the auditory feedback theory and lastly, limiting ourselves to the idea of direct realism as explaining language.

So, **we** by this time, we had completed of understanding how languages is perceived, but the next obvious question was how languages produce. So how does the production of language starts and so, we started off looking at the production of language. There we looked at the idea of the vocal cord, which produces language, spoken language for that matter, and how speech is produced.

So all the vibrations of this vocal cord, how these vibrations produce the various consonants and vowels and how these consonants and vowels, they combined together to produce languages or speech stream. Then we looked at certain speech areas of the brain, most dedicated ourselves into the Broca and the Wernicke area, how they are connected, how there is ventral and the lateral flow of information, and what areas other than the Broca and the Wernicke area are involved into the language.

We looked at several models of speech perception. For example, feedback model, the diva model, is a computational model and some other models of language production. And lastly, we looked at how the development of speech production happens in children through the use of again, the use of expressions, babbling, and so on, and so forth and how these formats of

behavior by the smaller children actually lead them to producing the mother tongue or the basic language and other languages as well.

So once they had completed, the idea of how language is perceived and produced, and also understood a little bit of what is language and the science of language, the next obvious answer was looking at how words are produced. So speech sounds are one thing, but these speech sounds, the phonemes are combined together to form meaningful units, which exchange ideas and these meaningful units which exchange ideas, or which stand as symbols are called words.

So the next obvious answer was looking at words. So we dedicated a three section or three lecture section on to the words. We looked at looking at what is the anatomy of a word, what is the different kind of words which are there, the functional and the content word, and how word leads to symbolism or how words transfer ideas between people. Next, we looked at the storage of words, so how different words are stored in the mental lexicon.

So we started looking at how words are learned, how children learn words, how the steep curve is there in learning, and what kind of processes or what kind of interactions the child goes through while learning different kinds of words. The next obvious thing is that once the child has learned a word, how does it store it. And so we were interested in looking at the cortical and lexical organization of words.

So we looked at how the semantic memory principles of the hierarchical structure of the cortex and the mental lexicon experience how words are stored. And lastly, we were interested in looking at the retrieval of word from the mental lexicon. And so we looked at how the spoken recognition happens. And we looked at the theories of 12:44 theory and the Dell interactive model, which gives us some understanding of how the retrieval of the word really happens.

Now, once we have words with us, these words assemble to certain kind of meaning. But then these words need to be combined into bigger sentences, because of one word would not mean anything. So, next step was looking at how these words are combined together into longer structures, which are called sentences. So we looked at the idea of what is a sentence and what is the structure of sentences are really about? So the first step that we needed to do

was to look at the idea of a sentence.

What is a sentence and what does it do? So we started out by looking at the structure of a sentence, what is the structure of a sentence looks like, we looked at how the sentence can be broken down into its phrases, into its clauses and that kind of a thing, and how the concept of the agent and the patient or the subject and the predicate they explain the structure of a sentence. So all in all we were doing is what is understanding the structure of a sentence and the syntactic structures and how complexities adding on to it.

The next thing obviously was, once we had an understanding of what is the sentence of a structure, the next thing that we wanted to do was to look at how comprehension of sentence actually happens in both adults and infants. And so we started by looking at how errors in sentences, forming of sentences, gives us an idea of how sentences are comprehended, how the theory of minimal attachment and the theory of priming and anticipation explains the comprehension of sentences in both adults and children.

The third thing that we went yesterday is how sentences are produced, so once we have an idea of how they are comprehended, the thing was how do we produce sentences and we looked at the vertical and horizontal flow of information as giving us some idea of how sentences are produced and looking at the scope and visual attentions also playing its role into production of sentences. The last thing that we wanted to do was to look at the syntactic structure.

The structure of how sentences are formed, the grammatical structure of how sentences are formed, how they are learned by children. So we looked at the model of sentence inquisition, incremental structure building model, and some other idea of which again from impairments in language, which gives us how language structures are learned by both adults and children. Adults have, of course have developed it, so it is basically into children, how learn this model.

Once we have sentences, we need to exchange the sentences between people and that exactly is called discourse. So the next thing of interest was looking at discourse. Now discourse has two forms, one is called the conversation, the other is called the narrative. So we focused both onto conversations and narrative. We started looking at what is conversations, anatomy

of a conversation in terms of how people understand turn giving and, and turn in interaction and constructing turns, in terms of how they understand that when is their turn to speak.

Conversations employ many people talking with each other, taking turns and expressing ideas. Then, so we looked into the basics of that. The next thing we were looking at is understanding what is a narrative. So in a narrative, one person speaks and the other listens to them. We looked at story grammar as a form of narrative and looked at how the story grammar gives us some idea of what and how narrative progresses.

And then other idea of references, and the how these referencing helps in forming a narrative. The next thing that we were looking at is anaphora and inferences. Anaphora are those words which are used instead of the contained words. For example, using if, which is a pre-known in terms of referring to the person in question, and how they help us in making inferences and understanding the sentence in a better way.

And the last thing that we were interested here is how the development of discourse ability happens in children in terms of gestures, in terms of post speech, in terms of using gestures, in terms of turn taking, late talkers, and so on and so forth and using the Gricean maxims, understanding how this develops into smaller children. The last thing that we were doing in the last two classes was looking at reading and writing.

Now, as we looked at, reading and writing is an ability which is a newly developed ability, because the brain does not come equipped with reading and writing ability. And so we focused on the writing system first, looking at what are different writing systems, in the world which exist and the autography of these writing systems.

Secondly, we looked at the cognitive processes in reading, which are involved and so we looked at how eye movements give us an idea about reading, and how text comprehension happened and the various models of lexical access helps us in understand the cognitive processes related behind reading. The third we dwell into development of reading skills. So how learning to read or how the development of dyslexia gave us an idea about the ability to read and how early intervention can help us in treating dyslexia.

And then we moved into the cognitive processes in writing, that is the fourth thing that we

did. We looked at how the ABC of learning really happened, how spelling can give us some idea about what is writing and learning of text and composing text, how the haze model helps us in understanding those cognitive factors which are effective in learning. And so now we are here into the idea of what is bilingualism, which I explained to you earlier, is the process of speaking two languages.

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As you look around yourself, most people in the world are bilingual except a few countries for example, America and the United States and the United Kingdom, those are monolingual people. And the monolingual people are those people who are able to speak only one language. So those people who are able to speak on one language or multilingual and most good examples are the people from the United States or from Britain. These people are the ones which are monolingual.

All other people besides these people are bilingual as they can shift between different languages. So then, what are bilingual people know bilingual people are those people who are able to speak two or more languages. Look at any language in India, any kind of person India for example, myself, I can speak both Hindi and English, Hindi being mother tongue and English being an language, which I have and then a little bit of Punjabi, something which I can speak, so three languages in total.

Punjabi is something which I cannot read and write, but I can understand, Hindi and English are languages, which I can read and write, of course, I think I have lost the ability to write Hindi properly, but then this happens because you do not use that. And so one of the things

that bilinguals do is that they are able to learn to speak in two or more languages. And most people in the world generally are bilingual as I had been explaining to you. So these are the same people who can use two or more language.

Now, why do bilingualism exists or why do bilinguals, the study of bilingual is important. The first thing is a globalization has led to an increase in immigration and so, people move out of their own states, for most people move out of India and move to the United States to work or Britain or those kind of monolingual country. And so, when you go to a country like that, it is expected of you to learn their language. Of course, the most prominent language speaking people will not allow you to function your language.

And so that is one reason for bilingualism to be to be effective. Now, in addition, the emergence of English is a global language of business and science, means that most people have to understand English and so that is one reason why bilinguals are required. Now bilinguals, they come in various form. The first form of bilingual is called a balanced bilingual. Now this is a person who grows up speaking two languages and can communicate equally well in either of them.

So if you are a bilingual, if you are a balanced bilingual you are one of those people who can communicate in both the language very well. So for me example, I am a balanced bilingual because I know very well Hindi as well as English and I can always switch between Hindi and English, that is something very interesting that I do in my classes, I keep on shifting between both the languages in equal ways.

Now, one thing that happens out of it is that I can express my ideas sometimes better and Hindi and sometimes better in English. And that way I can reach to the student in a much better way. So, they are balanced bilingual who can shift between both languages at the same time. But there are only few bilingual who are truly balanced in nature. So, we come to the idea of the other kind of bilingual, so most are bilingual are not balanced, but have preferred or dominant languages.

And then you can see that most bilingual do not have this balanced formats and so they have one dominant language. For example, the dominant language in my case, both languages are equally well, but for most people the English becomes the dominant language. Now, we

learn the foundation of our language at home as a children and school is also an environment for learning the language development, especially in vocabulary literacy.

And the language of the child is educated, it becomes the dominant language of adulthood. So, the reason why people have one dominant language is, the school teaches them. So, if you go to an English medium school, English becomes a dominant language although you are Hindi speaking, and so that is one of the things to be noted.

Now, some people will be counted as bilingual or not depending on whether you view the linguistic system they are familiar with as a distinct language or as a different dialect from the same language. You also have something called unbalanced lingual is a person who has limited ability to speaking in the second language. And so both form of bilingual exists a balanced and unbalanced bilingual.

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Now languages and dialects, so there are something called different languages and dialects is actually a form of a language, which is I would say an equivalent of a language. So we naively view language as discrete entities with national boundaries. So when we talk about people, we talk about people having fixed language systems or with boundaries they have fixed language system. For example, we believe that French is the most dominant language in France, Italian is spoken in Italy, Spanish is spoken is Spain and German is spoken in Germany.

And Deutsche is spoken in Germany, apparently they call it Deutschland. And so this kind of

things, we believe that certain national boundaries have this kind of language. Now, oftentimes, little languages exist along a continuum. For example, the Dutch-German continuum from Amsterdam to Berlin. If you start from Amsterdam, which is a small region here, if you have seen how Europe is like, and you move Berlin, which is right at the eastern side of Europe, and this is right at the North Western side.

And as you move along, you will see the languages keep on changing. So you start with Dutch, which is the language of the Netherland and how the dialects, how it starts evolving or how it starts changing, until and unless you reach Berlin, here you will find the standard German or the standard Deutsche. And as you move from Berlin to Vienna, you find the something called the standard Austrich, which is another form of German, which is there, German itself having a pure German.

So most standard Germans are spoken in Berlin, and the less standard German is spoken in the Dutch Netherland. But as you move along boundaries, you see that the dialects are there, the form of language expressions are there, which is not exactly the true language, but it is a dialect of it, which basically means it is a form of it, which is not the true expression or the true form. Now, distinction between language and dialect is more political than linguistic.

It is believed that language and dialect distinction is more political in nature and has nothing to do with the linguistic properties. Netherlands and Germans are separate countries, so they are treated as separate languages. Although if you look into it, the idea of Deutsch and German, they are more or less the same thing, or from the same family. Now similar continuum of Chinese dialects, comes from Beijing to Shanghai. So if you are moving from Beijing to Shanghai, Beijing being using the basic form of Chinese.

And so as you move along, this form of Chinese gets slowly ridden off or written off and you find some variations of it. So a lot of variations happens as you move to Shanghai, which is not exactly the same form of Chinese that, the classic form of Chinese that is using Beijing. Now, mutual intelligibility, degrees to which speakers of two languages or dialects can understand each other is known as mutual intelligibility.

And so mutual intelligibility is the ability of the people to understand each other's language. That is one thing. So linguistics avoid the language dialect conundrum altogether, by

assessing something called material intelligibility. Instead, what they believe is that they consider the degree to which speakers of two different languages or dialects can understand each other is called us mutual intelligibility. For example, Americans and British English are mutually intelligible, even though there are obvious differences between them.

Now, we can assume that if a speaker of language A can understand the speaker of language B, the reverse should be true, but this is not generally the case. So, if A understands, the speaker of language A understands language B, the reverse of that is not always true.

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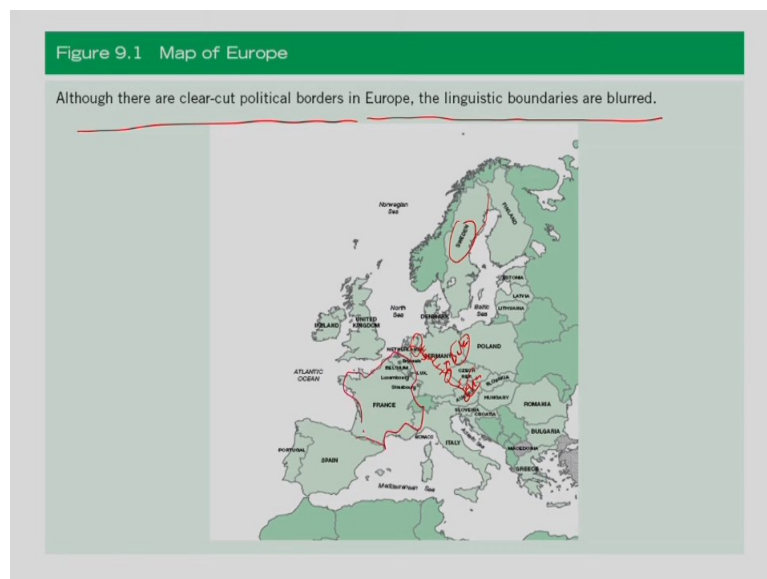
As you can see the map of Europe as you see there are several regions, you have Sweden and so, by different boundaries. So although there are clear cut political boundaries in Europe, the linguistic boundaries are blurred. So, people from Denmark, people from Netherlands when they move into Germany, they carry with them the same form of Dutch and so, as they keep on moving and here is where the Berlin is.

So, what will happen is a little bit of variation happens and so, if you move into Austria and this is Vienna, another form of language. So, the German which is used in Berlin, and the German which is used in Vienna, this is a different kind, it is called Austrich, but most structures are same and similarly in Netherlands it is same. So people believe that because people have boundaries or the countries have boundaries and these boundaries make them strictly use a different kind of language or linguistic boundaries.

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Figure 9.2 Map of Major Chinese Dialects

Although mainland China is a single political unit, its people speak a dozen mutually unintelligible dialects.
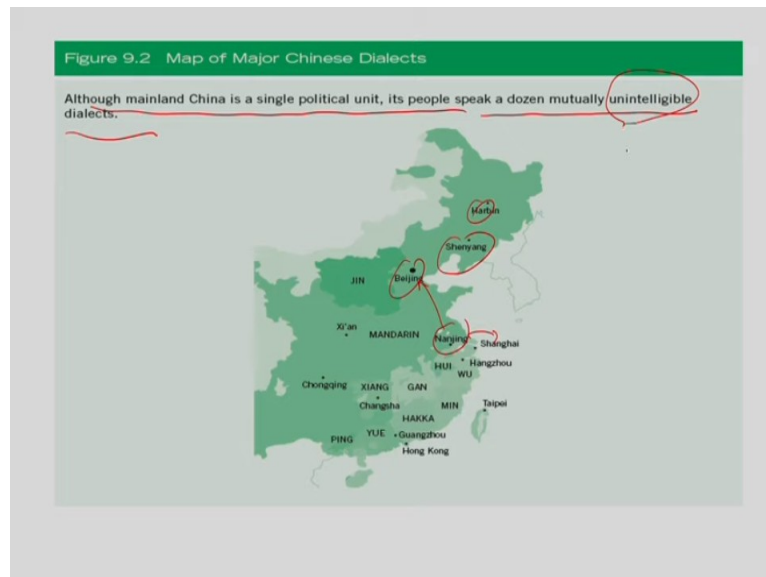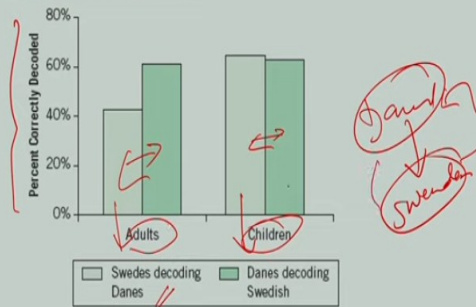
Now the reverse of true is in this country. So here what happens is there are different states and so there are different boundaries, they are not equivalent and so they would have different languages. But look at China, there is a single state and so as you look at people moving from Harbin to Shenyang or Beijing or Nanjing, what happens is although Mainland China is a single political unit, its people a dozen mutually unintelligible dialects. So, although in this case people speak something called intelligible dialects.

In terms of Europe, in this being one state people should be speaking one language if the political boundary is the reason for all languages, but then what we found out is that people in Beijing and Nanjing and Shanghai, they speak some kind of dialects which are unintelligible, mutually unintelligible dialect, which means that people from Beijing will not be able to understand languages from people from Shanghai.

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Figure 9.3 Mutual Intelligibility of Danish and Swedish

Now, there is a good example of mutual intelligibility in terms of the Danish and the Swedish. Now, Swedish adults have more difficult decoding Danish adults do about Swedish why? Because , Swedish people do not have to learn Danish, but Danish people have to learn Swedish if they want to come and work there. So, however, Swedish and Danish preschoolers perform equally well in decoding the other language. This such as that implicit social attitude influence the Swedish adult's performance.

So this is the percentage correctly decoded, these are the adults and these are the children. And if you look into it, the differences in terms of children are less than in terms of adults, in terms of Swedes decoding the Danes and the Danes decoding the Swedes. Now since the Danes, they moved to Sweden, for education and other purposes, so it is believed that the dean should be able to understand Swedish and so this is the difference. So with adults, it is difficult, it is another way, but with children it is another way of ability to understand.

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Immigration to the United States

- Heritage language
  - Spoken in immigrant's country of origin
- Societal language
  - Spoken by majority of people in a given society
- Three-generation pattern
  - First generation: heritage language is dominant, varying degree of proficiency in societal language
  - Second generation: learn heritage at home, but prefers societal language, which is dominant
  - Third generation: speaks only societal language, little or no proficiency in heritage language
- Incomplete first-language acquisition
  - Failure to attain full native speaker proficiency of first language
  - Typical among those who immigrate as children, who become native speakers of societal language

Now, immigration records for most instances of bilingualism in the United States and there is also a very predictable pattern of language shift across generations in immigrant families. Now we have something called the heritage language. Immigration to the United States is that most people move out of their countries and to the United States, and they carry the bilingual word with them. So spoken in the immigrant's country of origin, so when people move from their country to another house country.

For example, people moving from India, or any other country to the United States, the first form of language, the heritage of language is the foreign language which is spoken in the country's origin. For example, if Indians move out of India, and go to the United States for work, Indian or Hindi, typical language is the one which is the heritage language. But what is the societal language, this is spoken by majority of people in a given society.

So if you are moving from India, into the United States, English is called the societal language and Hindi is called the heritage language. And most people when they move, they start forgetting this, the first generations know it, and they feel proud to have this Hindi language. But as generations move about, what happens is, English becomes the most vocal because this is the language in which most communication is happening and this is the societal language.

So three generation pattern, let us look at how generation after generation deals with these heritage languages and societal language. And so what happens is in the first generation, heritage language is dominant, varying degrees of proficiency in societal language. The

people who actually move, for example, suppose I move now to the United States forever, what would happen is I will be the first generation and in my generation, the heritage language will be dominant, and the proficiency in the societal language, which is English will be less.
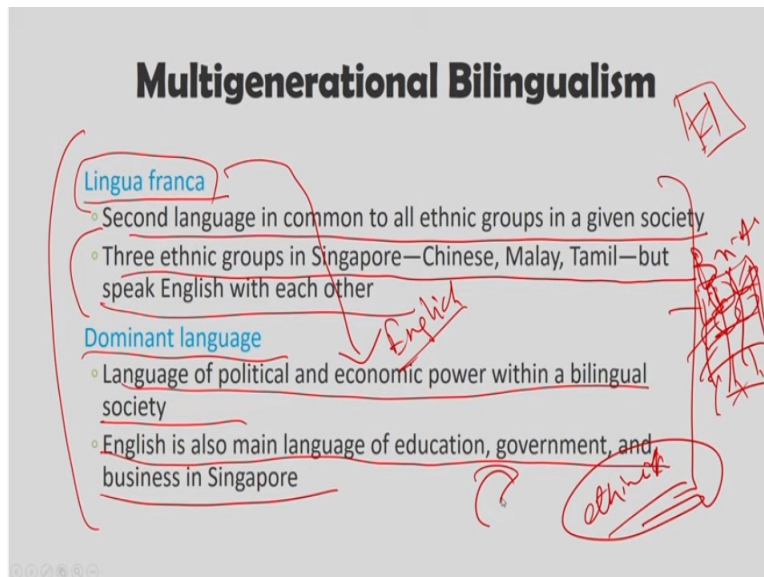
But my children, which is the second generation, they will learn heritage language at home, but prefer societal language, which is dominant. So my children will still, they are born in the United States and so as they are born in the United States, their language preference of the societal language will be English, and so they will more proficient in English, but they will still learn Hindi because I am still there, my dominant language is still there.

And the third generation, my children's children, they will speak only societal language with little or no proficiency in the heritage language. So if I am not there, and I have not taught my children enough of Hindi, what would happen is they will not be able to pass off so in the third generation itself what will happen, the societal language will become the most spoken language and the most interactive language.

Incomplete first language acquisition, now failure to attain full native speaker proficiency of the first language. Now what happens is, in the third generation, what happen, there will be something called the incomplete first language acquisition. Why, because second generation did not pass out anything and so it is basically a failure to attain full native speaker proficiency in the first language.

Also typical among those immigrants, those children who became native speakers of societal language is this incomplete first language acquisition that happens.

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Multigenerational Bilingualism

Lingua franca
- Second language in common to all ethnic groups in a given society
- Three ethnic groups in Singapore—Chinese, Malay, Tamil—but speak English with each other

Dominant language
- Language of political and economic power within a bilingual society
- English is also main language of education, government, and business in Singapore

Now, multigenerational bilingualism, what are these. Now, in many areas of the world, multiple ethnic groups with different languages live side by side. So what happens is there are some countries there are, a number of countries in which multiple ethnic group people, they live side by side. Now in that case, what happens is, the bilingualism becomes the norm, and each generation grows up the bilingual. One such example is the city state of Singapore in Southeast Asia.

In Singapore, you find that there are multiple ethnic groups of people, all of them bilingual and all of them living side by side. As a former colony, the Singapore has English as the lingua franca, which is the second language in common on all ethnic groups of a given region. Now the lingua franca, is basically the second language in common in all ethnic group of the society. So what happens in Singapore is that, the multiple number of, it is a British colony.

So here what happens is multiple number of people live here who are all bilingual, they come from different parts of the country. So here what happens is, the second language because most dominant, second language is a common to all ethnic groups because these ethnic groups exchange ideas in English. Now three ethnic groups in Singapore are Chinese, Malay and Tamil, but spoken language within all of them is English.

And so this is what is called the lingua franca. While the three ethnic groups may not speak each other's language, they can generally communicate with each other in English. English is also the dominant language of Singapore, meaning that, it is the language of political and

economic power with a bilingual society. Dominant language, language of political and economic power within the bilingual society and so dominant language here is always English although this is the second language.

As you can see, this is the lingua franca. Also, English is also the main language of education, government and businesses in Singapore. So, no matter how different ethnic groups come and live here, they always speak the common language of English.

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Let us now look at something called codeswitching. So, what is codeswitching, is basically how bilinguals, they switch words while speaking. So, among the bilinguals, the different languages are often associated with different environments or context. On one hand, we have the heritage language, may be used at home and the family member, so most bilingual use the heritage in their family life or topics related to the family. The societal language is a language which is spoken by majority of friends and people in the society.

And it is easier to use when discussing topics outside of the issues. Now, this must be the case for the first generations, immigrants who command the societal language is relatively weak. Thus, bilinguals often engage in something called codeswitching and so what is it, it is a change from one language to another within a single interaction. So when I am speaking, that is what I also tend to do, when I am speaking in my lectures, I keep on switching between the Hindi and English.

And why do I do it, because there are some concepts which can be explained in Hindi better

and some concepts that can be extended in English better and so, I find this and I keep on doing this codeswitching. So the codeswitching occurs between sentences in a conversation or even within the sentence. So then it is observed even in a young bilingual children. So, bilinguals are associated with different forms of language from different topics.

Heritage language may be used at home for daily life issues. Also, societal language may be used for more relevant issues outside the home. What is codeswitching? It is a change from one language to another within a single interaction. And they can even occur within a single utterances. It is not that one sentence will be in a particular language and the other sentence will be in another language. What could happen in a single sentence, people will be able to switch between two different languages.

And this property of switching between two languages in a single utterance or in multiple utterances is what is called codeswitching. Bilinguals have a good sense of interlocutor language abilities, which language will be best to convey the intended meaning. Now codeswitching reflects, what does codeswitching actually do? It reflects a deep pragmatic knowledge on the part of the speaker, the speaker has a very well idea or good idea of the pragmatics of the language.

Codeswitching is not just the result of a language failure, codeswitching is exactly not language failure, it is not that somebody when using Hindi, instead of English is failed to explain the English word or fail to repeat the English word. What happens is, it rises out of the skilled crafting of language to the appropriate context. Now, why I do codeswitching that is because, it is not that I do not know the English word for it.

Why we are we are using codeswitching is because I believe that the language shifting that I am doing is appropriate for that context. And so I am using some words or expressions can be explained better in Hindi and so I am doing the codeswitching. So codeswitching basically is not the failure of a particular language. Also a more formalized type of codeswitching is in terms of the translation.

Now, the social dynamics of translation are complex in nature and they involve interactions between members of the dominant and the subordinate classes. And the translator though able to speak both the languages, is still viewed as a member of the subordinate groups. So,

bilingual speakers choice of language depends more on the pragmatic factors with their own competence, there is a strong pressure the use of local language, whenever possible.

Also, bilingual speakers tend to use native languages of their interlocutors, because it increases the likelihood of their intended message will be understood. So, they use the language of the interlocutor because they believe that the language will be understood, they will be understood better. And finally, in interactions between speakers of the dominant and minority language, the burden of understanding falls on to the non-dominant language speaking people.

So, if I go to United States tomorrow, the burden of use of language of English will be falling on me because of course, people of United States will not like to understand Hindi or not like to put effort to understanding Hindi, so the burden lies on me to speak or exchange ideas in English. Translation is a form of codeswitching and as I said translation is a form of codeswitching.

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Now bilinguals choose language based on pragmatic factors, not owing incompetence, select dominate language of interlocutor to maximum the understanding also the experience pressure to use dominant language outside the home. Now, there is something called bilingual, accommodation, what is it? It is the sensitivity to ethnic identity of interlocutor in in selecting which language to use. Two year old bilingual children accommodate to interlocutor.

So, basically it is the ability or sensitivity of the ethnic group to use the correct form of language. Also, there is something called language negotiation, young bilingual becomes skillful at language negotiation, which is a process in which the bilinguals, the interlocutor work together decide which language to use. So, bilingual interlocutors work to decide which language to use and this is called the language negotiation in different conversations.

Now, receptive bilingualism ability to understand a second language without being able to speak it. Now, this is another form of bilingualism, where I can understand the second language, but I am not able to speak it. Danes and Swedes for example, French and German speaking Swiss across generations in immigrant families. This is called receptive bilingualism.

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Language and identity. So language as an integral part of a person's identity and bi-linguist use languages to establish their identity, which may vary as they move from one societal group to another. The first generation immigrants typically maintain heritage language and cultural identity. Also second generation typically identifies the societal language and the culture and so this is where the shift is.

The Heritage language is mostly of the first generation and the second generation onwards are using most of the societal language. Language and recall of personal memories. Childhood Experiences recall more vividly with greater emotion in the first language. And so when doing something called hypnotherapy, it is always better to use the first language or the mother tongue of the person, the heritage language of a person because childhood

experiences are more vividly expressed in the heritage language.

Bilingual psychotherapy, clients may find it easier to discuss early traumatic events in the second language and so this has to do with the use of the second language.

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Now, since we have understood a little bit of how bilingualism works and what are the various factors affecting it, next let us look at the organization of the bilingual mind, how the bilingual mind is organized. So, balanced bilingual activate both languages at the same time that they speak. Now, bilinguals rarely confused with the two language, it seems that logical to assume that the bilingual mind actually houses each language separately.

Now, if you look at the bilingual for example, I am a bilingual, if you are looking at me, I can speak English and Hindi both the same time and so it is a good preposition to understand that I am housing two lexicons in my mind, and both of them are working in parallel. Empirical evidences clearly show that bilinguals, they activate both languages every time they speak, even when their dominant language is in strictly monolingual situations.

So even in strictly monolingual situations where I am doing all interactions in English, I am also activating Hindi and that is how the bilingual people really work. Now, it is less clear whether, there is also the case with unbalanced bilingual, there is a person who has limited ability to speak a second language. And so what happens in most balanced bilingual, we have both languages acting at the same time. Now evidence for joint activation of both languages in the bilingual, they come from a number of different approaches.

Now a number of different approaches have been used which basically believe that bilinguals, they activate both the language areas of the brain when they are speaking. Now they show that bilinguals is cannot simply shut off one language while making word judgments in the other language. So lexicon decision task, lexical decision task is used to test whether both the languages are activated at the same time when bilinguals are working.

So bilingual cannot shut off Ll, which is the first language, while making word judgement in the L2, which is the second language. In my case, Hindi is the first language and English is the second language and so this lexical decision task says that I cannot shut off L1, when I am using L2. Similarly Spanish English bilinguals, they have slow reaction time for NOCHE word in English, because it is a word in Spanish also. And so this word, which is a non-word in English and a word in Spanish, this takes Spanish English people take more time.

But English Spanish speakers, English monolinguals, of course English is monolingual so they do not have to learn Spanish, but if they learn Spanish then what will happen is the reaction time would be reversed out. Cross language priming, another way of looking at how the both the areas of the brain are activated or both the mental lexicons are activated. Words in L1 aids in retrieval of words with relative meaning in L1. Now, cross language priming in which words from first language in Hindi primers in English.

What it says that words in L1, which is in Hindi, it aids retrieval of words in the meaning of L2. Now, German English bilingual if they are looking at this kind of thing, if they are shown them ARTZ, this primes for NURSE. So, if they show them ARTZ, which is exactly the meaning of a doctor in German and later on you show them NURSE, the priming, the reaction time for understanding this word is faster. Eye tracking data also, so visual area contains both markers and postage stamp, marka in Russian.

Now, the English monolinguals hear mark, they will look for the marker, Russian English speakers may look for markers or postage stamp. So what happens is, in the eye tracking experiment, what happened is Russian English speaking and the English monolingual were taken and so they were given several objects to look at and their eyes were tracked. In one case, you had a postage stamp and you also had a marker in front of you and the word that you have to look at was, or the word that you have to find an object was for marker.

Now, for English marker, as soon as they heard the word marker, their eyes moved to the marker which was on the table, but then the Russian English bilinguals, they first looked at postage stamp, which is basically a, which is called marka in Russian, and then later on, they translated to English and looked at the marker which is there. And so a lot of higher reaction time was resulted.

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Now, links between the two languages. So, how the two languages, in terms of bilingual brain, how the two languages are related. Now, vocabularies of the two languages are linked at the conceptual level, it is believed by some experiments suggests that the vocabulary of the two language of a bilinguals are, they are related at the conceptual level. Now, which basically means that whatever you say or talk about in one language, you can also talk about in another language.

Now words in the two different languages they refer to the same concept called transitional equivalent. So, the transitional equivalent basically says that they are able to switch between languages and when we are referring to language 1 and language 2, they are referring to the same concept and that is why this is called translation equivalent.

So, what is the two languages that refer to the same concept, for example dog in chien and chien in France, dog in English and chien France, if we are referring to it, what happens is, we are referring to the dog and so the dog is activated. An interesting issue with transitional equivalent is the idea that how they learn the first, how they are learned in the first place. So

both dog and hund for that matter, they refer to the same legged animal, which is the conceptual idea of it.

So, no matter what they look into, the translational equivalent is this and so the same time should be activated. Now, the mutual exclusivity principal. Young children assume that new words must refer to the novel concept, but they do not assume that this when learning a new word in another language. Children growing up as bilinguals have some awareness that separate linguistic systems are in use.

Now, for children of the monolingual system, this kind of problem may arise, but for bilinguals, they start with the idea that separate linguistic systems would mean different kind of things.

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Now sometimes there are words in the two languages that have similar form and meaning and these are called as the cognates. What are cognates? What we are trying to express is the link between the two languages, words of the two languages that have similar form and meaning are called the cognates. So the cognates are basically the words from the two languages, which are similar in form and meaning. Now, English and German have many cognates because they come from a common origin.

So the spelling would be different, but the form and the meaning would be same. For example, look at cafe, which is coffee and coffee in English. As you look into it, what happens is cafe and coffee or affel and apple in English they are other same. Now, English

and French have many cognates because they are massive borrowing from French to English and so English Germans are also the same, because the same Germanic language.

Now according to the principle of cognates, cognates occur because of two reasons, so why do cognates occur, because of two reasons. One reason is that some language are related to each other and thus share a certain amount of vocabulary. The other reason being that as German English share a number of cognates, for example, man and manm. In German you have mann and in English you have man, also you have wein, which is wine in English or if you have bier in German, which is beer in English.

So, another reason for cognate is that the language often borrows the name of a concept, both the languages, they borrow name of the concept they acquire from other cultures. So, both the languages are borrowing the concept from the other culture and so, that is the reason for the existence of the cognates. Now, there may be other words, which are called the interlingual homographs. Now, words in the two languages that have similar form but different meanings, these are called false friends.

So, it may be possible that the two languages have the same word, but they had different meaning and these are called interlingual homographs and also called false friends. For example, in German you have chef, which actually means boss, but in English chef actually means the chef who actually cooks. Also gift means poison in both the languages. So both means are temporarily activated as measured by N400. And it is believed that both meanings in a bilingual, in an English German bilingual.

Both the meaning for example, chef, the boss and chef, the chef, the cooking chef, both are activated at the same time when an English German person is using these interlingual homographs.

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Table 9.1 Some English Cognates With German and French

English has many cognates with German because both languages have a common ancestor. English has many cognates with French because of widespread borrowing after the Norman Conquest of 1066.

English	German	English	French
house	Haus	reason	raison
God	Gott	season	saison
land	Land	beef	boeuf
friend	Freund	biscuit	biscuit
sun	Sonne	bouquet	bouquet
moon	Mond	robe	robe
mother	Mutter	gourmet	gourmet
brother	Bruder	lingerie	lingerie
son	Sohn	pardon	pardon

Now, what are the disadvantages of bilingualism? Before that, we should look at some common cognates with English, German and French. So, you have house, here in German your haus, in English you have reason, in French here raison. You have God and you have Gott here, land and land here, friend and freund here, son and sonne here, moon and mond here, mother and mutter here, and brother and bruder here. Also son and sohn here.

In terms of French, you have reason and raison, season and saison, beef and boeuf, biscuit and biscuit, which is the same, bouquet and bouquet, robe and robe here and so what you see is that these are cognates and similar form words.

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The Bilingual Disadvantage (I)

Compared with monolinguals, bilinguals have
- Smaller vocabularies in each language
- More difficulty retrieving words
- True for both children and adults
- Measurable in lab, but no noticeable impact on daily language use

Semantic categorization task
- Participants name members of a category
- FURNITURE → chair, table, sofa, desk…
- Bilinguals name fewer items than monolinguals

Now, what is the disadvantage of being a bilingual. Now, compared with monolingual, bilinguals have smaller vocabularies each language. Since you are bilingual, you may not

have that much number of vocabulary or that amount of vocabulary in both the language and so, one of the obvious reasons offered disadvantage is that bilingual do not have enough vocabulary in both the languages. Also more difficult retrieving words. Since they do not have enough vocabulary, it is obvious that the bilinguals will not be able to retrieve words.

Or retrieve enough words from both the linguistic system. Now this kind of problem with the monolingual and bilingual is that, it is true for both children and adults. Also measurable in the lab but they are not noticed impact on the language use. Now although these kind of problems may exist for monolinguals, and difference between monolingual and bilingual, but you do not see bilinguals suffering in any way in a daily use of language.

Now compared with monolinguals, bilingual experience more tip of the tongue states, the tip of the tongue phenomena is when you are able to know a word, you know award but cannot name it and how does it happen, the tip of the tongue phenomena, it happens because you are not able to retrieve the lexical access, you are not given the lexical access or the symbol of the word or the meaning of the word. Now, some researchers have made the proposal that bilingual disadvantage can be expected in terms of lower word frequencies.

Now, semantic categorization task, the difference between bilinguals and monolinguals, or the bilingual disadvantage has been measured using something called the semantic categorization task. Here the participants have to name members of a category, furniture chair, table, sofa and desk and bilinguals name fewer items than monolinguals.

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In a lexical decision task also, it has been found that monolinguals discriminate words from non-word by considering whether the string looks familiar. But bilingual do so by considering whether the string is meaningful or not. Now, since the bilingual have two languages, so they do not look at the surface word and then make this distinction of lexical decision task in terms of word and non-word.

When distinguishing a word from a non-word, the bilingual will actually be distinguishing or actually distinguish words based on something called the meaning part of it or at the semantic form of it. Tip of the tongue phenomena, it has informed it is a temporary difficulty in lexical retrieval, mainly from less common words. Now compared with monolinguals, bilinguals experience more TOT states, that happens because, bilingual tip of the tongue can be explained in terms of lower word frequencies, this is known as the word link hypothesis.

Now according to these views, bilingual are less practiced at using the words they know compared to monolinguals and so they have more difficulty accessing them.

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That is what I was trying to explain you, the weaker link hypothesis. It is explained that bilingual disadvantage in terms of lower frequencies in each language. Also bilingual split time between two languages, so less practice using words in one language. Also, less practice leads to more difficulty in lexical access, and this is why the TOT phenomena, the tip of the tongue phenomena happens in bilinguals more than in monolinguals.

Inferring hypothesis. So an alternate experience for the bilingual disadvantage is in lexical

retrieval is something called the inferring hypothesis and so what is the inference hypothesis? I am sorry, it is called the interference hypothesis. So what is the interference hypothesis? What does it say? This is a proposal that bilingual disadvantage can be explained in terms of interference from translation equivalents of the unusual language.

What happens is when you are doing a transfer, when you are doing a translation from one language to another, a translational equivalent may interfere with retrieval, lexical retrieval of the first language and so, that can lead to the slower reaction times. So they experience bilingual disadvantage in terms of interference from translational equivalents. For example, French English bilinguals, attempts to retrieve dog but chien interferes with it.

Now since bilinguals can never turn off the other language, when they are speaking, the two languages will always compete for activation, and this competition will lead to interference and lexical access, but slower the process down of retrieval. Bilingual speakers need to constantly inhabit intrusions from unintended language, thus mixing the lexical access more effortful and so bilingual take more time in explaining any word for that matter.

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Now, while the bilingual disadvantage is clearly measurable in the laboratory, it is also important to note that it does not lead to any noticeable problems. So bilinguals do not have any noticeable problem in general day to day life. When two languages are closely related, bilingual disadvantage can exactly be reduced. So, if you are talking about German and French or German and Dutch this bilingual disadvantages is negligible at the best.

Now, there is a model of bilingual lexicon, which is called the revised hierarchical model. What is this model? Several models have been proposed for explaining bilingualism lexicon, now how vocabularies of the two languages are organizing the bilingual mind. The most popular is called the revised hierarchical model, proposed Kroll and Stewart. Now this theory of bilingual language processing, it assumes separate lexicon for each language connected by a common underlying at the conceptual level.

So the theory of bilingual language processing, it believes that there are separate lexicons for each language and they are commonly underlying conceptual level. So if L1 is the concept for first language, L2 is the concept for the second language, L1 is the first language, L2 is the second language, they are bound together at the conceptual level and this is what the theory actually says.

Two lexicons are there, so this is the lexicon, one for the first language, this is the lexicon two for the second language and this is the conceptual language where these two lexicons are connected. Two lexicons connected by direct link and indirectly through conceptual level, strength of each link depends on the proficiency of the bilingual.
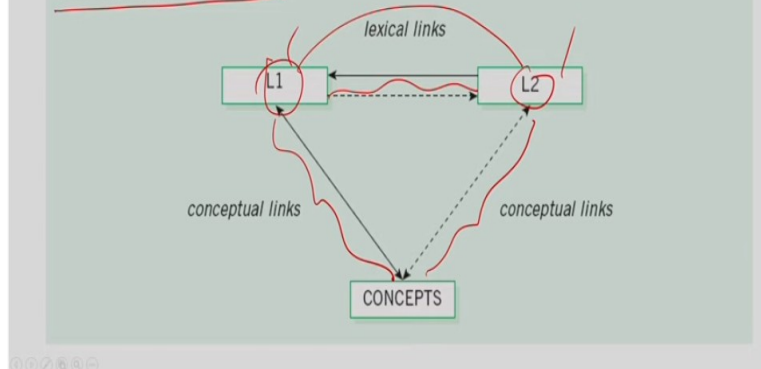
So if you are proficient in both the language, then each strength is very good, but at the conceptual level, if you are proficient in L1 and not proficient in L2, the strength here will be lesser, and that is how it has been explained. One language is dominant, the revised hierarchical model proposes that some of the links are weaker than the other. Now, as I explained that for balance bilingual, all links are equally strong, cross-linguistic priming is in either direction.

So both the links are strong and so conceptually they can activate the same word, same meaning and so here the priming will be very good or conceptual priming will be very good. Unbalanced bilingual, easier to translate from L2 to L1, priming L1 to L2, but not L2 to L1.
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Figure 9.4 The Revised Hierarchical Model

So, if you have a weaker model, so the revised hierarchical model, proposed separate lexicon for each language with underlying common conceptual layer. Solid links are strong and dotted links are weak, reflecting data from translation and cross priming studies. So if both are strong, there will be easy access between them and the concepts, but if L2 is weak and L1 is strong, this lexicon is strong and this lexicon is weak, this is the lexical link which is happening.

The conceptual link connection between L1 is higher, this is slower and so the translation between the L1 and L2 will also be slower.

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Translational equivalent revisited, so what is it, translational equivalents rarely means exactly the same thing. In Russian chashka means cup, but rarely means drinking vessel with a

handle. Russian stakan means glass, but really means drinking vessel without a handle. The more abstract the concept, the more the meaning of translational equivalence have to divert and so if you are looking at bilinguals what happens is, the translational equivalents or the more abstract concepts are there, the more difficult the translational equivalents become.

Now, Chinese verbs are the most difficult to do a translation, to get a translational equivalent. For example, in Chinese the word kai translates as open, open door, window, bank account, book everything. Turn on, also there is a translational equation, light, window, air conditioning, drive a car. So the more abstract concept is, the more the meaning of translational equivalents diverges and verbs are the more abstract than nouns and they are notoriously difficult to translate, that is what I have been telling you.

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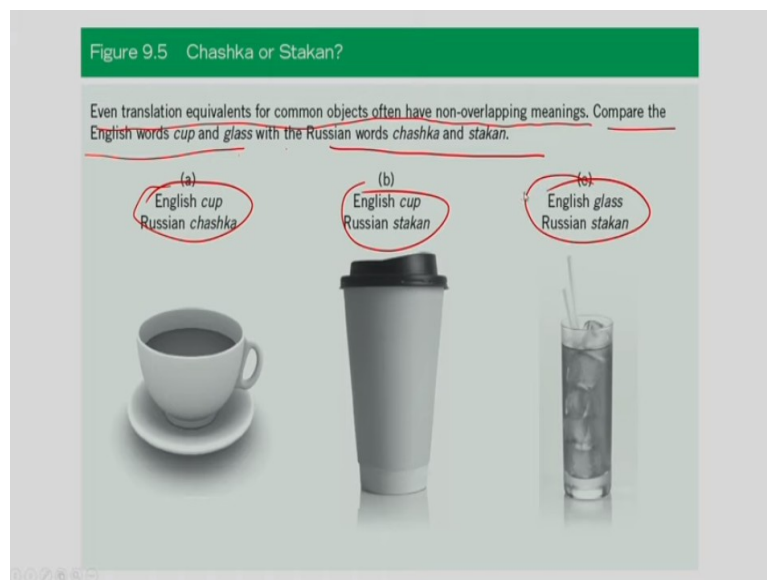
So even translational equivalents for common objects have non-overlapping meaning, compare the English word, cup and glass with Russian words of chashka and stakan, English word cup, Russian chashka, English word cup, Russian stakan, English word glass, Russian stakan.

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Sense Model

- **Theory of bilingual language processing**
  - Takes into account fact that most words have multiple meanings
  - These meaning do not fully overlap across languages
- **Priming activates all senses, or meanings, of a word**
  - But cross-linguistic priming depends on shared senses between translation equivalents
  - L1 → L2 priming less likely because bilingual knows fewer L2 senses
  - Bilinguals faster at translating concrete words (more overlapping senses) than abstract words
- **Picture naming task: Chinese-English bilinguals named**
  - Chinese-typical pictures faster when responding in Chinese
 - Western-typical pictures faster when responding in English

We look at something called the sense model. The sales model is the theory of bilingual language processing that takes into account the fact that most words from multiple meaning that do not fully overlap across a language. According to the sense model, what happens is priming activates all senses or meaning of the word, in a sense model what happens is, you are activating one language, the meaning of it through all senses, not only visual, but auditory or other senses also activated and that is how you develop the conceptual meaning.

So theory of bilingual language processing takes into account the fact that most words have multiple meaning. These meanings do not fully overlap in the language, priming activates all senses, all meaning or meanings of a word, but cross linguistic priming depends on shared senses between the translation equivalence. L1 leads to L2 priming less likely because bilinguals know fewer L2 senses.

Bilingual faster than translating concrete words, more overlapping senses, than picture abstract words. Now strength of sense model is that it cannot account for observing that bilingual are faster is translating concrete words, which tend to have more overlapping meaning, than they are at the abstract level. Words do not just link with abstract concepts, they can also elicit powerful imagery that can vary by culture.

So even very close translational equivalents can be associated with different prototypal meaning of the two language. Picture naming task in Chinese English bilingual name, Chinese typically pictures faster and responding in Chinese, Western typical pictures faster when responding in English.
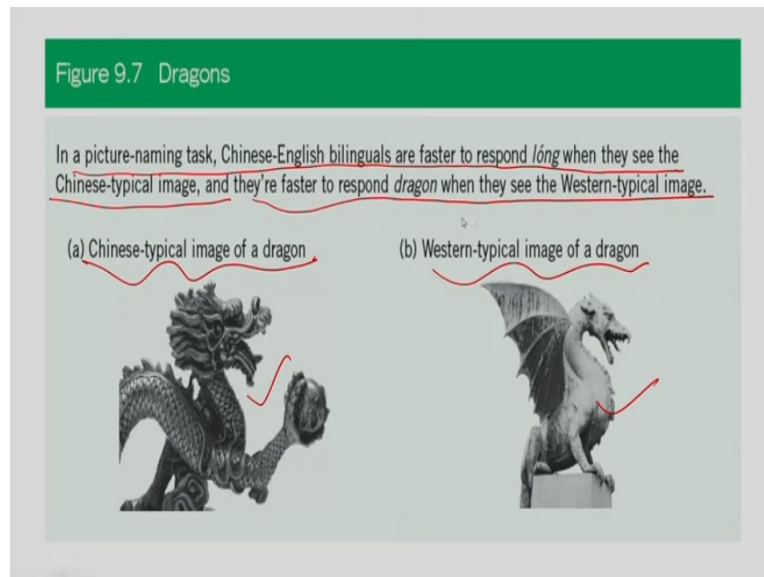
Figure 9.6 Sense Model
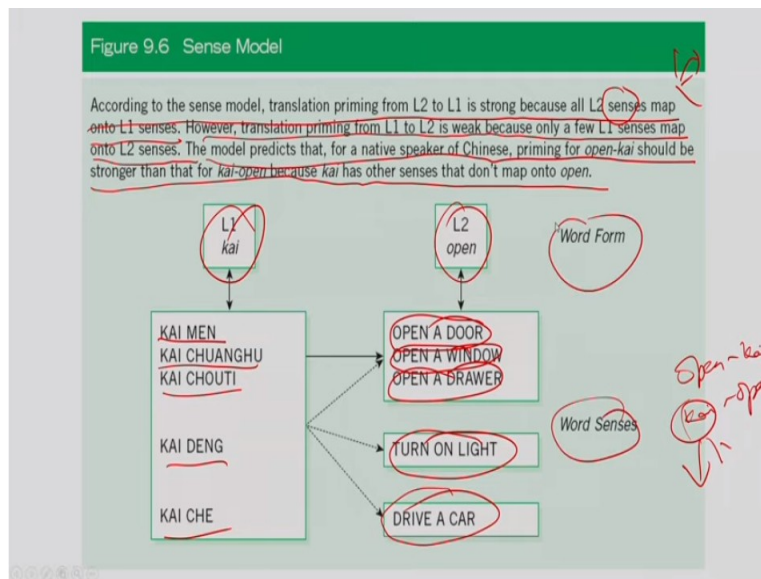
And so this is what the sense model actually says. Now, according to the sense model, translation priming from L2 to L1 is strong because all L2 sense map onto L1 senses. As I said, when I am activating a word there are different senses which are activated. Now however translational priming from L1 to L2 is weak because on the few L1 senses map onto the L2 senses.

The model predicts that for native speakers of Chinese, priming for open, which is kai, should be stronger than for kai open because kai has other senses that do not map into open. So open would mean kai if I am doing this priming, but if I am doing kai to open priming, it is difficult because kai can lead to all other different kinds of words.

So, this is kai, kai men, kai chuanghu, kai chouti, kai deng, kai che, but if I am looking at L2 open, this is basically, open the door, open the window, open the drawer, turn on the light, so turn on is one thing and drive a car. This is word senses and these are the word forms which are there.

Figure 9.7 Dragons

In a picture-naming task, Chinese-English bilinguals are faster to respond *lóng* when they see the Chinese-typical image, and they're faster to respond *dragon* when they see the Western-typical image.

(a) Chinese-typical image of a dragon

(b) Western-typical image of a dragon

Now in a picture naming task, Chinese English bilingual are faster to respond to long when they see the typical Chinese image and they are faster to respond to dragon when they see the western typical image. Now, this is Chinese typical image, this is dragon, Western typical image of a dragon and so depending on which, if it is Chinese English, and which kind of image will lead to which kind of priming out there.

So that brings an end to this particular section or this particular lecture. Now I will do quick review of what we actually did in this lecture. So we started off by looking at what is bilingualism and what are the different kind of bilingual properties, which are there and we looked at how languages are explained or how languages and dialects they vary and how bilingualism is multi-generational and so how does bilingual fit into the world.

We also looked at the property of codeswitching, which is use by bilingual and so what are the properties of that and when it is beneficial when it is not and we looked at how language choice is done by bilinguals. We also looked at and looked at how bilingualism provides an identity to people from the bilingual field. Next, we looked at how the bilingual mind is organized and so the most prominent theory says that there are two different language system lexicons and they are connected at the conceptual level.

So, we looked at how they are connected how cross language priming and eye tracking experiments explain this. We also looked at what are transitional equivalents and what is mutual exclusivity and what evidence they provide to the fact that they are either there is a single or a multiple lexicon for bilingualism. We looked at the link between the two

language in terms of cognates, which are words having similar meaning in both the forms and in terms of interlingual homographs.

We also looked at what are the disadvantage of being a bilingual, so we compared with monolinguals, what are the disadvantages of being a bilingual and we looked at in terms of the lexical decision task, semantic categorization task, and the tip of the tongue phenomenon. We also looked at how does this bilingual disadvantage come from, in terms of the weak link hypothesis and interference hypothesis.

And then we finally looked at something called the revised hierarchical model of bilingualism, which explain the difference between by balanced and nonbalanced bilinguals. And we looked at how the sense model explains this disadvantage in bilingualism in terms of how the two lexicons, the first language lexicon, the second language lexicons are combined together. When we meet next here, we will continue the discussion and take it through into looking at cognitive factors in bilingualism, but till we do that and meet next, it is thank you and goodbye from here.