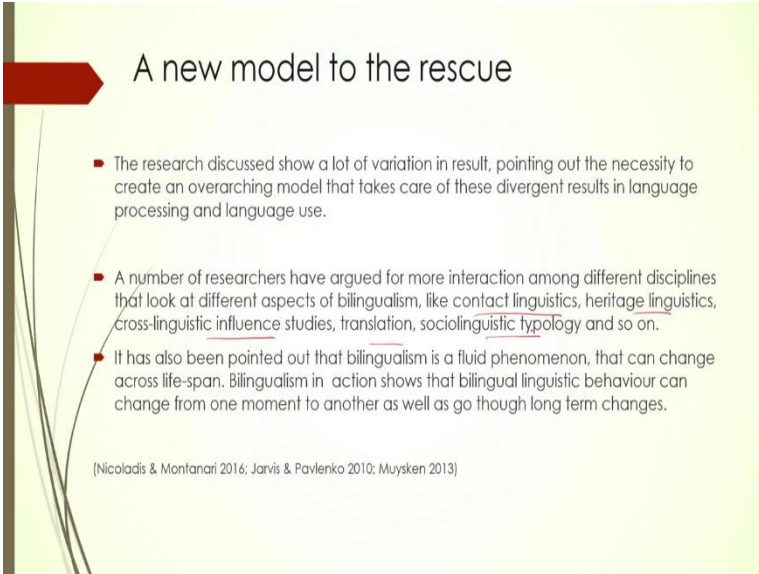


Bilingualism: A cognitive and psycholinguistic perspective
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Part - 02
Module - 08
Lecture - 20
New models. Applied areas

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A new model to the rescue

- The research discussed show a lot of variation in result, pointing out the necessity to create an overarching model that takes care of these divergent results in language processing and language use.
- A number of researchers have argued for more interaction among different disciplines that look at different aspects of bilingualism, like contact linguistics, heritage linguistics, cross-linguistic influence studies, translation, sociolinguistic typology and so on.
- It has also been pointed out that bilingualism is a fluid phenomenon, that can change across life-span. Bilingualism in action shows that bilingual linguistic behaviour can change from one moment to another as well as go through long term changes.

[Nicoladis & Montanari 2016; Jarvis & Pavlenko 2010; Muysken 2013]

Hello and welcome back. We are in the last module, module 8. And in this module, we are looking at the recent developments in bilingualism research. From module 1 to 7, we have discussed the various background mechanisms as well as empirical studies that look at the various processes in terms of bilingual population, in terms of various factors responsible for the differences in terms of bilingual language processing.

So, at the end of it, now we are looking at where the field is going, as in what is the future of this field? So, in terms of that, we have already discussed a few issues. Today, we will start with a new model that has been proposed in terms of bilingual language processing, not only bilingual language processing, multiple language processing.

Now, if you recall, in terms of bilingual language processing, there were a lot of disparity or let say a lot of different results that are available in the literature, in terms of whether the bilingual advantage holds or it does not hold, what are the differences in terms of

different populations and so on. And then we also saw that from that kind of divergent outcome, now we have come to the situation where researchers are proposing different variables to be taken into account.

So, one of that is that bilingual population cannot be understood as a homogeneous group. So, there are many new variables, new ways of looking at the bilingual processing that has come into the forefront now. In that vein, we will today discuss the new model that has tried to make sense.

So, now because of all of these divergent results, now the researchers have started looking at bilingualism, taking into account a lot of other factors, which may not be necessarily part of the psycholinguistics of bilingualism, let us say. So, when you talk about cognitive and psycholinguistic aspect of bilingualism, there are many things that are probably being going unnoticed, that is what the current finding, current feeling is.

So, in that vein, different aspects of bilingualism like contact linguistics, heritage linguistics, cross-linguistic influence studies, translation, sociolinguistic typology, these are some other areas that have now been proposed as you know as ally. So, when we when we are looking at bilingual language processing, we should not and we probably cannot anymore ignore these sub-domains of a language studies where these other factors are also taken into account.

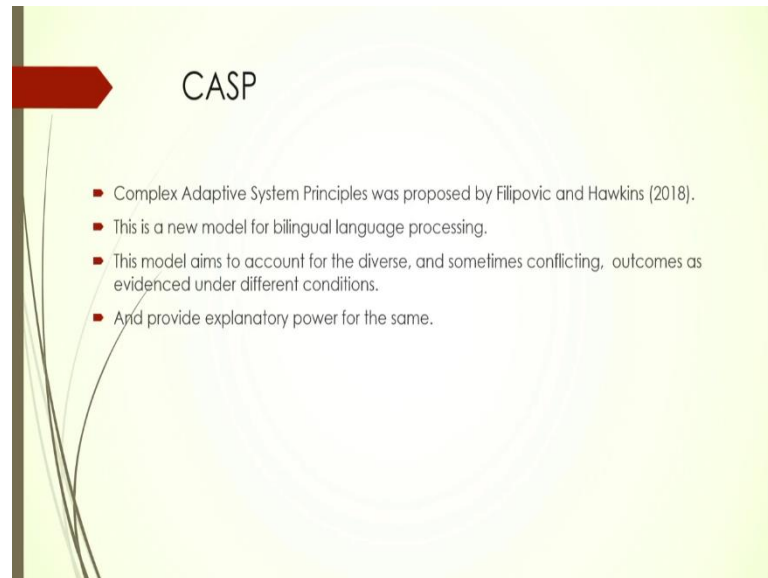
So, another thing about this in the background of this model is that the it has been pointed out quite often now that, bilingualism is not a static phenomenon, it is a fluid phenomenon it because a bilingual a language A and B may not be the same person as the bilingual in C and D languages.

That said, even within the same A and B bilingualism, there are a number of variables, a number of contributing factors that make it a fluid mechanism. Even within the same bilingual person, the status of bilingualism in terms of the in mutual interference of the two languages can also change.

So, it is fluid in all these three different or probably there are more ways of differences that we can think of. So, bilingualism not only changes across lifespan, but also some of these studies typically bilingualism in action, the studies that are together called

bilingualism in action, they show that a bilingual's linguistic behaviour can change from one moment to another as well as go through long-term changes.

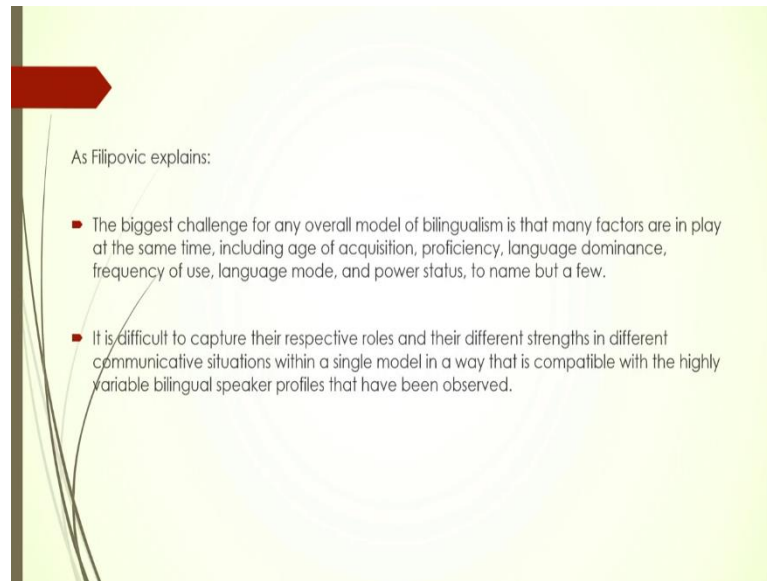
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So, you get the feel that it is a very very complex phenomenon to look at and hence we need an overarching sort of a model that takes care of all of these possibilities and may tries to make sense of the processing the results that are coming out. And also it should be able to provide enough explanatory power for the same process. So, that is the idea and keeping this in the background, Complex Adaptive System Principle or CASP in short was proposed by Filipovic and Hawkins in 2018.

This was built up on their previous model by the same name which they proposed in 2013 on second language acquisition. So, this is an updated version of the same and this tries to make sense of the bilingual linguistic behaviour in various by giving an overarching set of principles.

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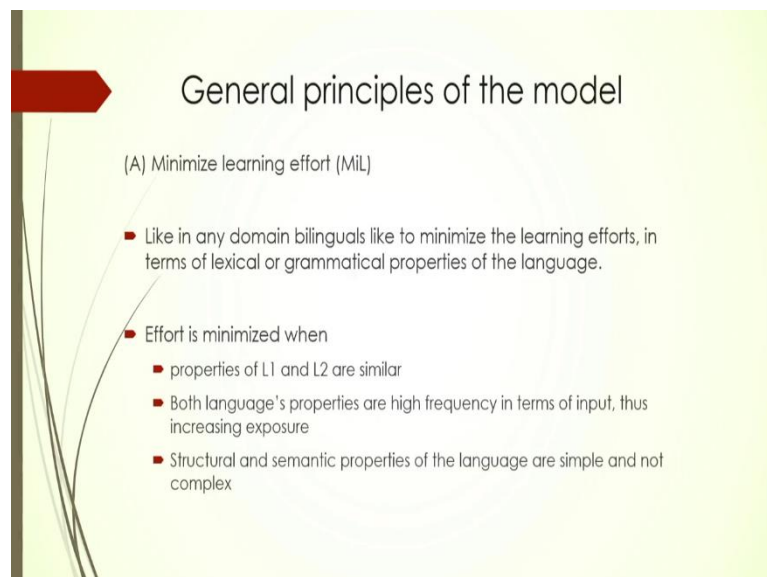


As Filipovic explains:

- The biggest challenge for any overall model of bilingualism is that many factors are in play at the same time, including age of acquisition, proficiency, language dominance, frequency of use, language mode, and power status, to name but a few.
- It is difficult to capture their respective roles and their different strengths in different communicative situations within a single model in a way that is compatible with the highly variable bilingual speaker profiles that have been observed.

So, what are those principles? accha before we go to the principles, the underlying logic that Filipovic has explained in his in her book - is that the biggest challenge for any overall model is that there are so many factors at play at any given point of time and many of them may not be always psycholinguistic properties also. So, power status, for example, frequency of use and so on and so forth.

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General principles of the model

(A) Minimize learning effort (MiL)

- Like in any domain bilinguals like to minimize the learning efforts, in terms of lexical or grammatical properties of the language.
- Effort is minimized when
 - properties of L1 and L2 are similar
 - Both language's properties are high frequency in terms of input, thus increasing exposure
 - Structural and semantic properties of the language are simple and not complex

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(B) Minimize processing effort (MIP)

- Bilinguals prefer to minimize efforts at processing.
- Complex grammatical properties are not only harder to learn but harder to access as well.
- As a result, 'maximize structurally and semantically simpler properties' is used.
- Hence simpler properties are more readily learned and used.
- Maximize Frequently Occurring Properties drives the acquisition and use of more frequent forms in both languages more than less frequent ones.

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(C) Maximize Expressive Power (MaE)

- This principle stands in partial opposition to principles (A) and (B), since achieving full expressive power requires sometimes more and sometimes less processing effort, e.g. more complex as well simpler expressions, and less frequent ones, contra (B). Complex and less frequent items are also harder to learn, contra (A).

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(D) Maximize Efficiency in Communication (MaC)

- a. Communication is efficient when the message intended by S is delivered to H in rapid time and with minimal processing effort;
- b. Acts of communication between S and H are generally optimally efficient; those that are not occur in proportion to their degree of efficiency.
- With respect to bilingualism, an efficiency approach will describe not only its role in communication, as just illustrated, but also, and primarily, the relationship between different linguistic systems in the bilingual mind and their observable outputs in communication. It is our contention that bilinguals strive for an efficient resolution of two grammars in one mind.

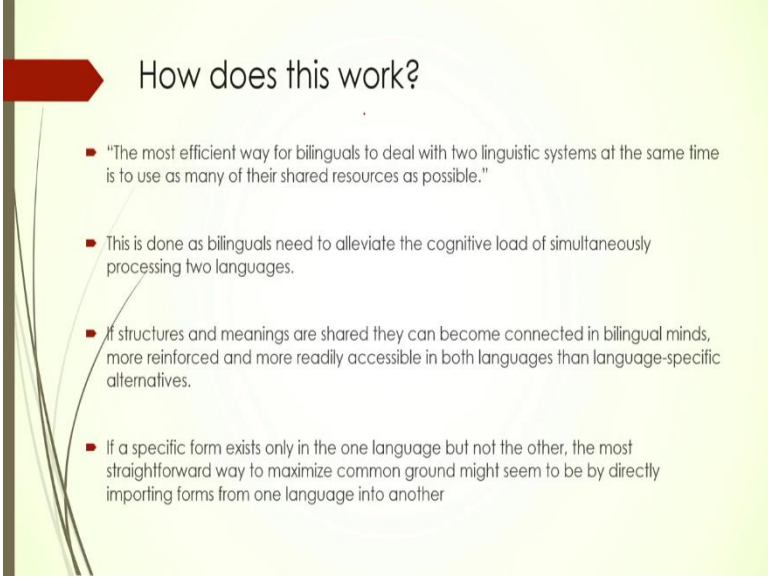
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(E) Maximize Common Ground (MCG)

- Bilingual learners and speakers maximize common grammatical and lexical representations and their associated processing mechanisms in two languages
- (i) if L1a and L1b share a given construction, grammatical rule or word meaning, and associated processing mechanisms, then these shared entities will be used more frequently in both languages. (These entities may be the preferred or majority pattern in one language and a minority or dispreferred in the other, but they will still be the pattern of choice in the bilingual's use of both languages.)
- (ii) if L1a and L1b do not share a given construction, grammatical rule or word meaning, and associated processing mechanisms, then common ground will be created by introducing entities from one language into the other. New shared entities will be introduced wherever possible within the constraints of current grammatical and usage conventions for the relevant language
- (iii) any violations of a grammatical or usage convention in L1a or L1b that occur when maximizing common ground will be in proportion to the environmental and psycholinguistic factors

So, it is very difficult to capture all of that, but this is what they have tried to do. So, there are few principles general principles as they call one of them is called minimising learning effort, then minimizing processing effort, maximizing expressive power, maximizing efficiency in communication and doing all of that by maximizing common ground.

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How does this work?

- "The most efficient way for bilinguals to deal with two linguistic systems at the same time is to use as many of their shared resources as possible."
- This is done as bilinguals need to alleviate the cognitive load of simultaneously processing two languages.
- If structures and meanings are shared they can become connected in bilingual minds, more reinforced and more readily accessible in both languages than language-specific alternatives.
- If a specific form exists only in the one language but not the other, the most straightforward way to maximize common ground might seem to be by directly importing forms from one language into another

These are the five principles that they have proposed. So, minimizing the effort to learn and process while maximizing the output. So, basically optimizing the entire input and output system. So, how does this work? The most efficient way for bilinguals as per Filipovic is to deal with two linguistic systems at the same time. Now, when we deal with two linguistic system, this automatically adds to the cognitive load.

Now, as a result of which they have to take care of added cognitive load with the similar kind of and the shared resources. Resources are the are shared, the human brain remains the same person, but the same brain has to take care of two different systems. So, as a result of which the structures and meanings that are shared between the two languages can become connected in the bilingual mind. This is as per the proposal of the model.

So, when there are meanings and structures which are similar meaning the languages that are closer, in that case what happens that the systems get connected in the mind, they get more reinforced and more readily accessible in both the languages. This is why this is how they explain the findings where, you see differences between languages which are close as opposed to languages which are genetically distant.

Similarly, if a specific form exists only in one language, but not in the other, what happens then? So, the most straightforward way to maximize common ground in that case would be to transfer the property of one language into the other. So, this is how the model tries

to make sense of the divergent results. We will not get into the details of these, references are there in the end where you can look up.

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Cognitive approach for language teaching and learning

- In second/foreign language (L2) learning, the instruction methods have always been a matter of discussions.
- Some common questions :
 - What aspect of language to be taught?
 - What should be the approach for pedagogy?
 - Is grammar teaching needed in the classroom? What kind and how much?
 - How is it taught and what do language instructors need to know?

Similarly, another domain that has become quite popular now and in fact, this is emerging as an alternative to the traditional teaching learning method of second language or third language or any new language for that matter is the cognitive approach to language teaching and learning.

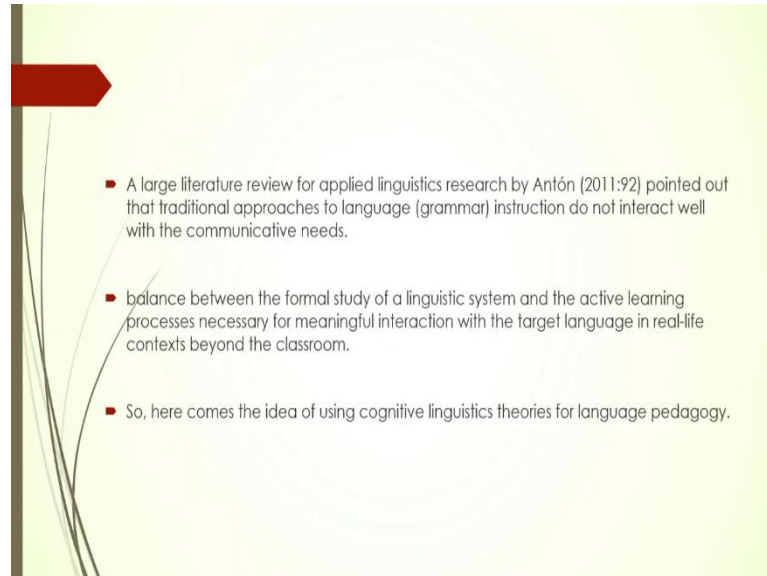
So, in if you recall when we discussed second language learning, we saw that there are lots of proposals and depending on the goal of the language teaching paradigm at a given point of time, the strategies of teaching have also been experimented with. So, there have been various kinds of experiment various kinds of teaching methods that have been used for taking care of various kinds of needs in terms of second language acquisition.

So, the various so, that brings to the forefront that idea that this has not been a very smooth sailing sort of a thing in this domain because there have been lots and lots of discussions disagreements as to what should be taught and how should it be taught. And whether we should teach grammar at all.

If we you should teach grammar, can we teach language without teaching grammar on the one hand? On the other hand is grammar teaching enough to teach a language? So, these

are some of the major questions that have been asked in these domain as with respect to the teaching strategies.

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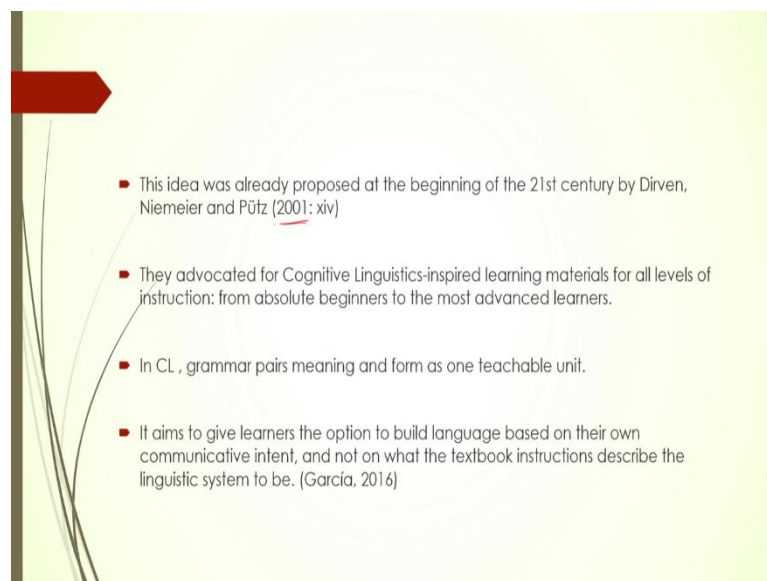


So, in a recent literature review for applied linguistics by Anton in 2011, they pointed out the traditional approaches for language teaching typically grammar teaching often does not take care of the communicative needs of the participants of the of the students. So, on the one hand you need to learn grammar on the other hand on one's communicative competence is also of utmost importance.

You will easily you can see this in the in real life when you have learnt a language through grammar book, how what are the difficulties that you face when you are going into the real life scenario. As a result of which nowadays real-life conversations and so on are incorporated.

So, a balance between the formal study of grammar as well as the processes near that are important for meaningful conversation in real life situations is a necessity. So, keeping this kind of a necessity in mind, another new way of teaching language has been proposed, which is the cognitive linguistic theory of language teaching.

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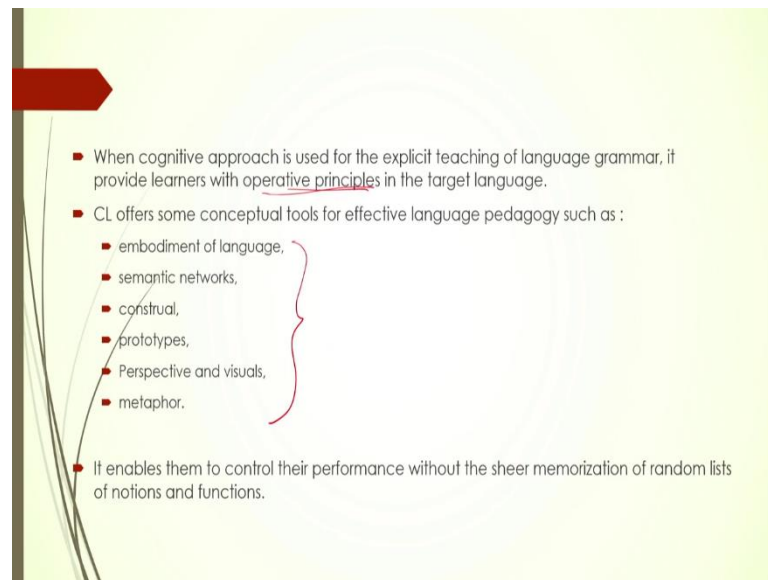


Now, this is not entirely new as because we are talking about the recent trends. This is not a very recently developed trend. This has been doing the rounds since quite some time now. It is been two decades. However, every few every now and then we have some new developments coming in.

So, basically what the earlier authors Dirven and others they proposed is that Cognitive Linguistics-inspired learning materials can be useful for learners from beginner to the advanced level learners. Typically what happens why we are mentioning this is depending on the level of learner as in if somebody is a beginner versus somebody is a mid level learner versus somebody who is an advanced learner, typically the teaching material differs. Teaching material the strategy of delivering the content and so on and the assessment strategies all of that differ. But using cognitive linguistic framework as a scaffold, if we use that for language teaching purposes, it is useful for all the different levels of learners. So, that is one of the positive sides of this particular framework.

So, it is because the interesting thing about this paradigm is that here grammar pairs meaning and form as one teachable unit. Basically in the cognitive linguistic framework the learners are not taught only the grammatical forms or that is the form or the meaning which is the content, but also the entire conceptualization pattern that underlies that form meaning mapping.

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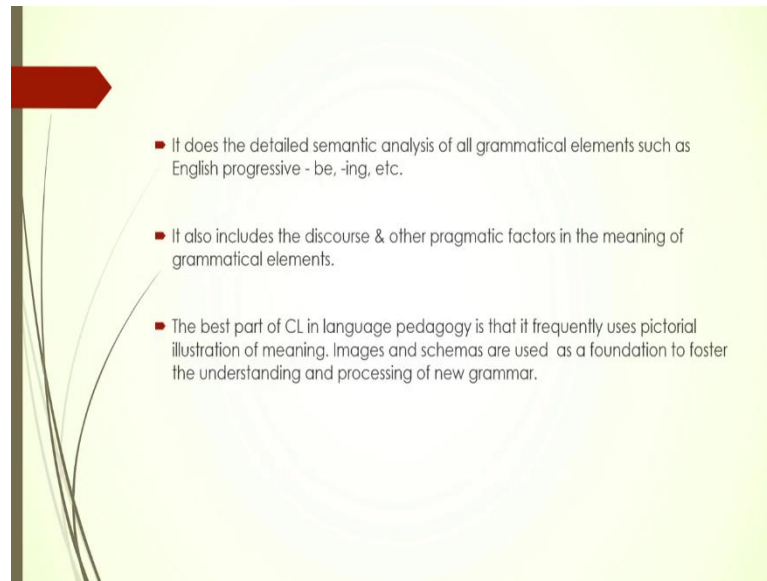
This is the most important point of departure in case of cognitive linguistic framework. So, basically what it does is this framework provides learners with operative principles. What is operative principle? In terms of cognitive linguistics, operative principles are the fundamental conceptualization processes that underlie the language linguistic forms and their meaning.

So, what you have in one language is not the end of it. What we see, what is the surface form is what typically gets taught in the in any kind of teaching learning environment. But cognitive linguistics takes a step backward and looks at the operating principles, looks at the underlying conceptualization pattern that gets reflected in the structure and meaning mapping. So, how do they do that?

These are the few principles through which language is looked at. So, you have embodiment of embodiment principle of language, semantic network, construal prototype image schema and so on, metaphor. So, you explaining a linguistic, particular linguistic structure through these principles makes it far more palatable to the learners.

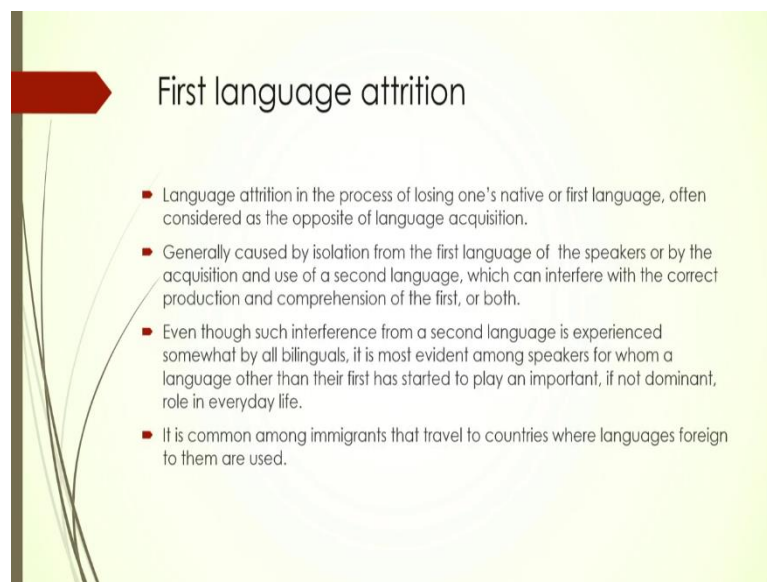
And they can easily make connections between their own language and then it is easy for them to make the bridge from L1 to L2. So, this is why it is considered a very useful tool to teach language with.

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So, it enables them to control their performance rather than having sheer memorization. Often we are used to giving grammatical rules to memorize, but cognitive linguistics just side steps all of that and looks at the ideas that are behind that.

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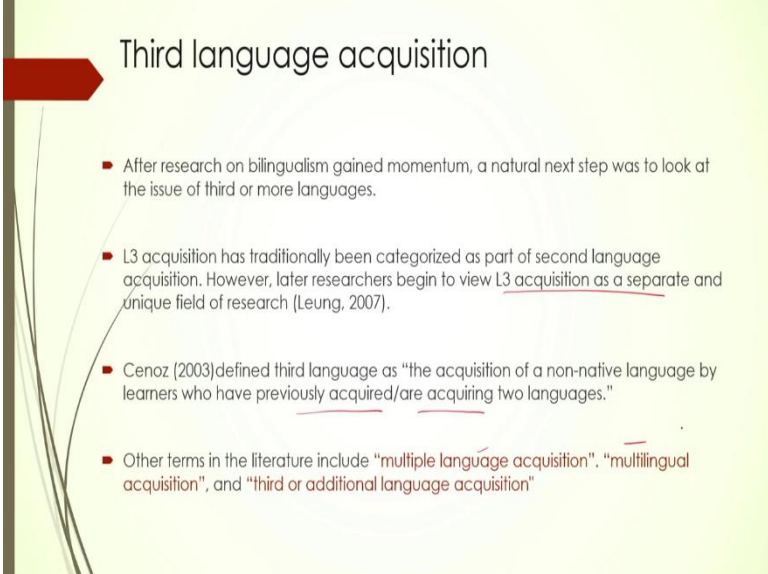
So, this is one important domain that is getting a lot of attention these days. In fact, there are also research going on in terms of using these frameworks using, for example, image schema or embodiment theory or the conceptual metaphor theory to teach language in the second language or third language in the digital domain as well. Digital domain where you

can teach yourself. It can be unsupervised learning as well. So, there are these possibilities that are now coming up in an interesting way.

Another area of current basic research is that of first language attrition. Attrition means when you have, when the speakers, when they learn a second language, chances are very often, if not always, the first language gets lost or let say the loyalty shifts. So, one depending on the language dominance, which language is dominant and how the demands on the language users are, sometimes chances are that first language attrition will be visible.

So, as a result of an automatic outcome of bilingualism research, first language attrition is also being looked at. Most importantly among immigrants with lot of mass migration across continents, nowadays this has become much more visible. So, immigrants that travel to countries where a foreign language is used as the most dominant language, first language very often gets sidelined.

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The slide is titled "Third language acquisition" and features a red arrow pointing to the right. It contains a list of four bullet points discussing the evolution of L3 research and its definition.

- After research on bilingualism gained momentum, a natural next step was to look at the issue of third or more languages.
- L3 acquisition has traditionally been categorized as part of second language acquisition. However, later researchers begin to view L3 acquisition as a separate and unique field of research (Leung, 2007).
- Cenoz (2003) defined third language as "the acquisition of a non-native language by learners who have previously acquired/are acquiring two languages."
- Other terms in the literature include "multiple language acquisition", "multilingual acquisition", and "third or additional language acquisition"

Similarly, once we have looked at bilingualism and you know a lot of research has already taken place, now the natural next step is to look at third language acquisition. So, the most interesting question that is being asked today is is L3 different, qualitatively different from L2.

So, traditionally L3 acquisition, third language acquisition was sort of bracketed with the second language acquisition, kind of considering that first language is different from the second language, but second and third languages may not be very different from each other.

Because of obviously, because first language is learnt within the critical period, second language may or may not be learnt within the critical period. So, there are qualitative differences that is already established. So, third language could also be clubbed. However, it is of late, now later researchers have started looking at L3 acquisition as a separate discipline, it is now emerging, but it is in its infancy.

So, there are various definition as to what is an L3. So, the acquisition of a non-native language by learners, who have already acquired or acquiring two languages; so, two languages are already in place. And then the language that you will learn, this is will this will be called third language acquisition. There are many other terms also utilized, multiple language acquisition, multiple acquisition so on.

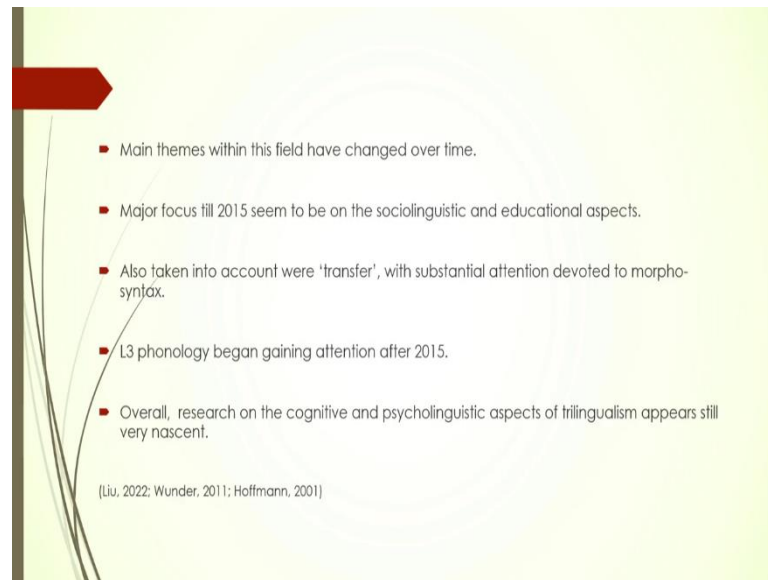
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And many, so many other definitions are also available, but that is not the main problem. The main issues that the bilingual trilingualism or third language acquisition are looking at is the are various aspects within that. So, looking at finer aspects within trilingualism, within third language acquisition, taking care of cultural and linguistic boundaries and various other domains are also being looked at now.

So, these are some of the areas based on conditions and the setting in which they acquired third language Hoffman has given, five different types of sub areas within trilingualism study.

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So, the main themes within L3 acquisition has changed over a period of time. In the initial stages, the studies primarily focused on sociolinguistic and educational aspects, but and while doing that a lot of focus was on transfer, this is something we have seen also in L2 acquisition, the transfer from L1 to L2 or L2 to L1 and so on, same kind of focus has been there in L3 also.

However, a very important change started happening around 2015. So, post 2015, we see a new domain in this area, which is L3 phonology. So, L3 phonology has emerged as another domain of research within this. However, there are still, the work still is in its infancy, it is still a new discipline. So, research on cognitive and psycholinguistic aspects are still not that prevalent or it has not yet become at par with bilingualism studies.

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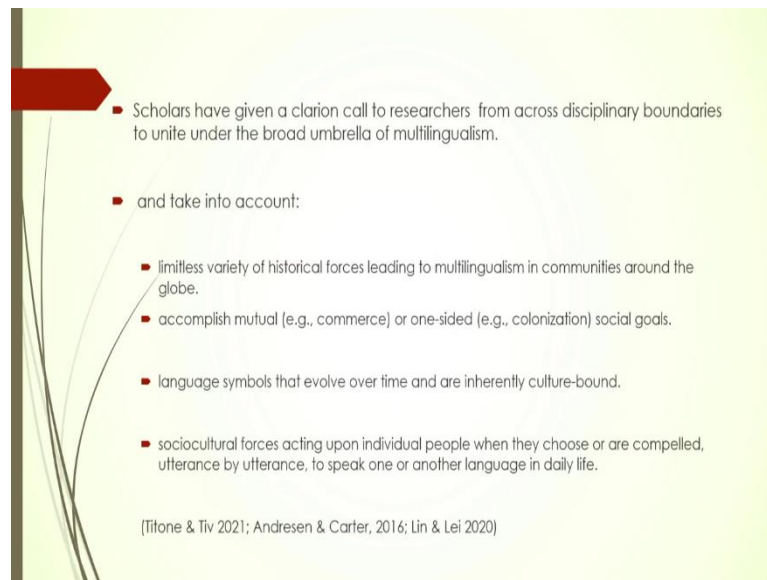
Multilingualism

- Rapid growth of transnational interactions has seen an equivalent growth in multilingualism.
- Multilingualism is a living, breathing, and ever-evolving phenomenon.
- Last two decades of bilingualism and multilingualism studies have taken a definite turn towards cognitive and psychological reality of the phenomenon.
- Despite the obvious role played by socioecological forces in shaping human experience of multilingualism.
- theoretical and empirical efforts to characterize psycholinguistic processes in adults routinely ignore a social view of language, notwithstanding frequent allusions to "contextual factors".

So, but it is going there. And then once you have taken care of bilingualism, trilingualism, now the natural next step will be multilingualism. So, not only that, a lot of transnational interactions have become the norm of the times now, the times we are living in transnational and interactions are very, very common; as a result of which multilingualism seen is seen now even in the traditional monolingual countries now as a breathable, breathing, living and ever evolving phenomenon.

So, we have already seen that the last couple of decades, bilingualism and multilingualism studies have taken a decidedly cognitive and psycholinguistic turn. However, the social ecological forces have often been ignored, which we have already discussed in terms of bilingualism and the same is there for multilingualism as well. So, primarily theoretical and empirical efforts to characterize psycholinguistic processes, the social view gets ignored.

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So, that is where again in this case also, there is a lot of discussion going on as to how and in which way we can incorporate the social aspect of multilingualism into the psycholinguistics of it. So, there are many researchers who are now giving a call for interdisciplinary studies looking at multilingualism from as diverse areas as possible.

So, in terms of diversity, we have we are looking at historical forces leading to multilingualism, then the kind of social goals which brought the communities together. Sometimes the social goals could be mutual, sometimes it could be one-sided. One sided social goals are typically the hallmark of colonization, but today there are a lot of mutually mutual goals are there when transnational companies are coming up, lots of interncontent intercontinental cooperation and so on. So, that is another factor.

Similarly, the how language systems evolve over time and how they are essentially culture bound this is another domain that has been pointed out that we are not looking at or we are not taking seriously enough. And then socio-cultural forces that either force participants, people to be multilingual or sometimes they do it by, you know, voluntarily.

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So, all of these factors are very important factors and that should be taken into account. So, in a nutshell, what the gist of the matter is that the researchers are calling for incorporating neuro-cognitive expertise on the one hand and socio-linguistic and socio-cultural context to come together. So, not only we should, of course, we must look at the neuro-cognitive mechanism but at the same time the socio-linguistic and socio-cultural theories should be also accounted for.

So, basically there is a name given for it. It is called systems framework, socially situated systems framework, which is the proposed framework. This is one area. Another is the also translanguaging, heteroglossic language ideologies, etcetera also emerging areas within multilingualism studies.

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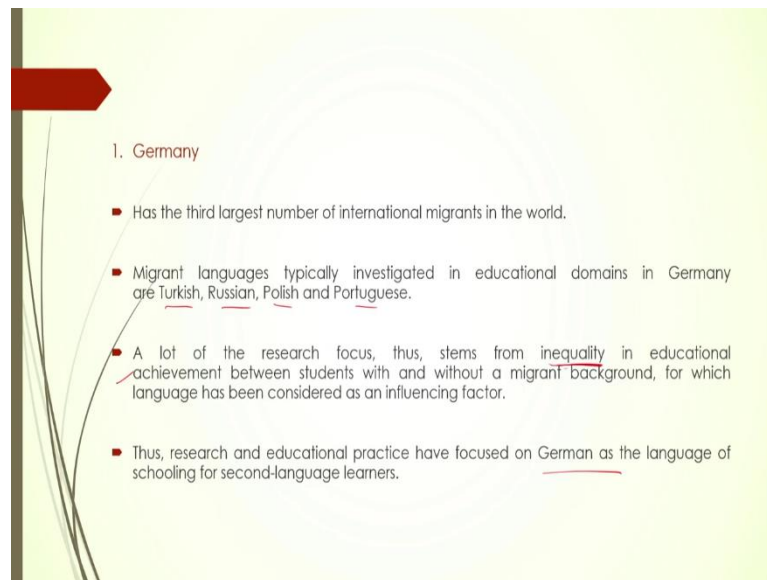


Multilingualism has become a very important factor in education also, multilingual education has become a very common factor across the world, again due to the same kind of motivating factors, whether it is large-level migration or lots of intercontinental, intercultural, inter-country cooperation in terms of trade and commerce and so on. So, education, multilingualism in terms of education is also an important factor.

So, this not only poses a challenge, but also is an opportunity for all kinds of education system. Challenge, because when you have diverse classroom, where students represent different languages, how what exactly should be the ideal method of teaching that group is, of course, certainly a very big challenge. But at the same time, this might also prove to be an opportunity.

So, it is again emerging as a very interesting area of research, not only within linguistics, but across, but also in terms of other domains. So, in order to meet the challenges and draw on the opportunities of linguistically diverse societies is what the research is now looking at. So, some European countries which we will discuss now, so, how they have tackled with this.

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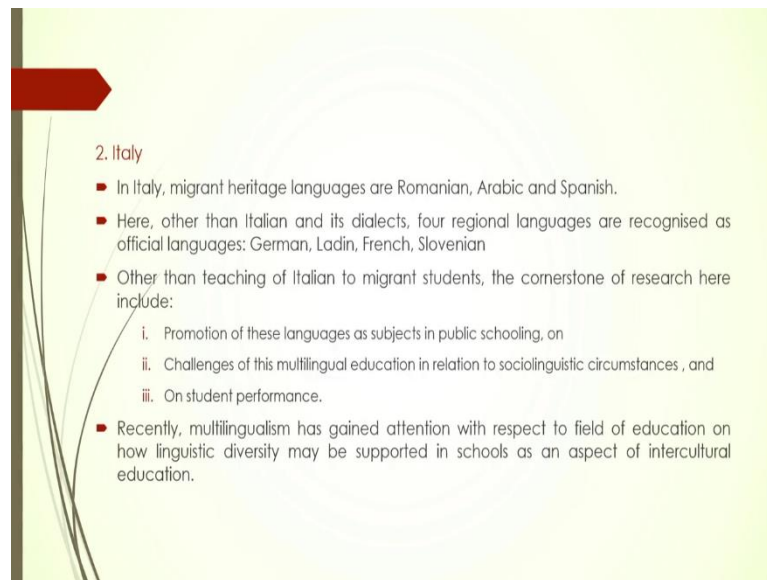


So, in case of Germany, for example, this has the third largest number of international migrants in the world. And there is a the variety is very interesting. So, you have Turkish, Russian, Polish and Portuguese migrants into the country and as a result, the classroom scenario is very quite diverse. And that automatically is visible in terms of inequality in educational achievement between students.

So, auto already it becomes a complex scenario, migration could be connected to or diversity in the classroom could be connected to different outcomes, different outcomes in terms of achievement in education or, but this could be due to migration, but non-migrant population also.

So, there have been many studies looking at all these variables within this scenario. So, research in this domain typically have focused on German as the language of schooling. So, if German is the language of schooling, how does it affect the various linguistic groups that are there, the diverse groups that are represented in the classroom?

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2. Italy

- In Italy, migrant heritage languages are Romanian, Arabic and Spanish.
- Here, other than Italian and its dialects, four regional languages are recognised as official languages: German, Ladin, French, Slovenian
- Other than teaching of Italian to migrant students, the cornerstone of research here include:
 - i. Promotion of these languages as subjects in public schooling, on
 - ii. Challenges of this multilingual education in relation to sociolinguistic circumstances , and
 - iii. On student performance.
- Recently, multilingualism has gained attention with respect to field of education on how linguistic diversity may be supported in schools as an aspect of intercultural education.

So, that is the German case. Moving on to Italy, the Italy also has a large number of immigrant population. So, Romanian, Arabic and Spanish speaking people are there so, in that case also here, other than Italian and its dialects, four other regional languages are also there, which are official languages. So, you see how the scenario is quite diverse and essentially multilingual.

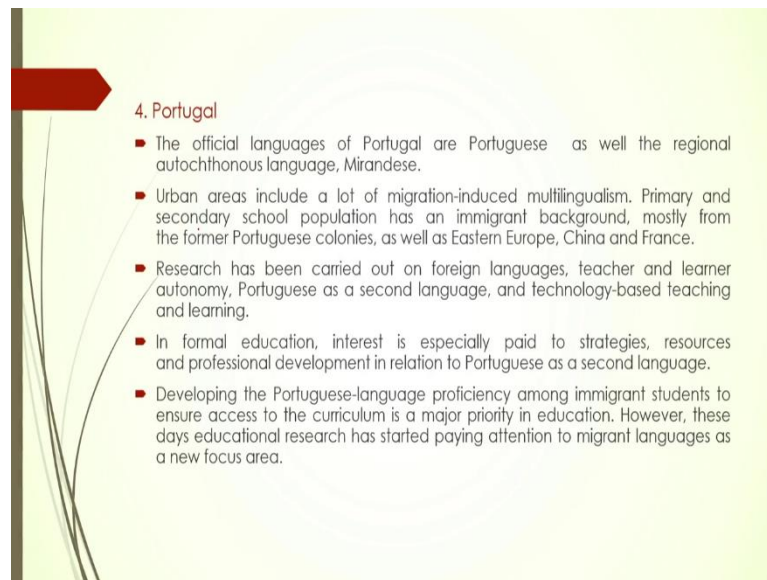
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3. Netherlands

- Around 25% of the population has a migrant background, with Papiamentu, Turkish, Arabic and Polish being widely spoken by their respective communities.
- Frisian is an officially recognised minority language and is part of the education system in Friesland. However, dialects such as Limburgish and Low-Saxon currently struggle for more inclusion in education.
- The focus of language education is mostly still on the acquisition of English as a foreign language in early education or on Dutch-English bilingual programmes.

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4. Portugal

- The official languages of Portugal are Portuguese as well as the regional autochthonous language, Mirandese.
- Urban areas include a lot of migration-induced multilingualism. Primary and secondary school population has an immigrant background, mostly from the former Portuguese colonies, as well as Eastern Europe, China and France.
- Research has been carried out on foreign languages, teacher and learner autonomy, Portuguese as a second language, and technology-based teaching and learning.
- In formal education, interest is especially paid to strategies, resources and professional development in relation to Portuguese as a second language.
- Developing the Portuguese-language proficiency among immigrant students to ensure access to the curriculum is a major priority in education. However, these days educational research has started paying attention to migrant languages as a new focus area.

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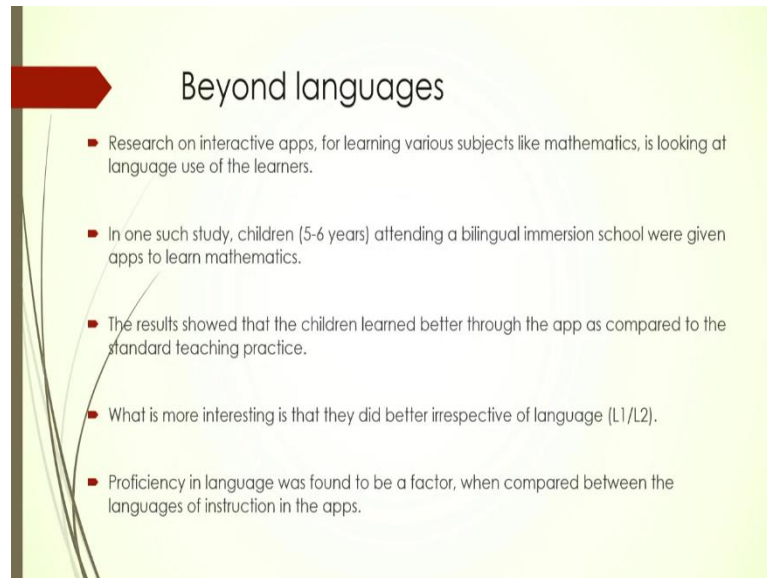
5. Spain

- The regional languages with official recognition are Basque, Galician and Catalan, whereas Aragonese, Asturian and Leonese are recognised, though not official, autochthonous minority languages.
- Therefore, speakers of regional languages in Spain are mostly bi- or multilingual, and foreign languages such as English, French, Portuguese are acquired in schools.
- The language policy and research in Spain is primarily focused on the three regional languages, Basque, Galician and Catalan.
- These three are both school subjects as well as medium of instruction in the respective regions.
- While many migrants speak Spanish as their first language, official figures indicate that 7% of immigrants come from non-Spanish speaking countries (mainly Morocco and Romania).
- Most of the recent research on language education is focused on the benefits of CLIL for teaching foreign languages or the relationships between regional languages, multilingualism, etc.

(See also: Duarte et al., 2020)

So, in that case, as a result of all these kind of a background, Italian, the research from Italy also is focusing a lot on multilingual education. Similarly, for Netherlands, because it has 25 percent of the population has migrant background. Portugal again similar kind of scenario, Spain.

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The slide features a light green background with a dark red arrow pointing right at the top left. The title 'Beyond languages' is centered at the top. Below the title is a list of five bullet points, each preceded by a small red square. The text is in a dark grey font.

Beyond languages

- Research on interactive apps, for learning various subjects like mathematics, is looking at language use of the learners.
- In one such study, children (5-6 years) attending a bilingual immersion school were given apps to learn mathematics.
- The results showed that the children learned better through the app as compared to the standard teaching practice.
- What is more interesting is that they did better irrespective of language (L1/L2).
- Proficiency in language was found to be a factor, when compared between the languages of instruction in the apps.

So, many of these European countries have now taken up multilingual education, multilingualism in a big way to understand, how these different factors have an impact on the educational outcome as well as linguistic outcome. Moving beyond languages, languages as we have seen in throughout this course does not remain the impact of language or speaking one or two languages, does not remain confined to language alone. It also affects many other domains of mental behavior.

So, one of them is today is the age of apps. So, the virtual learning is a very common thing these days, a lot of virtual learning platforms are there for children, teaching math science and so on. So, this has emerged again as another interesting domain of research as to how if there are connections between bilingual education and education through apps and so on.

So, this is one such study that we will discuss. In one such study, children who were quite young, 5 to 6 years, they are attending bilingual immersion schools and they were also given apps to learn mathematics. So, they on the one hand they have traditional teaching going on, on the other hand they were also given apps to study mathematics and learn from them. So, there are two interesting outcomes of this research that has been reported.

The results showed that children learned better through app, as compared to the standard teaching practice, ok. There might be multiple reasons for it. One of them is the content remains standardized as opposed to you know, classroom teaching or standard teaching

practices may be open to varieties depending on the teacher and teacher's qualification, attitude and so on.

But in case of app that does not happen, the content and the content delivery mechanism remain the same and there are many others. So, the finding is that through app the children were learning mathematics much better as opposed to in the classroom. And another interesting thing is that they did better whether the language of the app was L1 or L2.

The app was the delivered the content both in the L1 and in the L2. So, what they found out was the performance the learning now was better in app based learning whether it is in L1 or it is in L2. So, that is one and proficiency of the language in the language. So, how proficient one is in the L1 or L2 had a correlation with the outcome.

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So, if you are better higher proficient outcome will be better. So, studies like this basically brings out the possibilities of new grounds of research linking bilingual educational theories to educational apps. In fact, as I just said educational apps and social robots and so on are now a big area of research and we are trying researchers are trying to come out with come up with the best in the domain.

So, in that domain while doing that we need this kind of research that is going on. So, findings can be extended to different settings like controlled learning, real world learning and bilingual immersion setting and so on.

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Applying what we learnt.

- Research for the sake of research is a good idea
- But having an applied domain for the same research is always a little better.
- Few areas of practical application where cognitive and psycholinguistic knowledge of bilingualism can be utilized:
 - Language teaching
 - Translation ✓
 - Intercultural communication
 - Marketing etc. .

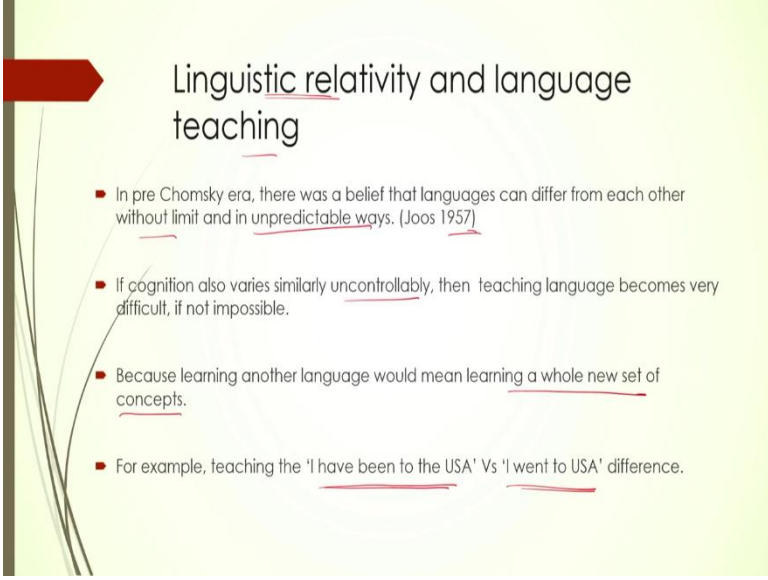
So, this is another area. So, these were the areas of current basic research. Now, in the application oriented research also we see some interesting trends when we talk about the latest areas of interesting research. So, research for the sake of research is a good idea which is what we call basic research. But having an applied domain is much better.

I mean if you have if your research has an application in the real world nothing like it. So, in keeping that in mind a few areas of practical application in where cognitive and psycholinguistic knowledge of bilingualism can be used. So, there are of course, many other domains, but as we are focused in on cognitive and psycholinguistic aspect of bilingualism, we will look at some of these.

Of course, this is not an exhaustive list, but these are some of the domains that are that are now throwing up interesting research output. One of them is language teaching as we have just seen and translation. Translation studies have been popular for a long time. Translation studies are relevant in case of literature, in case of linguistics and as well as social understanding of language use and so on. So, this is also getting influenced by the findings in bilingualism research.

Intercultural communication we have discussed some of it in the beginning of the course. This is also another domain where understanding of language and cognition interfaces in various cases are now informing the results, informing the newer research and then last, but not the least marketing.

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The slide features a light green background with a dark red arrow pointing right at the top left. The title 'Linguistic relativity and language teaching' is centered at the top. Below the title, there are four bullet points, each with a red square icon. The text in the slide is underlined in several places.

Linguistic relativity and language teaching

- In pre Chomsky era, there was a belief that languages can differ from each other without limit and in unpredictable ways. (Joos 1957)
- If cognition also varies similarly uncontrollably, then teaching language becomes very difficult, if not impossible.
- Because learning another language would mean learning a whole new set of concepts.
- For example, teaching the 'I have been to the USA' Vs 'I went to USA' difference.

But as I just say this is not an exhaustive list, this is just a pointer as to how things are changing. So, language teaching in case of language teaching, one interesting combination has been linguistic relativity and language teaching looking at them together. So, the impact of understanding linguistic relativity, impact of research in linguistic relativity and if that can have a that can be utilized, if that knowledge can be utilized in terms of language teaching. So, that is the idea.

So, in the pre Chomskian era, there was a belief that languages can differ from each other without limit and in unpredictable ways. So, this was way back in 1957, the idea was given out that languages are different, of course, they are different, but they can be, the differences can be without limit and unpredictable.

So, if cognition also varies similarly uncontrollably, then teaching language becomes very difficult. So, languages are different, cognition is also very different and if their differences are as you know similar between them that is uncontrollable and without limit, then you can very easily imagine how difficult it will be to teach a language, a second language to somebody for whom these two languages are very different.

Because the cognition, the fundamental understanding itself will be different, because learning another language would mean learning a whole new set of concepts. This was pre-Chomskian understanding because languages are different and concepts are also different, cognition is also different.

So, for example, there have been a lot of studies in this line, some of it we have discussed in the language learning, second language acquisition module. So, for example, a structure like this, I have been to the USA versus I went to the USA. This kind of structural differences is not very easy to teach in to somebody who does not have that a person whose first language does not have this kind of differences. This was pre-Chomsky.

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So, post- Chomsky and after Chomsky the propagation of the idea of a strict separation between language and intentional conceptual system if I can refresh your memory a bit, Chomsky's ideas are and then of course, after Chomsky, Fodor and many others, they supported the idea of modularity, modularity of the human mind.

What does modularity of the human mind talk about? The brain is human mind is made of modules. Different Different modular settings are there for each purpose. So, language is one such module and because it is separate from other modules, it need not interact. So, as a result of which there is a strict separation as Chomsky proposed between language.

So, language in Chomskian terms is a computation system. So, symbol manipulation system, right. So, symbol manipulation system, it need not depend on the sociological or intentional and conceptual system. There are two different things all together. So, there is no, they do not talk to each other. This is the idea.

So, when you talk about this kind of a notion, this means that language teachers can ignore cognition all together and just focus on language. This is exactly what happened in the post Chomsky area era. When the language, teaching language was only for the sake of learning and teaching language and concepts were not given much of a focus, because concepts are un-varied.

The idea was that concepts across languages or across groups at the fundamental level, they remain un-varied, they remain universal. And language also has an universal aspect which is the universal grammar, only the surface structure changes. So, keeping this kind of a background in mind, a lot of language teaching methods have focused primarily on language and as somebody very interestingly put it ‘a nod in the direction of culture’.

Not really taking it as a variable, not really focusing on the cultural aspects or the intentional or the conceptual systems and so forth, primarily focusing on language, its structure, grammar and so on, with a nod towards the culture, ok this also exists sort of thing.

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On the other hand,

- If one accepts that speakers of different languages think differently, it entails:
 - second language teaching need to take into account what those differences are
 - Which of them are teachable
 - And how to teach them.
- For example, Japanese and English have different ways to categorize objects: by material and by shape.
- Now, teaching English to Japanese will need to address this issue.

On the other hand, if you look at linguistic relativity on the other hand, if one accepts the speakers of different languages, think differently, this is the idea of linguistic relativity that different languages because by virtue of the semantic structure difference. So, if you have for example, Hopi is the most famous example in this domain.

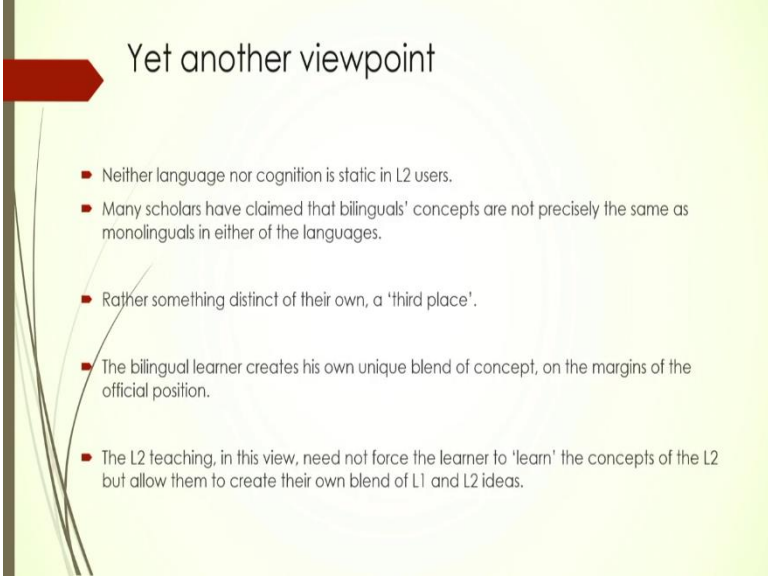
So, Hopi does not have grammatical a tense markers. So, that probably mean means that they do not understand the idea of time as we do, this is where the whole controversy actually started from. So, the basic idea was that languages are different speakers of different languages, think differently.

Now, if that is taken as a as true, then second language need to take into account what those differences are when you are teaching, keeping linguistic relativity as a fundamental backbone if you start creating a language-teaching mechanism, then what are the things to be taken into account? One is to find out where the differences are, which of them are teachable, not everything can be teachable. There are certain things that are that defy any teaching material and then how to teach them.

So, what are the differences? Which of them can be taught and how to teach them? So, for example, Japanese and English have different ways of categorizing objects, ok. So, Japanese categorize objects by material and English by shape. To give you a small example, the there have been many studies in this line. So, there are, we did discuss this in bilingual cognition module.

So, if there are plastic combs and wooden combs and you know plastic and a dump of wooden blocks and so on. And then if you ask the Japanese speakers to put similar things together, they will put everything wooden together and everything plastic together. But if you ask the English speakers, they will put combs together whether it is wooden comb, plastic comb and all other things separate. So, this is what we mean by different ways of categorizing objects.

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Yet another viewpoint

- Neither language nor cognition is static in L2 users.
- Many scholars have claimed that bilinguals' concepts are not precisely the same as monolinguals in either of the languages.
- Rather something distinct of their own, a 'third place'.
- The bilingual learner creates his own unique blend of concept, on the margins of the official position.
- The L2 teaching, in this view, need not force the learner to 'learn' the concepts of the L2 but allow them to create their own blend of L1 and L2 ideas.

Now, teaching English to Japanese learners will have to address this issue and this issue can be taught in terms of cognitive mechanisms and conceptual conceptualization pattern present in each language. That is one. Yet another viewpoint exists that neither language nor cognition is static. Neither cognition is just universal and static nor it is you know, it is different in each language. But neither language nor cognition is static in to L2 users.

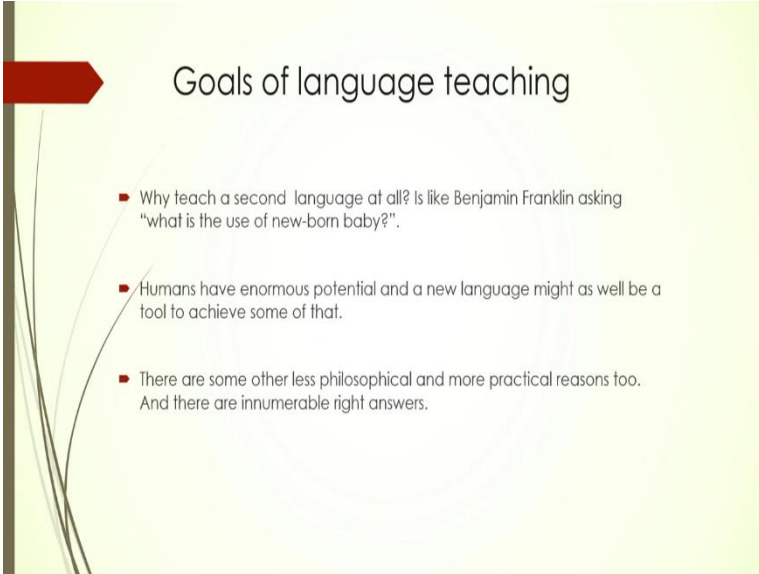
So, many scholars have now argued that concepts are for a bilingual brain, we have discussed this in bilingual cognition module that for a bilingual brain, what happens? Is the bilingual a combination of two monolinguals? Does it mean that he has you know concepts in L1 and concepts in L2 as separate things and how does it really work?

So, in that background, some researchers have proposed that bilinguals have something distinct of their own kind of a third place; where they blend, blend the concepts of L1 and the concepts of L2 and create a very different understanding of the same idea, which is different from the L1 speakers, L1 monolingual speakers as well as L2 monolingual speakers.

I would like to draw your attention to the Greek bi English bilingual study that we discussed in terms of the ble and galazzo color categories. So, this is what we mean by creating a third space. So, the bilingual learner creates his own unique blend of concept on the margins of the official position, official position as in the monolingual position on those concepts in each of the languages.

So, in this view, the L2 teaching need not force learners to learn how it is in L2, but just to just give the concepts, give the language forms and the underlying concepts and let them be, let them create their own concepts. So, that is another.

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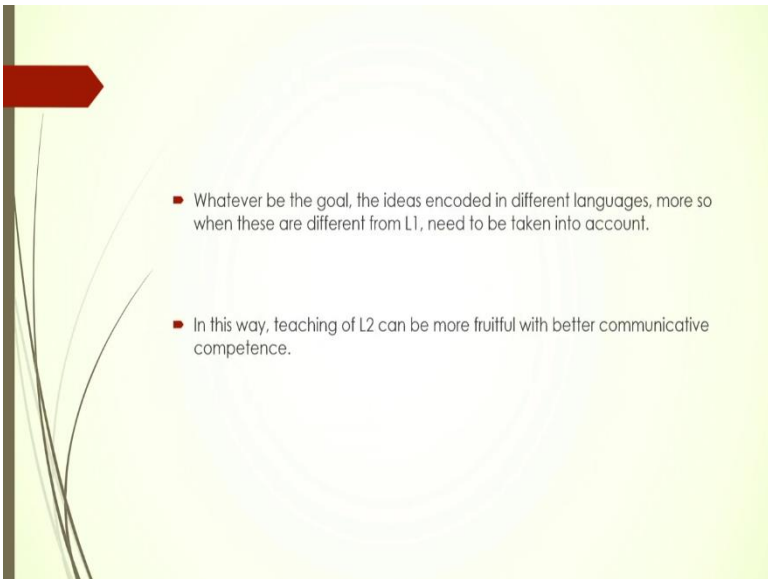
The slide features a light green background with a faint circular graphic. A dark red arrow points to the right from the left edge. The title 'Goals of language teaching' is centered at the top. Below it, three bullet points are listed.

Goals of language teaching

- Why teach a second language at all? Is like Benjamin Franklin asking "what is the use of new-born baby?".
- Humans have enormous potential and a new language might as well be a tool to achieve some of that.
- There are some other less philosophical and more practical reasons too. And there are innumerable right answers.

Now, this is; obviously, when you are talking about language teaching, goals of language teaching is also important. So, but then as we all know that language learning, learning a new language has enormous possibilities. So, that is actually not a very good question. There could be different kinds of reasons, from philosophical to more practical.

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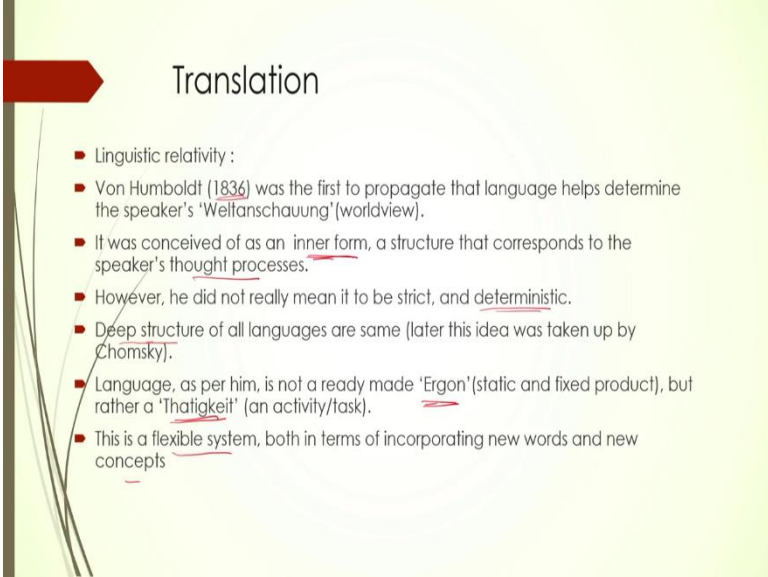


The slide features a light green background with a faint circular graphic. A dark red arrow points to the right from the left edge. Two bullet points are listed.

- Whatever be the goal, the ideas encoded in different languages, more so when these are different from L1, need to be taken into account.
- In this way, teaching of L2 can be more fruitful with better communicative competence.

But whatever the goal is, the fundamental thing still remains, fundamental fact still remains that the ideas the encoded in different languages more so, when they are different from the L1 need to be taken into account. Now, finding a way to tackle that problem, there have been many theories, many strategies. One, we have already discussed just now the cognitive linguistic framework.

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Translation

- Linguistic relativity :
- Von Humboldt (1836) was the first to propagate that language helps determine the speaker's 'Weltanschauung' (worldview).
- It was conceived of as an inner form, a structure that corresponds to the speaker's thought processes.
- However, he did not really mean it to be strict, and deterministic.
- Deep structure of all languages are same (later this idea was taken up by Chomsky).
- Language, as per him, is not a ready made 'Ergon' (static and fixed product), but rather a 'Thatigkeit' (an activity/task).
- This is a flexible system, both in terms of incorporating new words and new concepts

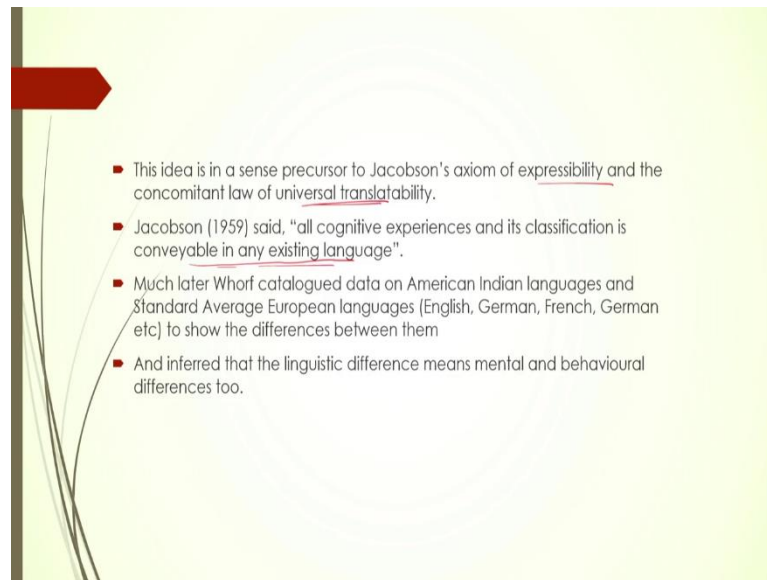
So, if we take that into account, teaching of L2 can be more fruitful. So, this is an applied domain where a lot of research is going on. Another area is that of translation. Now, translation again, has been looked at from linguistic relativity theories. So, Humboldt was one of the first to talk about then that language helps determine the speaker's worldview, 'Weltanschauung', he called it.

So, the language, the structure of the language has a role to play in terms of the person's worldview. So, it was conceived as an inner form, a structure that corresponds to the speaker's thought process. However, he did not mean it in a very strict sense. He did not really mean it to be deterministic which later on came to be, which later on was proposed as linguistic relativity hypothesis and the stronger version of the hypothesis. But Humboldt really did not mean it that way.

So, he called that there is a deep structure of all languages which are same. And this is the idea that Chomsky later on took up from there. So, language as per Humboldt is not a ready-made Ergon which is static and fixed product, but rather a Thatigkeit or an activity.

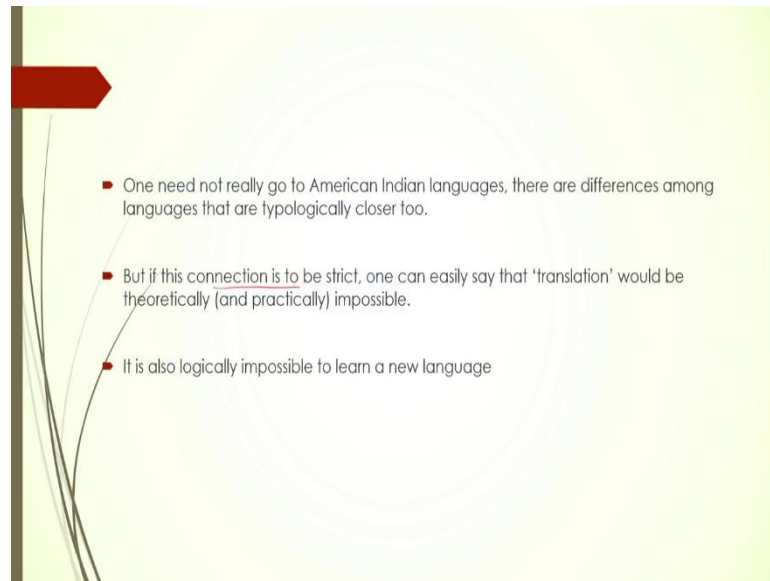
Basically, this is an activity so, constantly in flux. So, it is a flexible system, both in terms of incorporating new words and new concepts. So, there is an underlying, there is a deep structure, at the same time, there is the language is a process through which there is a lot of interconnection between the concept and the structure and things can change.

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So, this idea is a precursor to Jacobson's axiom of expressibility and the concomitant law of universal translatability, right. So, all cognitive experiences and its classification is conveyable in any existing language; meaning that we are going back to where we just discussed that concepts are certain concepts are universal, irrespective of the language that you speak. And as a result of which every concept is expressible in any language.

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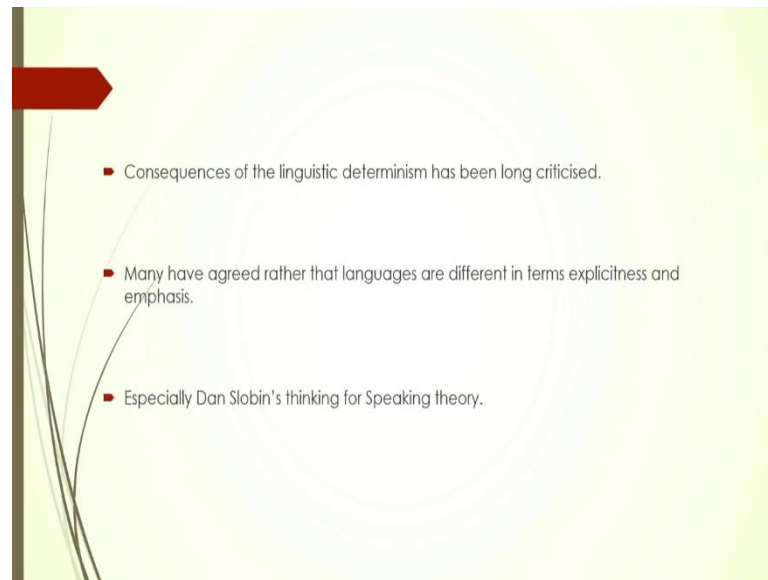
And later on, of course, Whorf did not agree and they talked about the relativity and all of that. So, the fundamental thing here to notice is that if the connection between language and thought are strict and they can be different from one language to another, then translation would be impossible, because the languages are different and concepts are also different. Then you cannot translate, there cannot be any equivalent concept from L1 to L2 to translate.

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So, it is also very difficult to learn a new language. So, this is impossible if you go by Whorfian theory of linguistic relativity translation also will be difficult. Just as language teaching, a second language teaching will be impossible, nearly impossible, similarly translation will be impossible.

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So, when switching from one language, language A to language B, the same person may not understand what he had just said in language A. That is the extent of the problem if we are taking linguistic relativity very strictly. So, a lot of new theories as a result have come up.

One of them is thinking for Speaking theory by of Dan Slobin which says that the difference occurs only before you start to speak till then it is, till then there is a lot of universality. So, as a result of which that the languages are different in terms of explicitness rather than fundamental conceptual level. So, languages and the differences that we see are at the level of explicitness and emphasis.

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Intercultural communication

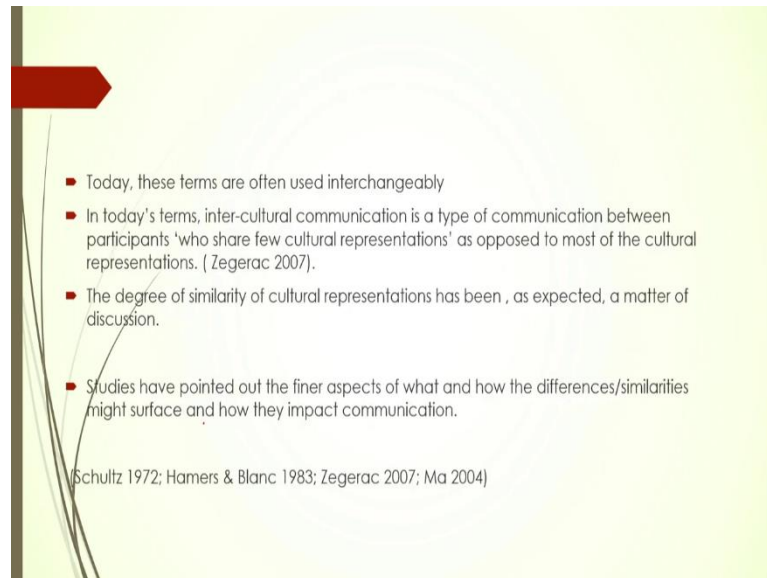
- The field of intercultural communication has roots in second language acquisition studies (Lado 1957)
- Similarly, research on cross cultural non-verbal communication within social psychology has also influenced the dominant frame within which to discuss these issues. (Hall 1959).
- Social psychology is more interested in the dynamics of group interaction in terms of distinctiveness.
- How one group differs from another in terms of communicative style, for example.
- While doing so, they maintain a difference between intercultural communication and cross cultural communication.

So, that is one domain where translation studies are looking at now. Similarly, we have intercultural communication, intercultural communication we have discussed a bit before that when we talk when we communicate across language boundaries or across cultural boundaries. So, this has been discussed in terms of second language acquisition studies since quite a long time.

So, research on cross-cultural nonverbal communications are also have also been around in social psychology, in the domain of social psychology and has influenced the dominant frame within which we discuss these things today. So, on the one hand bilingual, on the one hand second language acquisition, on the other hand social psychology both have looked at intercultural communication in their own way.

So, but social psychology is more interested in the dynamics of group interaction in terms of distinctiveness. How the differences are, how do the differences emerge in a cross-cultural communication? So, how one group differs from another in terms of communicative style for example, ok. So, while doing so, they maintain a difference between intercultural communication and cross-cultural communication.

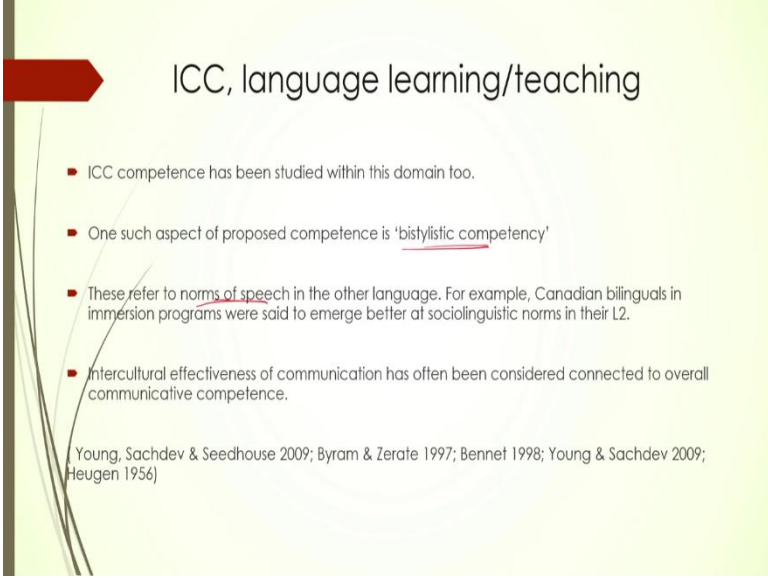
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So, this distinction is maintained in social psychology, but today these are often used interchangeably. So, in today's terms intercultural communication is a type of communication between participants who share few cultural representations. So, where there is not a lot of similarity, not of not a lot of overlap between the cultures, but a few cultural representations are shared. So, that is what, that is a scenario which merits to be called intercultural communication.

So, the degree of similarity of cultural representation as a result of this has been a matter of focus, has been studied a lot. So, studies have pointed out finer aspects of what and how the differences and similarities might surface and how they might impact the communication intercultural communication.

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ICC, language learning/teaching

- ICC competence has been studied within this domain too.
- One such aspect of proposed competence is 'bistylistic competency'
- These refer to norms of speech in the other language. For example, Canadian bilinguals in immersion programs were said to emerge better at sociolinguistic norms in their L2.
- Intercultural effectiveness of communication has often been considered connected to overall communicative competence.

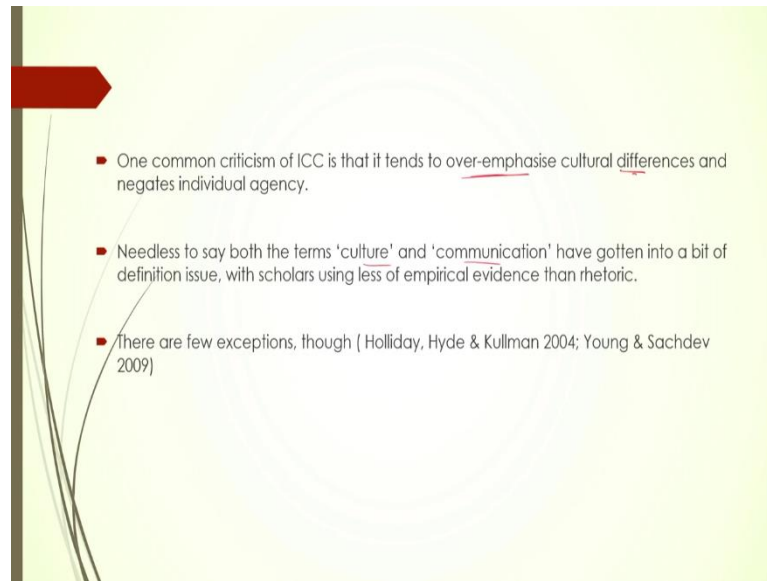
(Young, Sachdev & Seedhouse 2009; Byram & Zerate 1997; Bennet 1998; Young & Sachdev 2009; Heugens 1956)

So, that is one area again another applied area in real life. What are the, so, how far the cultural boundaries are and in case of an intercultural communication, what gets highlighted? Does the similarity get highlighted? Does the differences get highlighted? And what is the role of language there? How far these differences or similarities impact communicative competence and so on?

Similarly, intercultural communication and language learning teaching have also been looked at in terms of the relationship. One aspect of proposed competence is bi-stylistic competency that is one new term that has been proposed. So, they refer to the norms of speech in the other language.

For example, Canadian bilinguals in immersion program are said to emerge better at socio-linguistic norms in their L2. So, connection between ICC and language learning and teaching. Intercultural effectiveness of communication has also often been considered connected to overall communicative competence. This is understood because until and unless you know the differences in or similarities across cultures communicative competence will be compromised.

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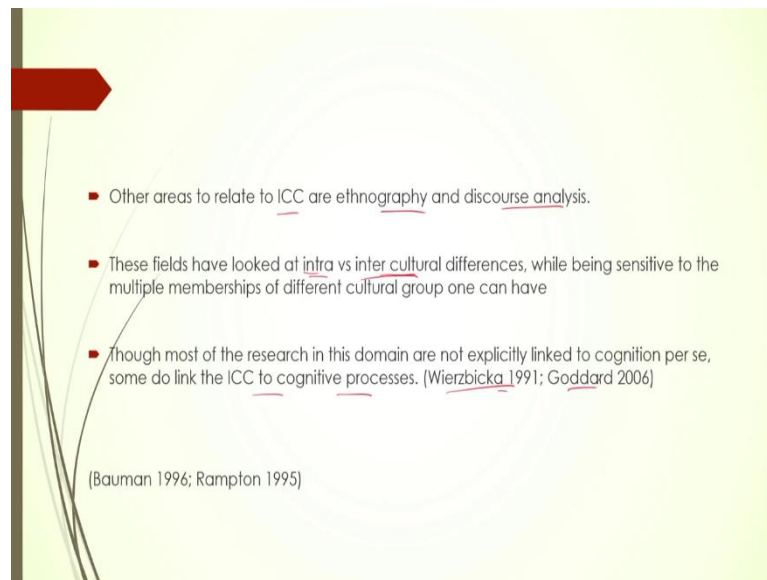


However, there have been, there has been a lot of criticisms also. One of them is that it tends to overemphasize the differences and negates the individual agency. This is common in any study that looks at diversities across cultures and languages because the differences seem to become very important rather than how the individual person reacts to that particular scenario. So, the individual gets side-lined in favour of the differences between the groups.

So, needless to say that both the terms culture and communication have also been you know taken with pinch of salt because there are lots of definitional issues as to what should be considered culture and what should be considered an effective communication. And but the problem with, but problem in the sense that, what has created more issues with understanding in this domain is that less of empirical evidence than rhetoric?

So, lot of rhetoric is there, but very less of empirical information in the sense of experimental evidence. So, this this domain is not entirely experimental. As a result of which lot of rhetoric makes up for that. So, that is one problems. However, this is now getting sort of rectified. So, there are some studies that are that have come up recently that have taken into account the empirical evidence as well.

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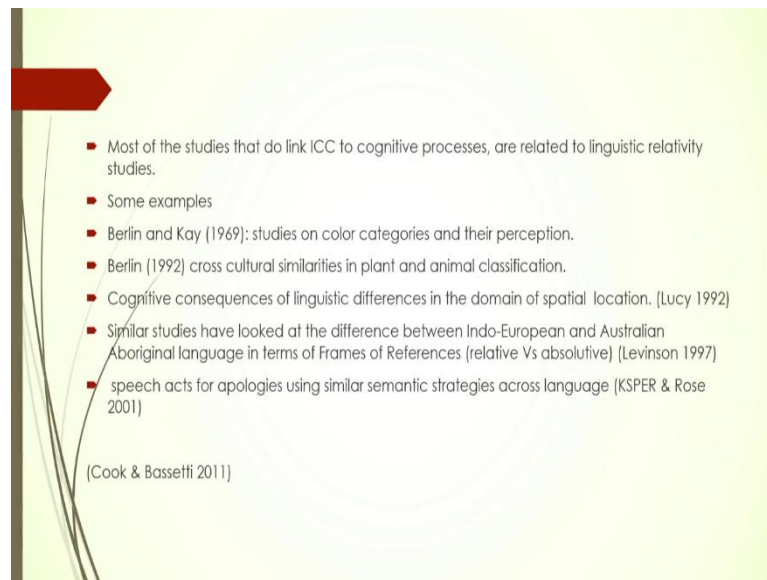


Other areas that relate to ICC are ethnography and discourse analysis as you can easily expect. So, these are all domains, these are fields that looked at intra versus, intercultural differences while being sensitive to the multiple membership of different cultural groups one can have.

What; that means, is that each of us are playing different roles in our day to day life in each of us are playing multiple roles. So, while doing that, we are simultaneously part of different groups. So, different within the larger group we may be having smaller intragroup differences. So, that is what we mean by intra and intercultural differences. So, within the larger one culture, there can be subdivisions and one particular individual might be a part of many of these subdivisions.

So, how do you look at those issues in terms of ethnography, in terms of discourse analysis is another domain. Though most of the research in this domain are not explicitly link linked to cognition, but some of them do link to cognitive processes. One of them some important names in this regard are Wierzbicka, Goddard.

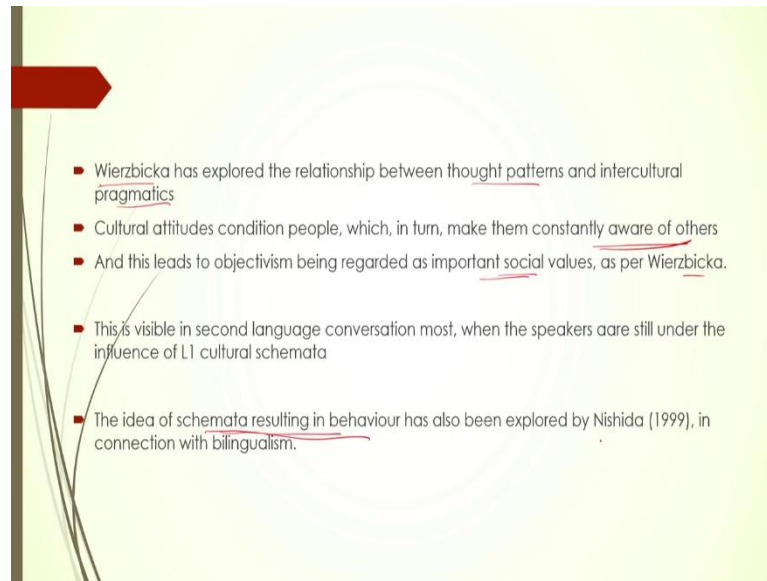
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But largely on the whole the processes that do link intercultural communication to cognitive processes, they are more or less largely related to linguistic relativity. Of course, there are others also, but largely. So, we already have seen Berlin and Kay's cross cultural studies on color perception and then similarities in plant and animal classification across the world's languages, cognitive consequences of linguistic difference in spatial location.

Similar studies have also looked at differences between Indo-European and Australian Aboriginal language in terms of frames of reference as in how you locate objects in space, whether it is relative versus absolute and so on. And then of course, speech acts for apologies using similar semantic strategies.

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So, there have been different you know branches of studies that have tried to that have tried to merge the cognitive aspect of language understanding as well as the intercultural communication. An important name in this domain is Wierzbicka, who has explored the relation between thought patterns and intercultural pragmatics.

So, there are lots of interesting domains that are looking at these issues, taking the language cognition connection interface in bilinguals on the one hand and then there are these application oriented research. So, cultural attitudes condition people which in turn make them constantly aware of others, right. So, and this leads to objectivism being regarded as an important social value, that is what her theory is on.

Now, this is visible in second language conversation most, when the speakers are still under the influence of L1 cultural schemata. The idea of schemata resulting in behavior has also been explored. This is a very interesting domain. The schemata that your language provides underlying schemata and which in turn affects the way linguistic behavior turns out to be in a conversation setup.

So, this has been studied, this has been studied before as well. But today, we have more of empirical studies that are taking place.

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Buy-lingual consumer: advertising and bilingualism

- Bilingual consumer's response to advertisements
- Studies in this area often take RHM as the starting point to argue that L1 has stronger link to concepts.
- This will lead to greater memory and comprehension of Ad-texts in L1 than in L2.
- One study that looked into this aspect, found that if there is strong correlation between the picture and Ad text, there might be high memory of the Ad's claims, but if the correlation is weak, the memory for the claim is less.
- This is true even with fluent bilinguals.
- So, pictures make up for weaker L2-conceptual link.

(Le Heij, Hooglander & Van der Velden 1996)

And last, but not the less, we are looking at bilingual consumer. In today's world, consumerism as you all know that is a very important rather all pervasive phenomenon. So, a lot of research is going on in this domain as well. So, in bilingual consumers response to the advertisements is has become has come out as the one applied area of bilingualism studies.

So, in the studies in this area often take revised hierarchical model. We talked about revised hierarchical model when we looked at how the language the lexical entities of each of the languages of a bilingual connects to the conceptual storage. So, that is what revised hierarchical model is. So, at the starting point to argue that L1 has stronger link to concepts. That is what the basic idea of studies, many studies that have looked at the consumer's response to advertisements have taken care of.

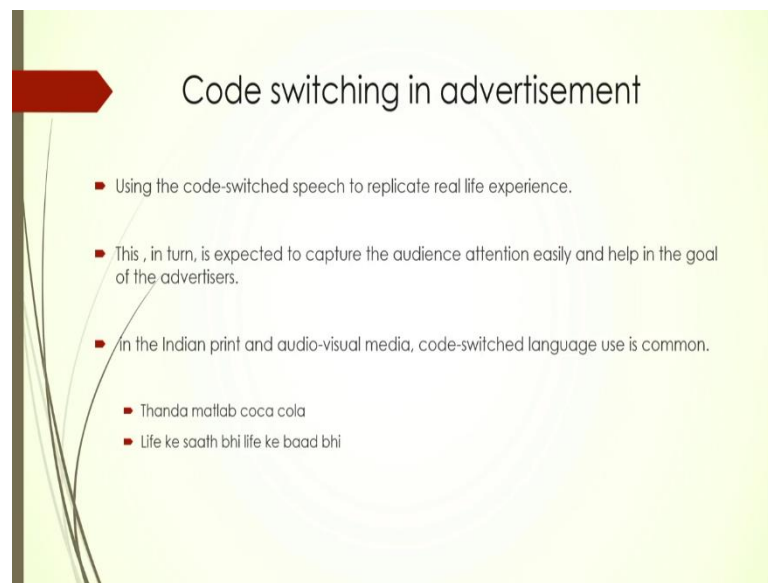
This will lead to, so, if you have a greater connection between the text and the concept in L1, but not such a strong connection between the text and the meaning in L2, what will automatically the result of this will be that you will remember the memory of it will be stronger when L1 is used. That is the idea. So, they found that a strong correlation between picture and ad- text, this there might be a high memory of the adds claims if the connection is strong, but if the correlation is weak, memory of the claim is less.

So, if you are using L1 versus L2, the differences will be visible in terms of what which how much of the advertisement you actually remember. This is true even with fluent

bilinguals. So, interesting studies in this, sometimes what they have done is sometimes they show that pictures make up for the L2, weak weaker L2 conceptual link.

So, whether you are using pictures or not versus whether it is L1 on L2, this kind of these are these variables combined together show us that L1 is more useful to remember the ads, the concepts of the ads, but if we use pictures, then the compromising factor of L2 is not, is taken care of.

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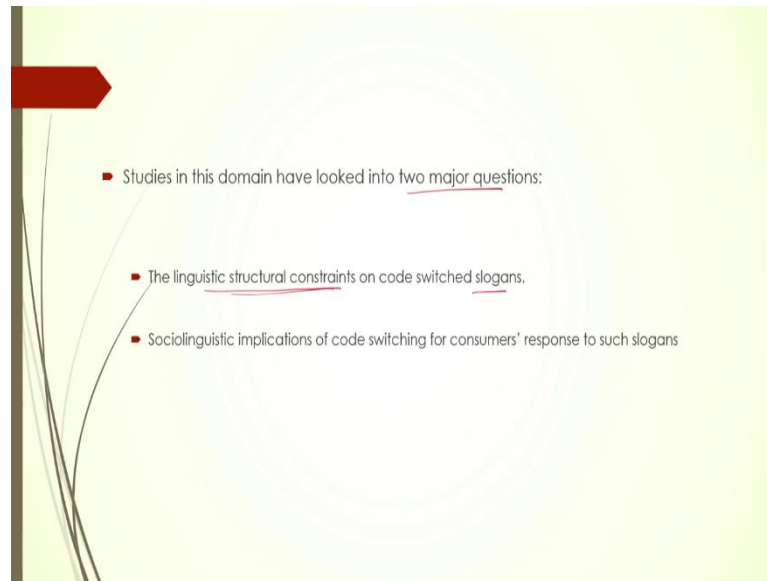


That is one domain. Another domain is the use of code switching in advertisements, which is this is very common in India, we you just switch on your TV and you see the lots and lots of code switched speech that are used in advertisements. So, they are used because they want to replicate real life experience.

Now, it is not anymore confined to the bigger cities even in smaller places, smaller towns, we see a lot of code- switching practice. So, advertisements TVCs are basically trying to replicate the real life experience of the consumers and thereby create a connect, right. So, this in turn is expected to capture the audience' attention easily and help them remember the product.

Some examples, 'life ke saath bhi life ke baad bhi'. So, in Indian, both in the print and the audio visual media use this strategy to a very large extent and I would say to a very successful goal as well.

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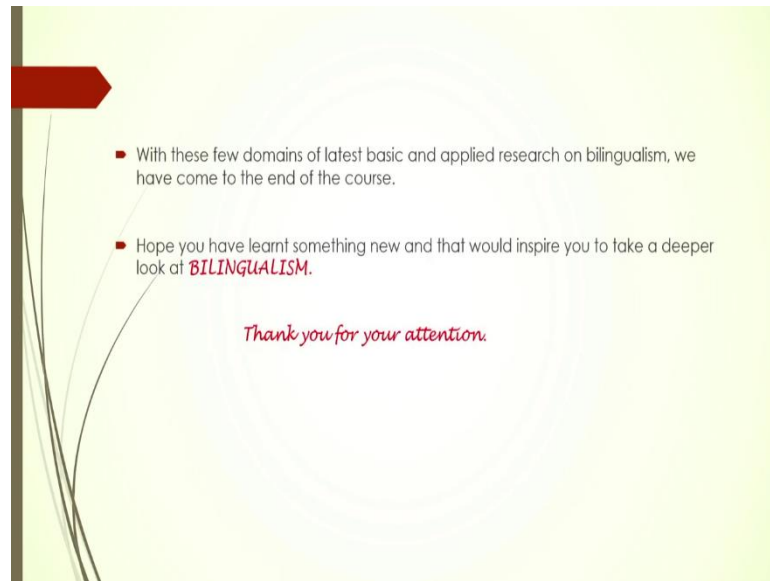
So, often you remember. Another domain of study could be the Amul, the brand Amul and its advertisement strategies. They also use a lot of code switched language and Amul advertisements are of course, very popular and very very topical. The studies that looked at that are looking at code switching in the in advertisements have looked at few major questions. Two of them we will discuss here, we will look at here.

The linguistic structural constraints on code switching in the code switched slogans, because in the advertisements, the slogan advertisements are typically like 20 seconds or 30 seconds long. So, within that, you have to create a very effective slogan which will stay with the consumer and will effectively convey the message also.

So, this is a very there are lots of constraints here. So, within that also the researchers have looked at the linguistic structural constraints that are taken care of in these slogans as well as the socio-linguistic implications of code switching on the consumer's response. So, how far they have been useful?

What are the strategies that are more useful for the product for the companies in terms of the consumers actually acting upon them, memorizing them more or buying more or you know how the consumer behavior gets affected as well as the various kinds of constraints while creating the slogan. So, these are the primary things.

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So, in a nutshell, we have looked at the current research both in terms of basic research as well as applied research on bilingualism. And with that, we have come to the end of the course. I hope you I have been able to tell you something new. And of course, the idea is that you would have taken you would take home some new ideas, new inspiration to look at bilingualism as an interesting phenomena.

We looked we started the course with justifying as to why we should study bilingualism and keeping that in mind, I hope I have given you enough reasons to look at bilingualism as an interesting area of research.

Thank you very much.