Advanced Cognitive Processes
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Lecture – 05
Knowledge – IV

Hello, and welcome to the fifth lecture on the course Introduction to Advanced Cognitive Processes. I am Dr. Ark Verma from IIT, Kanpur. Now, in this week we have been talking about various aspects of language we began talking about concepts and categories in the first class then we talked about semantic networks in the last lecture if you remember I talked about connections networks.

Today, I am going to talk about a slightly broader frame of knowledge and this frame of knowledge is referred to as schemas and will also talk a little bit about scripts which are a particular kind of a schema now we have talked about concepts as a currency of knowledge we have talked about concepts as units of knowledge.

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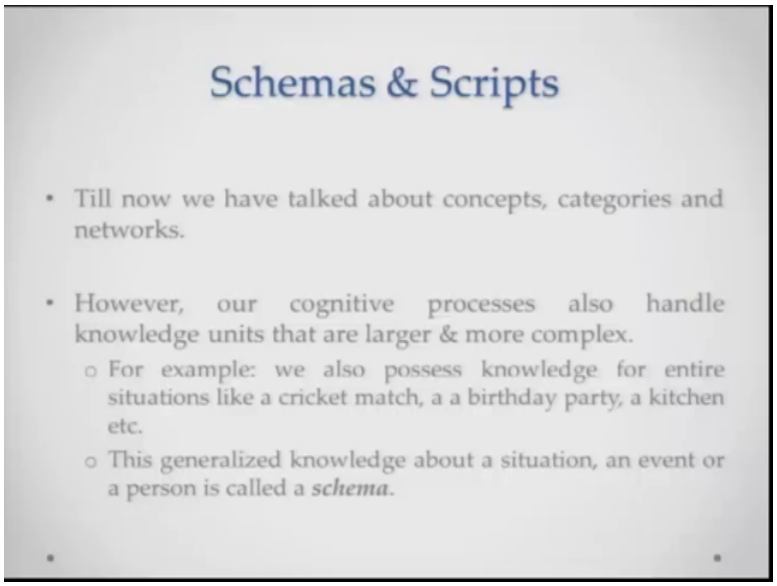

However knowledge is not merely decomposable into units we generally deal with knowledge in our daily lives as broader aspects. So, we do not really talk about only specific concepts. If you remember we talked about things in a much broader frame of mind you could talk about what happens when you go to a restaurant or you could talk about what happens when you go to visit a cricket match, what happens when

you planning to let us say make tea or you know go to somebody's marriage, having a birthday party. Any aspect of daily life that you would want to talk about each of that basically all you are talking of each of these things represent slightly bro broader concepts than just say for example, the concept of a canary or a concept of a cake that we have been talking about.

So, today I will try and guide you through some of the theories of the psychological theories about these broader aspects of knowledge which are referred to as schemas. So, cognitive processes handle these units and this generalized knowledge about the world this generalized knowledge which might contain. So, many different concepts all organized in a particular manner these are referred to as a schema.

So, you might have a schema for let us say making tea, you might have a schema for you know let us say as I was mentioned going to a birthday party and stuff like that.

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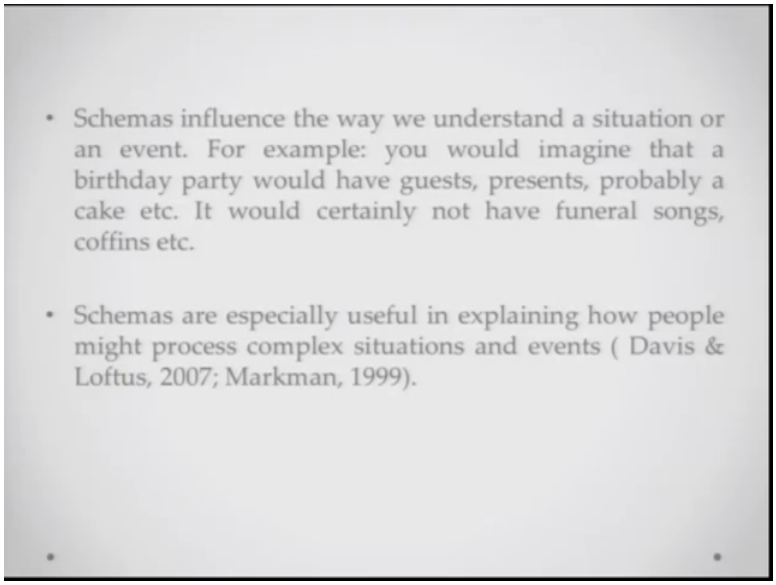

Now, schemas if you think of them and if you kind of you know take a step back and try and introspect what are these different schemas that you are dealing with and how are these different schemas influencing your daily interactions how are these different schemas influencing your understanding of the world.

So, it is said that schemas do influence our understanding of a situation of an event and they might also bias us let us say or get us into anticipating or expecting what is

going to happen in the next moment. Now, let us take a very simple example if you are going to a birthday party you know what would you expect? Your schema of a birthday party includes these many things it includes there is certainly somebody whose birthday that is it includes, let us say nice food, it includes it would include guests, it would include presents maybe, it would include a cake for example, and as soon as somebody comes to you and tells you that you know you have to come to my birthday party and it is on such and such date all of these things you are automatically going to anticipate and you are going to kind of you know sometimes organize your behaviour around these anticipations.

Now, that is the most interesting part of knowledge that we can talk about that is one of the very interesting aspects about and that is probably knowledge in common parlance that is what you say for example, mean when you talk about that I have the knowledge of what it means to go to a birthday party you probably talking about this schema where in all of these little concepts are organized in a particular manner.

Also, schemas might be considered useful in explaining how people might process slightly more complex situations and slightly complex event say, for example, if there is a marriage, now marriage is a complicated event and there are so many rituals and there so much to you know that happens when somebody is getting married. So, as soon as you say, as soon as you mention marriage to somebody they might already be activating all of these ideas related to marriage whatever their experiences being, whatever they have you know gathered out of the word marriage and whatever they heard of what goes on in particular marriages. So, the idea is you kind of as soon as you mention these words you are you know giving them a snapshot into what all can be expected. This is the kind of knowledge which we are going to talk about today in more detail.

Now, this knowledge I keep mentioning the all of these facts that you are kind of you know getting as soon as I mentioning, let us say a birthday party or a marriage or a restaurant is basically you can term it as generic information. So, obviously, from particular marriage to other marriage or from somebody's birthday party to a different person's birthday party, the details might change here in there. The details might not be the exactly the same in all of these birthday parties, but you have a generic idea about what happens in birthday parties usually.

Now, this generic information about a particular situation or about a particular event is what people store in their memory and they use this information to understand and remember new examples of particular kinds of schema say, for example, you would have some generic information about any particular event and you could say, for example, you know if somebody is asking to recall one of the earlier birthday parties that you have been to, it is quite possible that you might not remember the exact details of what went on in that particular party. But, you will use your schema to actually bring on and kind of construct a narrative around that schema you know I was there and you know there was nice food there and these people and this person got so many gifts etcetera.

Sometimes even though you might not clearly you know remember these particular facts, but the schema comes to the rescue for memory and you kind of try and generate this narrative structure because using the help of your schema. Also, if you talk about the future as I already mentioned and a few minutes ago that schemas also allow you to predict what will happen in a new situation sometimes. Say, for example, you have never been to a particular place, say for example, you know you migrate to a different country and you go somewhere, where somebody's invited you to their marriage.

Now, the idea is you might have never been to that kind of marriage, say for example, you might never have been to a Jewish wedding for that matter and you know you are in Europe and you go into this persons wedding you might have some idea about what goes on in and these weddings from whatever you have heard. So, you have generated a schema and on the basis of that schema you are kind of predicting you are kind of anticipating what all is going to happen at that point in time.

So, schemas not only help you in some sense to gather information, organize information, to recollect information it also helps you to predict what might happen in a new situation. So, schemas can be used as juristic or general rules that are mostly accurate because it is very rarely that instances or say for example, exemplars of such kind of events or things you know vary too much from each other. So, if you have an idea of what happens in a party or what happens in a marriage you already have enough information to say for example, navigate that event in some sense.

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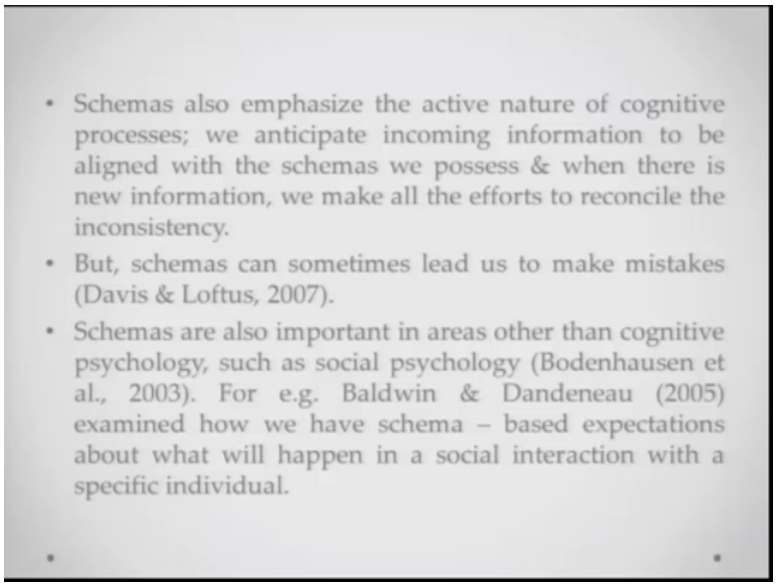

Moving further schemas also tell us something about how cognition actually takes place. It also it tells us about that we are not really passively experiencing events you are also actively participating and anticipating events. So, we are basically anticipating whatever incoming information is going to come we are evaluating it, we are comparing it with the schema that we already have this feeling of, I knew this would happen, in a lot of scenarios.

In some scenarios where I knew this would happen does not really make sense and you in your say, for example, encountering a really new situation say, for example, which does not reconcile with the idea say for example, you go to a Jewish wedding and you find some of some ritual that you had not even thought of and you did not really expect a lot of frames you try and understand why this was there was it something that generally happens is it something particular to this particular wedding things like that.

So, anytime that the incoming information, new information if you are in a new situation is not consistent with your schemas that you already are holding you would make all the efforts to actually try and reconcile that with your schema you either try to update your schema or you are either try to say for example, check the source of by this new variation is there and maybe keep make notes for later.

So, schemas, this is all about how schemas can be useful in navigating around the world, in understanding the world, in anticipating information etcetera, but because I am talking at the level of schemas it might seem all too generic and you know you might be wondering that you know a lot of times things happen that are not consistent with schemas what happens then. So, schemas also lead us to make particular kinds of mistakes say, for example, Davidson Loftus did some research and showed that a lot of times people anticipate on the basis of their schema what is going to happen.

So, the idea is you are kind of pre empting phenomena before they are happening. And, there is a high chance that any new you know something new will occur and your anticipation some predictions might not be right. It does not happen all the time, but it might happen a few times as well.

So, schemas in that sense say for example, also are very useful in fields like social psychology when you are talking about social cognition social perception etcetera. So, the idea is and Baldwin and Dandino they did this research and they basically were trying to examine how people have schema based expectations about what will happen in their interactions in their social interactions with particular people. Say, for example, you know you are going to meet let us say a very high ranking official of the military or say, for example, you are going to meet the principal of a particular college or you are going to meet a lawyer.

Now, if you have not really met either of these individuals before you might actually go with certain kind of schema based expectations and you might you know organize your behaviour all around that say, for example, somebody is going to meet a high ranking army official think I might already have the schema that you know this person is going to be very strict he might not be funny at all and I have to be you know behave in my best possible manner. But, if you go and you made this person and this person turns out to be the opposite jovial very friendly etcetera you might kind of you know you are in a slight soup because you made this mistake of over anticipating the particular situation.

So, again it is not all the time correct, but a lot of times a schemas give you good predictions and that is how schemas are useful to us.

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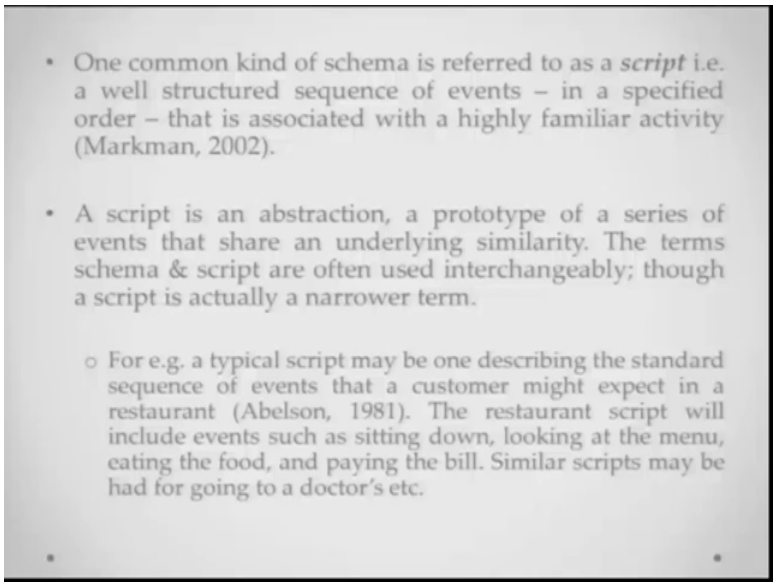

Now, let us talk a little bit about a particular kind of a schema, let us talk about script. Now, a script is a special kind of schema where in you have anticipated a well structured sequence of events which are occurring in that very specified order and it is generally associated with a highly familiar activity. So, you might have a script for making tea. Now, making tea is basically something that you will do in a particular manner you will do that over and over again and you will do that in that, but in that same sequence. Say, for example, you will put the water to boil, you will probably add the tea leaves then and you will add sugar and then maybe you add milk and you will do that most often than not in a particular sequence and that sequence is also going to be obeyed more often than not.

So, such kind of schemas where you have a very sequential arrangement of events all of them happening one after the other is called a script. Trying to formally define a script the script is an abstraction it is basically a prototype of a series of events that share an underlying similarity. So, the idea is I am going to make tea all of these are parts of what making tea is all about. So, the terms schema and script you will see in literature sometimes they are used interchangeably, but the fact is that script is actually a much narrower term.

So, it is also a schema, but since a schema which is much narrower in nature. There is this sequence of things that has to happen where a schema might be slightly more

generic in nature. Say, for example, a typical script may be you know maybe one describing standard sequence of remains that customer expects when the customer goes in a particular restaurant, the idea is the restaurant script should include you know looking at the menu, ordering the food, eating the food, paying the bill and let us say paying the tip and coming off.

You would have similar tips for say for example, going to a dentist going to a particular doctor etcetera. So, these are schemas yes, but these are more specific schemas. These are schemas which are associated to sequential steps, sequential events happening one after the other in the same order.

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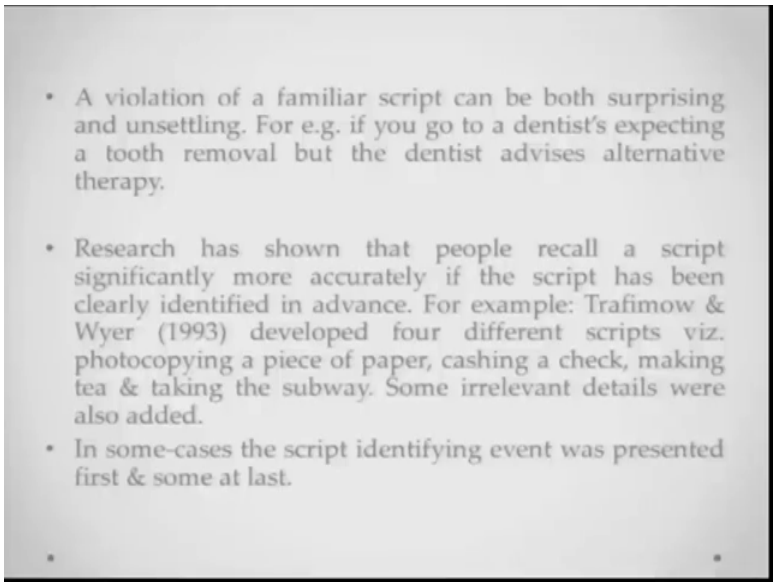

A violation of a familiar script, just like violation of schema I was talking about, can be both surprising and unsettling. For if you go to a dentist and you are expecting that my tooth is not well and most probably I will be advice for the tooth extraction or tooth removal, but the dentist on the other hand says there is some hope and you should probably try something some alternative therapy, maybe you know use this medicine for some time and we are not really ready for tooth extraction right away.

So, the idea is you will both be surprised and sometimes people might be unsettled, if their expectations are taught it in a particular manner. So, the idea is that, obviously, you know our world revolves around these kind of schemas, but it might often be a

good idea to not really put too much weight on these kind of anticipations and these kind of expectations.

So, research has shown talking about the kind of research that has been done with the schemas, so, research has shown that people recall a script significantly more accurately if the script is has been clearly identified in advance. So, what do I mean by identified in advance? Say, for example, you go to a particular place and say for example, you go to a restaurant as soon as some may say you know somebody's inviting you to go to a as soon as you enter the place, as soon as you are getting ready for the place you already create this anticipation you already create that, ok, this is what I am going to do.

On the other hand, in cases it might happen that say, for example, somebody told you that you know I am going to take you to a particular place, but I am not going to tell you and you suddenly discover that it is a very you know a very high quality restaurant a fine dining place and then because your schema for such a high quality such a 5 star kind of a place might be slightly different from then your local you know canteen or your local mess these 2 scripts might be very different from each other and you might really feel very surprised sometimes unsettled etcetera.

But, if somebody gives you a clue that or say for example, if you can already identify that this is what is going to happen you will remember these events much better you will kind of your organize your behaviour around that. So, they wanted to do this study Trafimow and Wyer in 1993, they developed 4 different kind of scripts. Say, for example, very simple events photocopying a piece of paper and cashing a check, making tea and taking the subway. So, they basically develop scripts for all 4 of these events and also added some irrelevant filler details for participants to remember. So, the parchments were made to remember all of these all 4 of these events.

In some cases, when this script was there in some cases the script identifying event was presented first and in some cases it was presented at the last. Say, for example, put the water to boil. If put the water to boil is presented in first you would already start assuming that maybe tea is going to be made and you automatically remember this slightly better.

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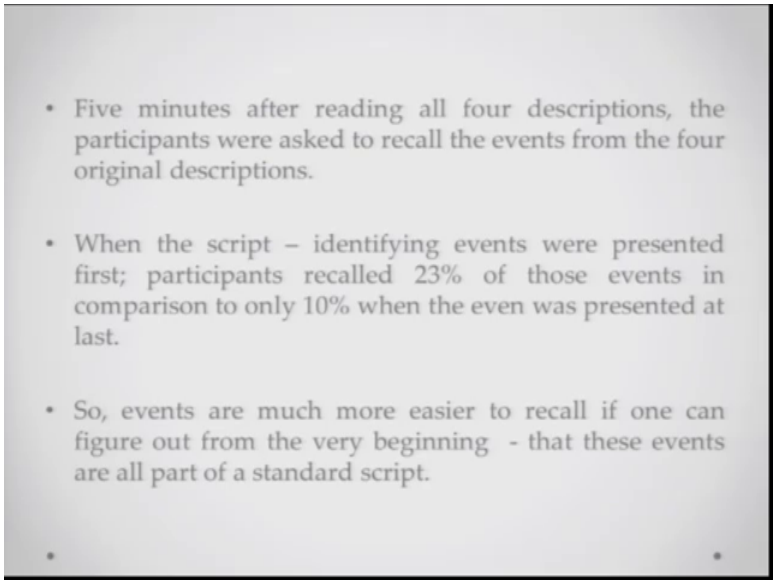

So, the idea is they asked their participants five minutes after reading all the four descriptions. They asked the participants to recall the four original descriptions that were given. Now, in cases where the script identifying events were presented first, participants could recall 23 percent of those events in comparison to only 10 percent of the events when the script identifying events were presented at last. So, as soon as you can identify the script the entire sequence comes to a memory and you will recall it better. In cases when the identification or the script identifying event was present at the last you probably one organizing this stuff as will in your brain.

So, that is probably what it leads to miss remembrance or less you know memory for events which for scripts where in you have not identified the script initially already. Now, events so, that is pretty much what happened with the study. Let us try and understand how these schemas might be operating through these various cognitive processes that we have.

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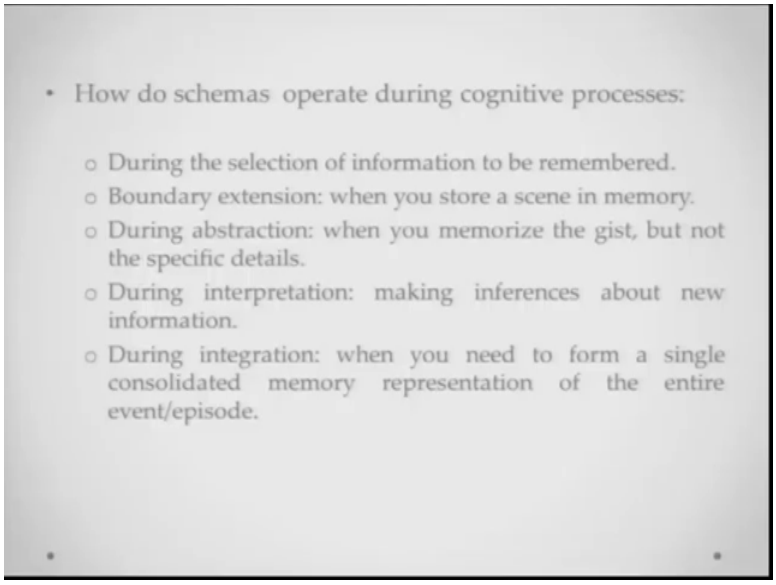

So, it has been said the selection of information, so, schemas influence the selection of information to be remembered, whatever event is happening at a point in time. If you have particular schemas the schemas might influence which information which parts of the information which parts of the event or the episode that that is what you will remember correctly and which you will not pay too much attention on. Boundary extension say, for example, sometimes when you store a particular visual scene in the memory, sometimes it might happen that when you are asked to recall this you might recall a little bit more than you actually saw we talked about all of these details in a while well I detail all of these aspects.

Schemas are also helpful during abstraction; say, for example, when you try and memorize the gist, but not really the specific details, because as soon as I tell you that you know I am going to talk about a birthday party and I you know start giving you very many boring details about the birthday party I was last night you might just remember the word birthday party hold the gist and not really pay attention to a lot of details that I might be mentioning.

During interpretation also schemas are very helpful, say for example, when you have to make inferences about new information. Information that was not there already, say for example, if I am describing you know a terrorist attack somewhere or something like that now you might basically already have a scheme of what happens when such attacks are happening and you might basically interpret all the you know

close by events with that frame of mind. So, that is also one of the one of the things one of the manners in which schemas actually influence peoples cognition.

Also, schemas might influence integration of information I will again talk about this in more detail later, but I can give you an idea that when you need to form a single representation of so many different events that have happened at a particular point in time, your schema might help you organize this in a particular way then you would have otherwise you know organize this information.

So, let us talk about all of these things in a bit more detail.

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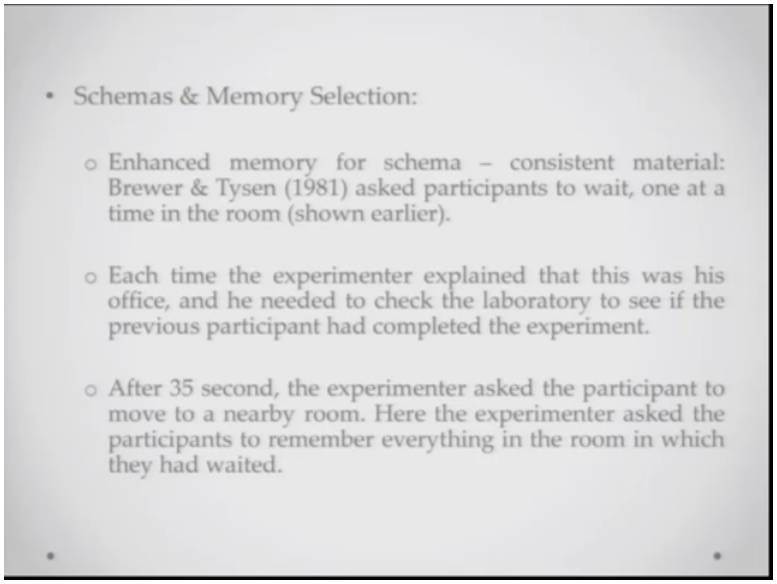

Now, let us first talk about Schema and memory selection. So, it has been shown that there is enhanced memory for schema consistent material; Brewer and Tysen they asked participants to wait one at a time in a room.

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So, I will show you this room here. Now, you can quickly have a look at this and then if I ask you to tell me what all you saw in this room how well would you be able to recall. So, can you can pick up a pen and start writing down whatever you saw or I can tell you that you know that room was the picture of my office and then you can try and recall and write down whatever you saw there. What do you think which of the 2 scenarios will lead to more recall.

So, this is pretty much the experiment that Brewer and Tysen did in 1981, they basically explained they brought participants to their office they asked them to wait in that room for almost 35 seconds and after 35 seconds they actually you know move these partitions to a different room. Here, the persons were asked to tell about everything they saw in the earlier room. What do you think would have happened?

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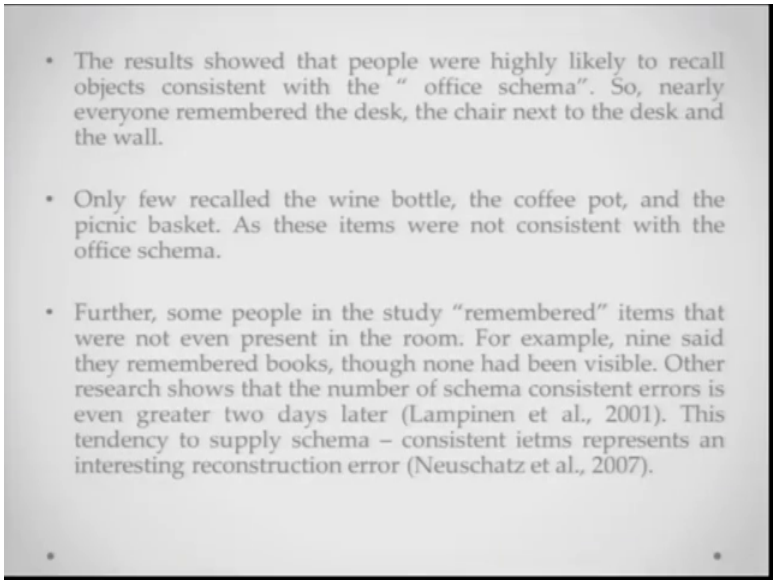

The results basically there is sure that persons who are highly likely to recall objects consistent with the office schema. So, as soon as I mentioned office you might already think about nowadays, you can think about a table and adjoining chair maybe a cupboard. Nowadays, you might say again inner system in the picture nowadays you might think of a computer, a printer, stuff like that. So, all of this stuff people very readily remembered.

However, if you look back at this picture you will see that there are some things here that are not consistent with the office schema. Say, for example, there is a bottle of wine, there is a picnic basket there and there are some other things as well. So, memory for these kind of objects in this room was slightly compromised. So, very few people recalled the wine bottle, very few people recalled the coffeepot and the picnic basket because these items were not consistent with the office schema. Again, this is a demonstration of how schemas might affect how you are taking a memory from a particular event or a situation and how you are kind of being a will do you know recall it later.

So, an interesting aspect of Brewer and Tysen study was that some people in the study actually remembered items that were not even present in the room. For example, 9 people said that this remembered books though there was no book, you can see here there is no book in this office. So, this is again one of the examples of how schemas might interfere in your recollection.

Now, other research has also shown that this happens almost all the time and these kind of errors are referred to as schema consistent errors and schema consistent errors kind of aggravate they become more and more if you know the recall part is asked 2 days later, 3 days later as much as the gap is there between the event and the recall there are more chances of having these schema consistent errors. This one basically is also taken as an example of what is called a reconstruction error. The error is happening in this reconstruction of memory. So, this is basically a schema consistent reconstruction error.

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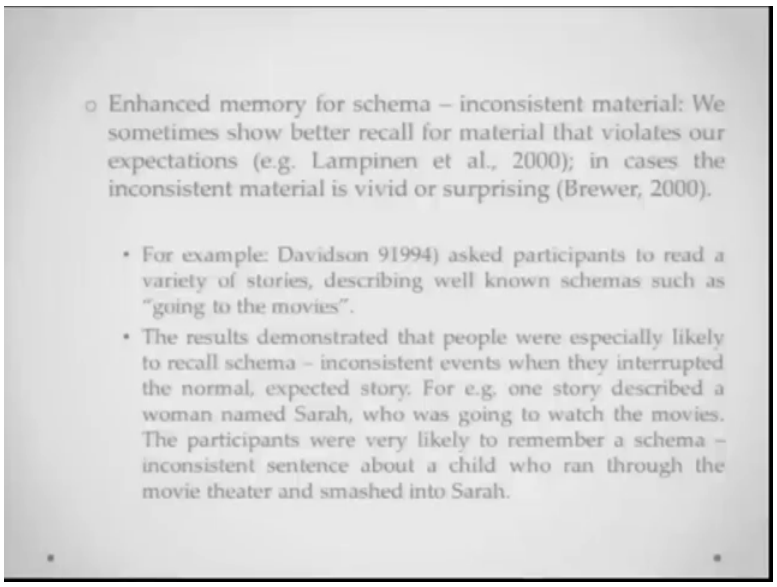

Now, also it is being shown that people have sometimes enhanced memory for schema inconsistent material. It is almost you know I am presenting contrary findings from the earlier part, but that is what the literature has shown. So, people have also reported remembering things better when they were inconsistent with the schema that they had about event or in situation or a place. Say for example, you know things that completely stand out, say for example, you go to a funeral procession and there is somebody who is wearing very colourful clothes you know and this person is very chatty, is laughing all the time and interacting with people, the behaviour of this person will completely stand out with rest of the people there who were probably in mourning wearing you know either white or black clothes and stuff like that.

So, if you have you come across information like this, if you come across information that is entirely inconsistent with the schema of a particular event or a situation there that is where you will also recall this particular kind of information. So, Davidson basically suggested they basically conducted this interesting study where they asked participants to read a variety of stories describing very well known schema such as, for example, going to the movies and these participants were reading these movies and later they were asked to recall this you know recall these different stories.

So, the results demonstrated that people were especially likely to recall schema inconsistent events in the story. So, when they interrupted the normal and expected you know story. Say, for example, one of those stories was about a woman named Sara who you know goes to watch the movies, but during that you know when she goes to watch the movie at some point in the cinema hall there is a boy, there is a child who kind of you know comes and bumps into her and you know say for example, the popcorn she was carrying or you know spread on the ground.

So, these kinds of events which actually stand out of the expected scheme of things are also remembered better.

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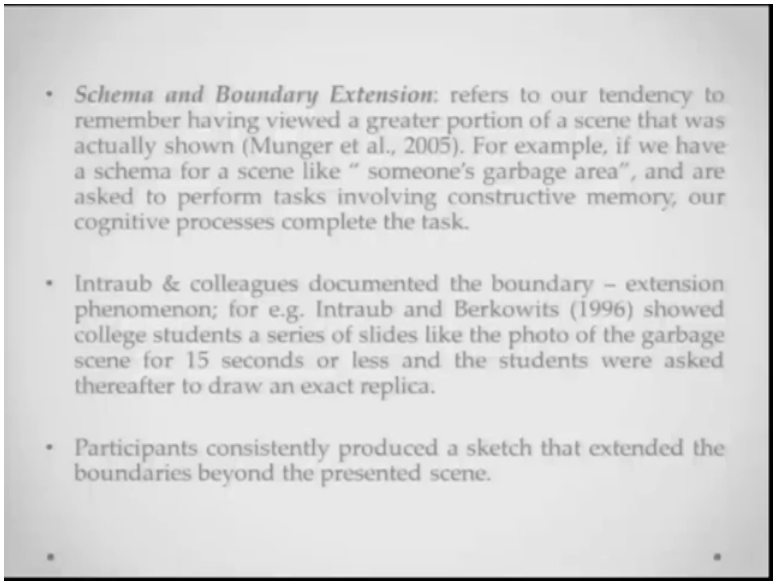

Now, another phenomenon that I could talk about regarding schemas is called boundary extension. Now, boundary and extension basically refers to tendency to remember having viewed a greater portion of a scene that was actually shown.

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Say for example, I show you a picture like this here and I actually remove it and then I ask you to describe in so many words about whatever you have seen in that picture. A lot of times it happens that people view these visual scenes, people view these scenes and events and later when they are asked to recall the kind of let they schemas interfere with their recollection of these scenes, with a recollection of these events this is basically an example of boundary extension.

Say for example, if you have a schema again the picture was or somebody's garbage area. So, if you have a particular schema of you know somebody's garbage area and I asked you later to draw this or I asked you later to write about this even if your memory might not be completely accurate for this particular thing you might try and fill this up with whatever your schema tells that garbage areas have. So, it is quite possible that in addition to the tin can and plastic and they said that is there you might also you know tell that you know there was filled lying around and so many other things. So, this is basically, what is an example of what is called a boundary extension.

Now, Helene Intraub and colleagues actually did a lot of research on boundary extension and they actually documented these phenomena for quite a long time. Let us talk about one of the studies they did. So, Helene Intraub and Berkowits is basically in 1996 and did the same experiment they showed a number of college students a series of slides like the photo that I just showed you and they showed this for very short time they showed it for almost 15 seconds or even less and then students were after and were later asked to draw a replica of whatever they had seen.

Now, it was seen in the results that participants consistently produced a sketch that had extended the boundaries beyond the present it seemed. So, extending the boundaries basically mean that you try and that you eventually end up drawing a lot more that is already presented in the scene. So, that is basically what a boundary extension is about.

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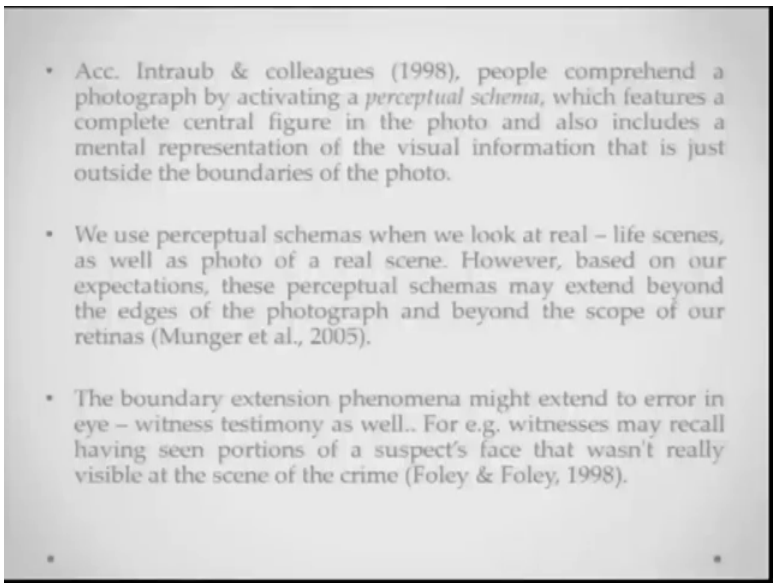

So, according to Intraub and colleagues and what the reason is that people comprehend the photograph by activating what is called a perceptual schema. If you are looking at a particular photograph which let us say you can take the office photograph as an example or you can take the last photograph of the garbage area as an example or nowadays in social media face book etcetera you see so many photographs.

So, the idea is you automatically activate sort of a perceptual schema you know it is almost like a framework using which you are actually you know navigating through that scene. So, you all might sometimes somebody shared a photo of theirs vacationing at a particular beach you automatically picture and you automatically start in some sense is collecting information that is sometimes not already there and that information is supplied by our perceptual schema.

So, Intraub and colleagues reason that people comprehend a photograph by activating what is called a perceptual schema which features as a complete central figure in the photo and also includes mental representations of the visual information that is just outside the boundaries of the photo. See for example, if it is a beach scene, you might also already you know start imagining that you know you saw the sun setting or say for example, you saw people playing or you know whatever your schema of a particular beach scenario might be and again your schema will be depend upon your memories or your experiences with the beach.

Generally also if you think of it we use perceptual schemas when we look at real life scenes as well as when we look for and look at photographs. But, sometimes you know based on our expectations these perceptual schemas may actually be extending you know the boundaries of whatever is there in a particular photograph or whatever is there at a particular scene. Now, this is basically you know, so, a Munger and colleagues say that this is almost like extending you know beyond the edges of the photograph and beyond the scope of what our retinas would usually see.

So, the boundary extension phenomena sometimes and it has various applications, but one of the more interesting applications is that it also exchanged to explain errors in you know things like eyewitness testimony. If you remember or if you go back and have a look at the last course where we talked about memory in a lot of detail, sometimes eyewitnesses you know they remember seeing things that they were actually not there during the crime scene, when the crime was being committed.

So, a lot of times what might happen is that witnesses may recall, say for examples having seen portions of the perpetrators face of the suspects face that was not really you know visible. You know people might come back and report with full confidence that they saw this person you know firing the bullet or using the knife or something

very similar to that. Even though that that thing might not have actually happened say for example, in a hypothetical scene you see somebody being robbed by you know a group of people and all of these group of people who were robbing are you know fairly well dressed etcetera, but there is a other group of people standing nearby or slightly shabbily clothed who are you know really unkempt and not really looking up to the mark.

And, you come back and after some time somebody asks you know did you see that, you know robbing scene, were you there, could you be a witness? A lot of times it might happen that your memory can get confounded by things like boundary extension and you might report that yeah you saw you know this robbing being committed and it was committed by people who would you know more shabbily dressed etcetera.

So, this can be again one of the examples of their boundary extension or the presence of schemas is modulating your organization of knowledge or modulating your information uptake or information recollection from memory.

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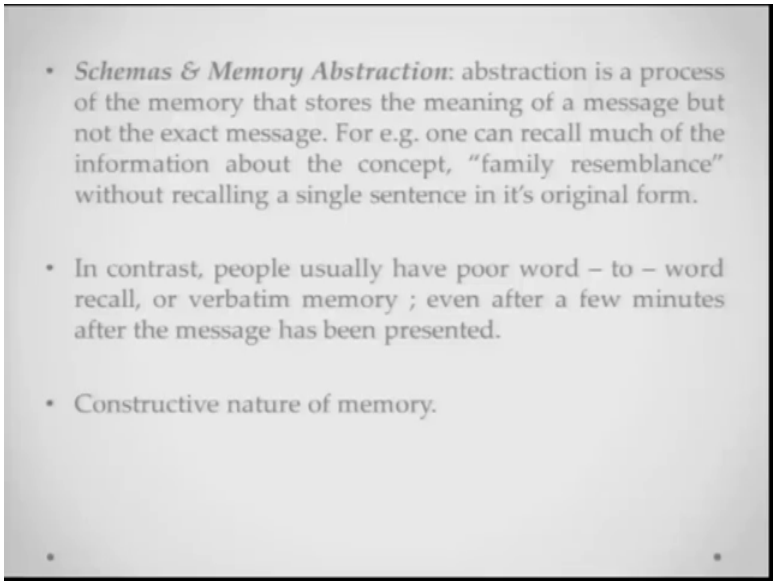

I have been talking about how if we are organizing your knowledge one of the very important processes in organizing knowledge is abstraction. So, a lot of times you do not really remember things and events and situations in their complete detail, you do not remember the exact words of what was said, if you end up seeing this you know

the whole of this lecture and 2 hours later somebody asks you know you saw that lecture on knowledge and what was it all about.

It's very likely that you not really remember word to word whatever I am saying here, but you might be able to give a good idea the kind of a jest to the person that you know that today's class was about schemas and this is what the broad idea about schemas is. So, this kind of activity and something that we do all the time is called abstractions.

Abstraction is a process of memory that shows the meaning of the message, but does not really store the exact message word by word. So, also, but you know there are other kinds of scenarios as well, where people do have you know good memory which is called verbatim memory. Generally, if you see people will not have a very good word to word memory, but there are also some people who might say that you know I have a very good verbatim memory.

Now, this thing what this abstraction what is it an example of, abstraction basically is really about the constructive nature of memory. So, memory as I have stressed enough in the last course when we were talking about memory as there so much length. Memory is not really passive organization of information. It is not really passive storing of information or even if you are trying to recollect information it is not like you know there is something kept on a shelf and you reach out with your hand and you take it up. It is not really like that, memory is a very active process memory is a very constructive in nature when you are trying to pull up information from the memory.

So, memory exchange a memory abstraction and we were also talking about boundary extinction right now all of them are examples of that of the constructive nature of memory

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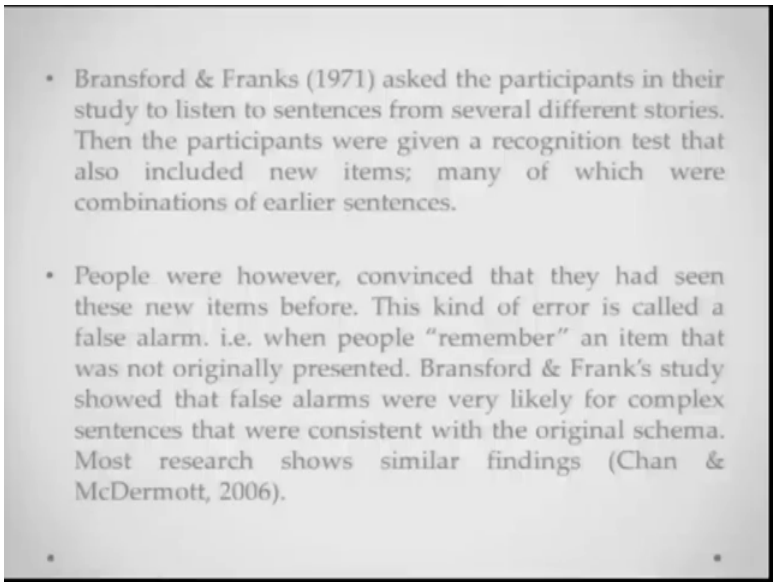

Bransford and Franks have actually done a lot of work about constructive nature of memory and let me describe one of the studies that they did. So, they asked the participants in their study to listen to sentences from several different stories. So, these persons are listening to many different stories, many different versions and then these participants were given a recognition test. The recognition test included some new items some items that they had not seen earlier, but these were combination of earlier presented sentences. So, many stories were there in the same stories were made about sentences etcetera.

And, when the recognition test was given they might have original items as well and they had new items which would actually combination of original items. A lot of times people in the experiment they told that they were highly convinced that they had seen these new items before, because the usual combination. Sometimes, but again these are not verbatim presented in the study. Earlier, this kind of error when you are highly convinced that you have actually seen this something you not seen this aspect earlier you have been to this place earlier etcetera is called a false alarm. If you have not been there you do not really certainly remember this, but you kind of think that it was there and you remember it with a high degree of confidence.

Bransford and Franks very actually showed that false alarms were very likely for more complex events or more complex sentences which were consistent with the original schema. Say for example, I am reading a story about again if we can take the earlier example the women named Sara was going to the movies. Now, if there are there is a slightly more complex sentence there. Say, for example, Sara went to the you know ticket counter bought the ticket and then went to the restaurant and bought this food and only then she returned to you know her seat in the theatre.

Now, if I am giving you such a long sentence and again both of these events that I mentioned in the sentence are consistent with your schema of going to the movies you would basically you know have these false alarms. So, if I have mentioned this entire thing in the recognition test even though this was not present in the you know earlier story that I have presented, you might kind of tell yourself that no I have seen this information there was certainly there and why should it be there because again this is a story about somebody going to a movie and people go to movies and have popcorns and buy tickets and only then they can buy tickets and have popcorns and only then they come to you know and to the seat and watch the movie.

So, more complex sentences anyways are slightly more difficult to process, but in case they are consistent with the original schema, there is a high chance that you will think that this is something that have already been made yeah. So, most research for most research other than Bransford and Franks also finds that similar things happen in a variety of different experimental scenarios.

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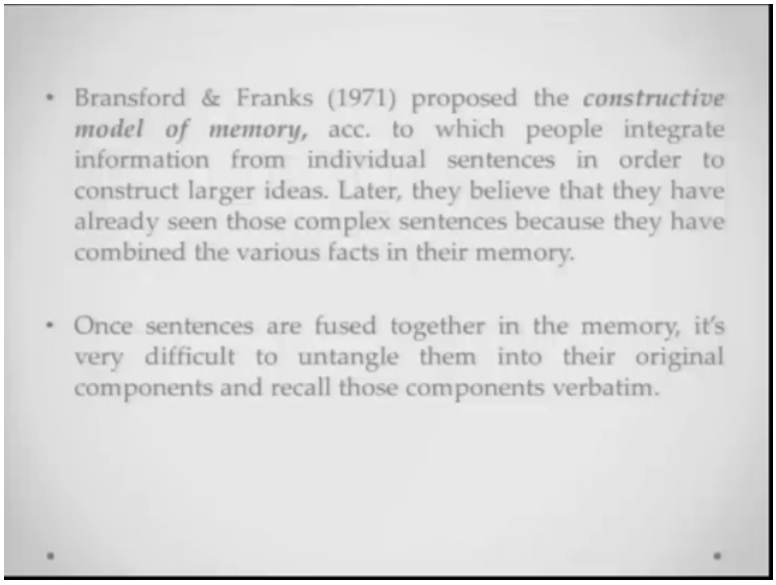

Now, based on these in this kind of Bransford and Franks basically proposed what is called the constructive model of memory. The constructive model of memory basically proposes that people integrate in information from individual sentences in order to construct a larger idea. So, if I am giving you a 10 minutes talk in long sentences about a place I am going to visit or about a place I have visited earlier you might not really be interested in all that, but you will probably abstract you pick the gist out of this and say, for example, tell you somebody else that you know this person went for vacation to x place, that is what people generally do and that is what the constructive model of memory proposed by Bransford and Franks talks about.

So, they say that you know people integrate information from individual sentences in order to construct larger ideas, later they believe that they have already seen those complex sentences already been added complex events because they have combined these various facts in their memory. So, what you have actually seen plus what do you have kind of inferred because of your particular kind of schemas that is in that onward you are kind of combining both of these things together. And, when at a later time you are trying to recall this may be because you want to tell the story to a particular friend it becomes very difficult to untangle these two things what you have actually seen versus what your schema has told you. So, that is again one of the problems with memory, but again this is what the constructive nature of memory is all about.

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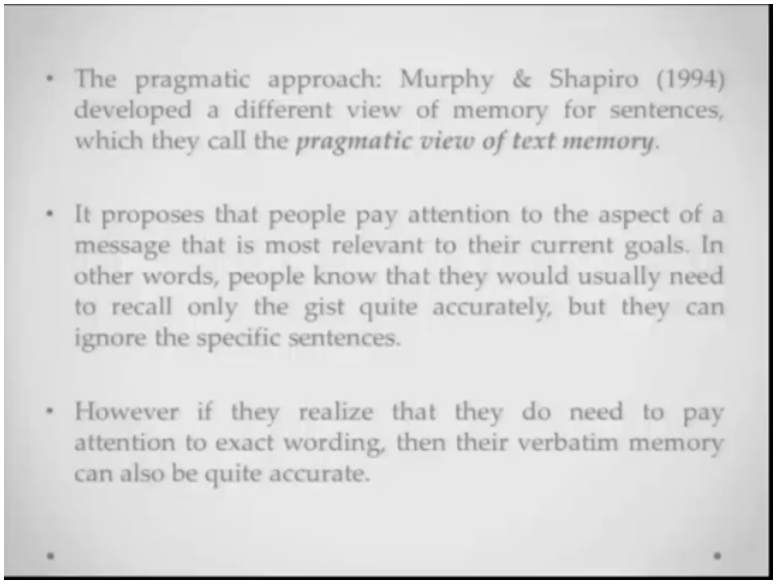

There is another approach to memory because we are talking about scanners there is another approach to how schemas might influence memory. This other approach was given by Murphy and Shapiro in 1994 and they call it the pragmatic view of memory. So, what is the pragmatic view of memory? The pragmatic view of memory is that people pay attention to the aspects of message that are most relevant to their concurrent goals.

Say, for example, whatever I am talking about in this lecture, if I tell you that none of this is actually going to come in any of the assignments or any of the exams that you are going to give, you might not really be very inclined to remember this anyways and that happens in classrooms all the time. But, the idea is as soon as I say that you know today's lecture will carry so much weight in a particular assignment or anybody like quiz that is going to happen, you will probably try and pay more attention to this and you will try and kind of remember as much as you possibly can.

So, the pragmatic view of memory basically, says that people pay attention to the aspect of the message that is most relevant to their current goals. In other words people know that they would usually need to recall only the just quite accurately, but and so they can ignore the specific sentences. Now, however, as I was saying earlier if they realize that they do need to pay attention to the exact wording suppose, I am asking you to write all of this down at some point in time then the verbatim memory can also be quite accurate.

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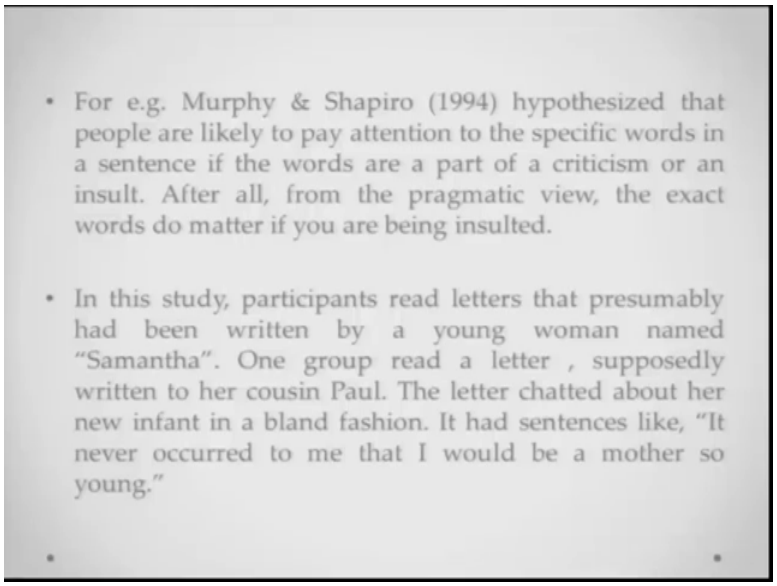

Now, Murphy and Shapiro proposed this and they actually conducted a study where in they hypothesized that people are likely to pay attention to specific words in a sentence if the words are part of particular kinds of criticism or some kind of insult. Insult is something that pricks you know, insult is something that is socially very important. So, people are very likely to pay attention to when they are being insulted. So, that is what the pragmatic view of memory would tell you.

So, what happened in this study, participants were told to read letters that were presumably been written by you know this particular woman called Samantha and Samantha writes two letters; one of these letters she writes to her cousin Paul and she is actually describing her life circumstances and you know maybe she is not met this person for a long time and she is you know chatting about all the things in the world. And, so, this letter had and, but this later had sentences like you know it never occurred to me that I would be a mother so early etcetera. One of the interesting characteristics of this letter was that this letter was written in a very bland way, you know in a very morose, in a very colourless way so to speak. So, there were no exaggerations, no exclamation etcetera was a very plain letter.

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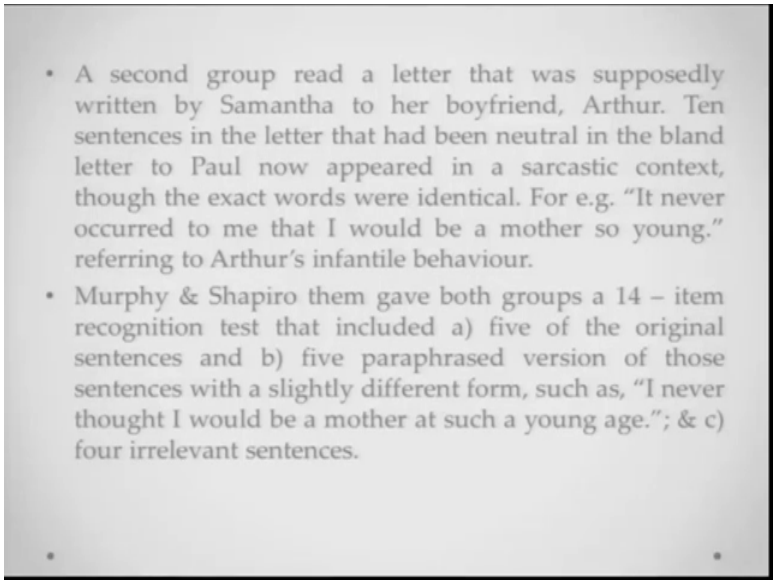

The other letter was written basically to her boyfriend Arthur and ten sentences in this. So, this letter was actually very well designed. So, ten sentences in that letter were written a very neutral, in a bland sort of way the same way they were appeared in Paul's letter, but in this letter this these all of these ten sentences were basically used in a very sarcastic context in a very taunting kind of a manner. So, for example, the sentence, it never occurred to me that I would be a mother so young, was actually used when referring to Arthur's infantile behaviour. So, the idea was now it does not really mean a plain a statement of fact. Now, it actually means insult to this particular person, so, here in the manipulation lies.

Now, Murphy and Shapiro actually gave both of these groups. So, two different groups read these two are reading these two different letters and later Murphy and Shapiro gave a are giving both of these groups a fourteen item recognition test. So, they have to look at these fourteen items and tell that whether these items had been presented earlier or not five items were the original items original sentences that were presented five were paraphrase versions of these items. Say for example, the same ten things we have been talking about could be presented as I would never thought that I would be a mother at such a young age. So, you have kind of extended it a little bit paraphrased it. It is not the same sentence that was presented verbatim.

And, there were 4 irrelevant sentence just acting as fillers. So, what would you think would have happened?

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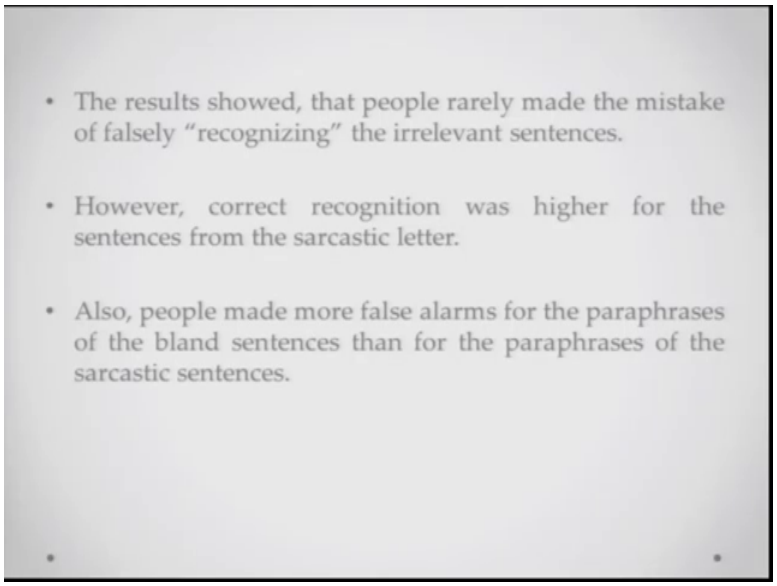

The results showed that people really made the mistake of falsely recognizing the irrelevant sentences. So, they did not really recognize that they were there. So, that is a good thing. But, correct cognition was much higher for sentences that represented in a sarcastic context than sentences that were not presented in that were in the letter which was written to Paul. Also, people were making more false alarms for the paraphrases of bland sentences then for the paraphrases of sarcastic sentences.

So, why are they getting confused with the bland sentence? They are getting confused with the bland sentences because they actually did not pay a lot of attention to it. As soon as the same sentences appeared in the letter written to Arthur because there was a sarcastic context attached to it they probably processed it better and they probably stored it better.

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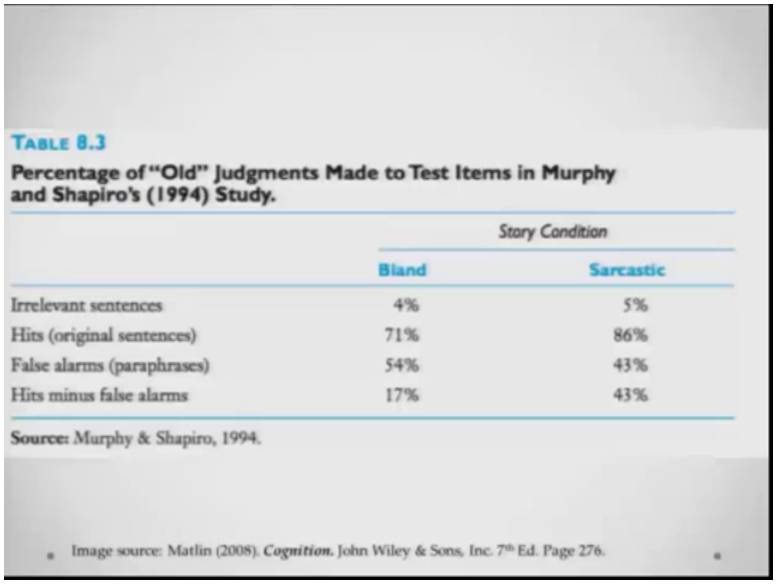

TABLE 8.3

Percentage of "Old" Judgments Made to Test Items in Murphy and Shapiro's (1994) Study.

	Story Condition	
	Bland	Sarcastic
Irrelevant sentences	4%	5%
Hits (original sentences)	71%	86%
False alarms (paraphrases)	54%	43%
Hits minus false alarms	17%	43%

Source: Murphy & Shapiro, 1994.

Image source: Matlin (2008). ***Cognition.*** John Wiley & Sons, Inc. 7th Ed. Page 276.

Here, you can see the results irrelevant sentences 4 percent. So, sarcastic sentences 5 percent and then you can see the hits and you can see the false alarms and hits minus false alarms ratio.

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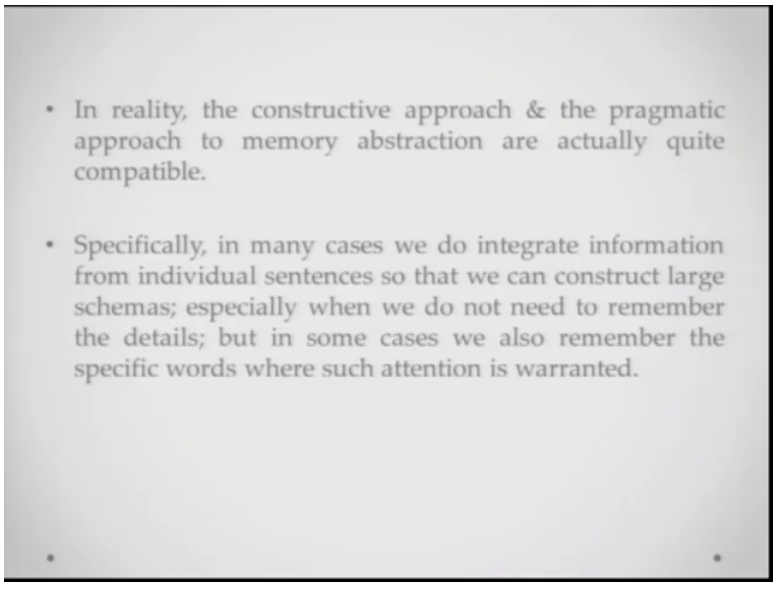

In reality, again because I am I have been talking about the constructive nature in the constructive approach, in reality the constructive approach and the pragmatic approach to memory abstraction if you actually look at them are actually quite compatible. So, they could be scenario, say for example, where you need to integrate information from individual sentences to form a kind of a gist, they could also be

scenarios where you where you would you know actually pay a lot of attention to specific details.

So, both kinds of scenarios actually exist and they probably apply in a compatible fashion to different sin and different situations. So, there would be situations where you could apply the just making some strategy and they could be places where you will apply the there are strategy of actually remembering everything in detail. Let us talk about how schemas you know affect the integration in memory.

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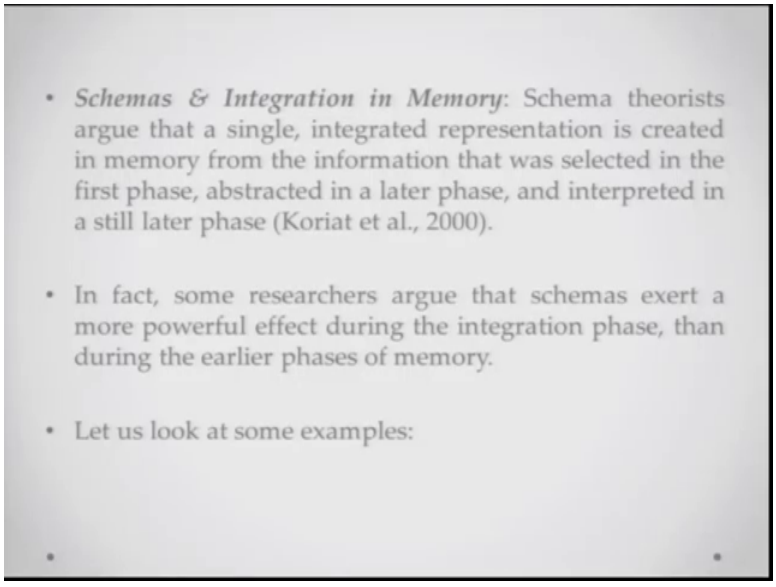

So, schema theory is basically they argued that a single integrated representation is created in memory from the information that was selected in the first phase abstracted in a later phase and then interpreted in a still data phase. So, our memories are basically, if you look at it they are not really just raw facts they are not, every essay for example, if you try and remember I do not know what time of the day you are watching they say, for example, you know it is a 7'o clock in the evening and you are kind of you know watching the same lecture and if I am asking you to recall whatever have happened in the day, you do not you will probably not recall each event separately in all it is detail, but you will have you will kind of gist some of this part you will probably abstract it in a slightly later part and in the end you will try and integrate interpret all of what has happened in the last phase.

So, schemas also inflate influence the integration of events in memory. Some researchers have actually argued that schemas actually if exert a much more powerful effect during this integration phase than during the earlier phases of memory. So, schemas might not affect your information uptake so much, but they will have a very strong impact on how you are finally, integrating and forming consolidated memories.

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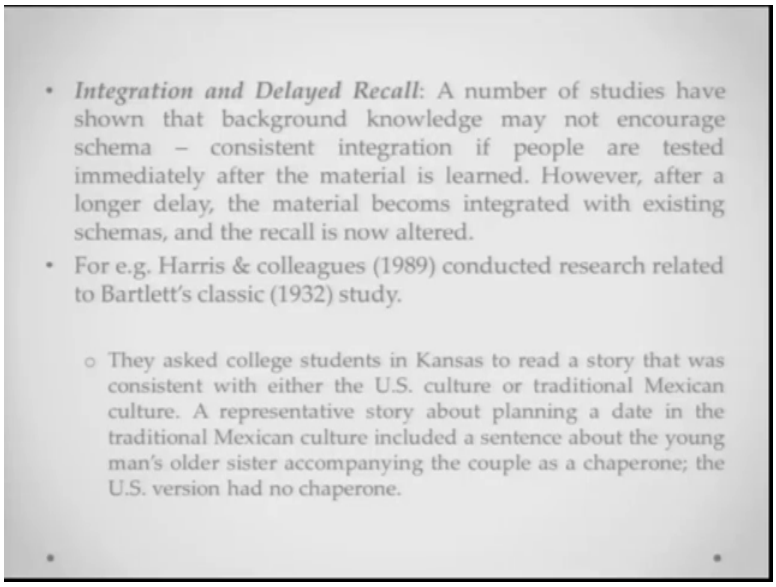

So, let us look at a couple of examples there is sometimes a delayed recall kind of value. Say, for example, a number of studies have shown that background knowledge may not encourage schema consistent integration if people are tested immediate after the materials learned. So, if a material is learned immediately then the schemas might not be able to affect so much.

So, after a long delay; however, the schemas might play a more important role. So, Harris and colleagues did this study in 1989 and they try to replicate Bartlett's you know classic 1932 study, where he had a particular event narrated and he asked people to come after different periods and just write back the same story. So, in this experiment in Harris and colleagues experiment they asked college students in Kansas in US to read a story that was consistent with either the US culture or the traditional Mexican culture. So, there was a representative story about planning a date in the traditional Mexican culture and basically, it included a sentence about a

young man's older sister accompanying the couple as a Shapiro. Now, in the US culture that is not something that happens usually, so, the US culture version did not have this Shapiro thing.

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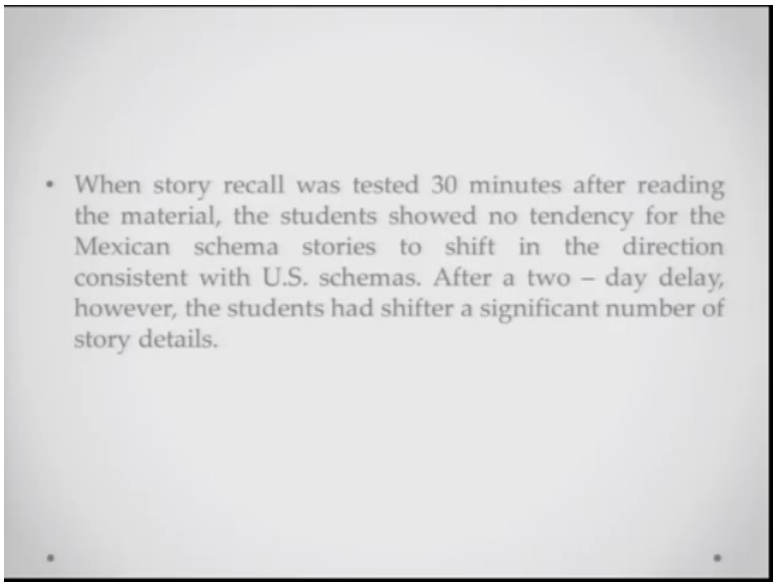

When the story recall was tested 30 minutes after reading the material the student showed no tendency for the Mexican schema stories to shift in the direction to consistent with us schemas. Now, because this is happening just 30 minutes later; however, when the same test is taken 2 days later a lot of students have kind of shifted the boundaries towards either side.

So, the schema consistent errors are actually kicking in of in cases where delayed recall is being tested. It is not happening immediately, but when the integration is happening 2 days later when you do not really recollect the entire details and you are trying to form a representation on your recollection and you know the interpretation of whatever has happened that is where the schema is kind of kicking a in much more strongly.

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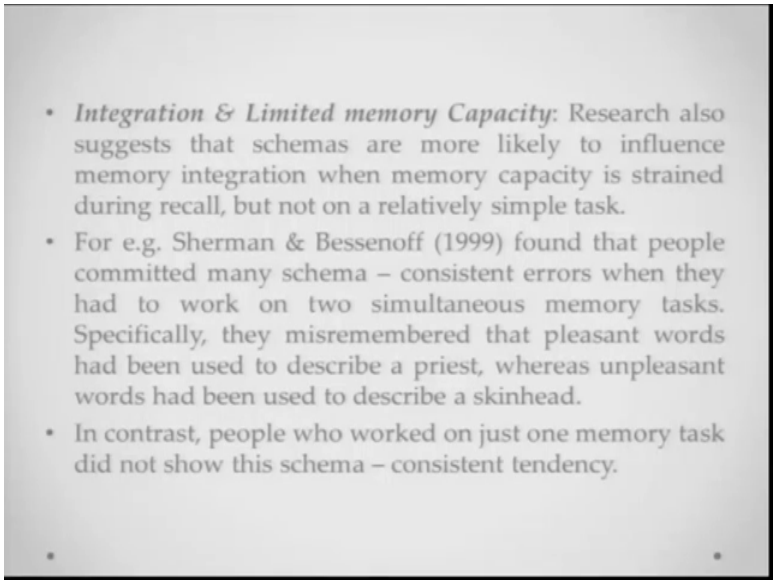

Let us talk about a different scenario. People have also said that integration when you are talking about a limited capacity that is also where the schemas come into play. So, research suggests that schemas are more likely to influence memory integration when memory capacities strain; so, when people are doing so many different tasks at the same time.

So, Sherman and Bessenoff basically, found that people committed many schema consistent errors when they had to work on two simultaneous memory tasks. Say, for example, they misremembered that pleasant words had been used to describe a priest and whereas, unpleasant word used to describe a skinhead. And, contrast when people who were working on a single memory task in their experiment, did not show this schema consistent tendency of remembering. So, when your resources are slightly strained, when people have too many too many things on their mind, maybe there is a lot of stress that is where the schemas might actually you know present a lot more influence than in some scenarios when people are more relaxed and they have you know time to work around these things.

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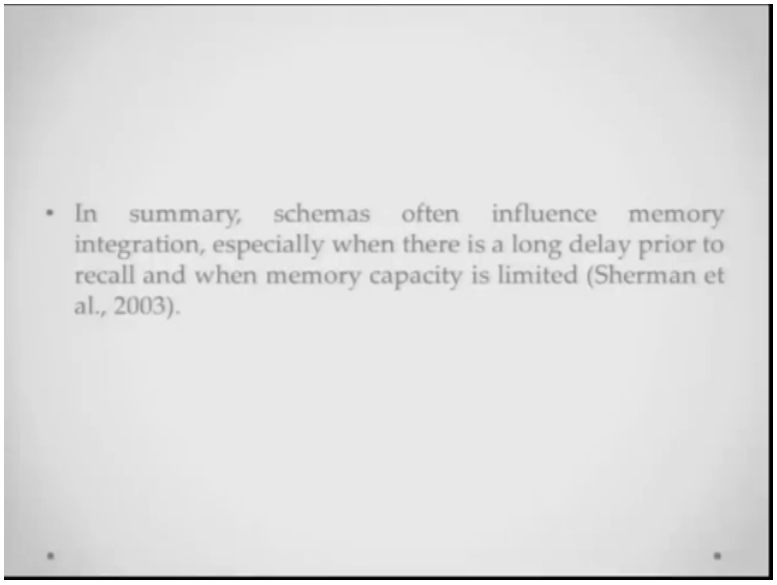

So, in summary trying to summary of whatever you have talked about schemas till now, the schemas do often influence memory integration, especially when there is a long delay prior to recall and also when memory capacity is limited.

So, I hope you gathered whatever about schemas whatever scheme as we did in this class and that is all from me about schemas, we will talk about the next topic in a next lecture.

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