

Scripts and Schemas

- What is a schema?
- How are they set up?
- How do schemas affect memory?

A common situation



Violations to Schema



How would this work?

So what is a schema?

- So far, memory has had little organization
- Some relations among concepts
 - A network model
- Concepts themselves are structured
 - We know a lot about things like events
 - How is that knowledge organized?
- Schemas
 - Knowledge structure for things
 - Sometimes called a script

A knowledge structure

- A frame with causal information

```
Grocery_Shopping
eventType: Shopping
purpose: GettingGroceries
location: GroceryStore
actors: buyer, manager, checkout person
subEvents: gettingCart (A), selectingItems (B),
           paying (C)
temporalRelations: precedes(A,B), precedes(B,C)
```

- Each component also needs a representation

Using a script

- Comprehension of stories
 - John went to the store, picked up some pasta and went home.
 - Did he pay?
 - Did he pay before or after selecting the pasta?

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Using a script

- Memory
 - We use scripts to organize memories
 - We tend to fit events into our existing schemas.
 - Bartlett (1932)

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The war of the ghosts

One night two young men from Egulac went down to the river to hunt seals, and while they were there it became foggy and calm. Then they heard war-cries, and they thought: "Maybe this is a war-party." They escaped to the shore, and hid behind a log. Now canoes came up, and they heard the noise of paddles, and saw one canoe coming up to them. There were five men in the canoe, and they said:

"What do you think? We wish to take you along. We are going up the river to make war on the people."

One of the young men said: "I have no arrows."

"Arrows are in the canoe," they said

"I will no go along. I might be killed. My relatives do not know where I have gone. But you," he said, turning to the other, "may go with them."

So one of the young men went, but the other returned home. And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water, and they began to fight, and many were killed. But presently the young man heard one of the warriors say:

"Quick, let us go home: that Indian has been hit." Now he thought: "Oh, they are ghosts." He did not feel sick, but they said he had been shot.

So the canoes went back to Egulac, and the young man went ashore to his house, and made a fire. And he told everybody and said: "Behold I am accompanied by ghosts, and we went to fight. Many of our fellows were killed, and many of those who attacked us were killed. They said I was hit, and I did not feel sick."

He told it all, and then he became quiet. When the sun rose, he fell down. Something black came out of his mouth. His face became contorted. The people jumped up and cried. He was dead.

Successive retellings

- At various intervals, people were asked to recall the story
 - A Native American legend
- Retellings got shorter
- Aspects of story became more like Western stories
 - Hunting seals might become fishing
- Schema incongruent information is often lost

Watching a peace march from the 40th floor

The view was breathtaking. From the window, one could see the crowd below. Everything looked extremely small from such a distance, but the colorful costumes could still be seen. Everyone seemed to be moving in one direction in an orderly fashion and there seemed to be little children as well as adults. The landing was gentle, and luckily the atmosphere was such that no special suits had to be worn. At first there was a great deal of activity. Later when the speeches started, the crowd quieted down. The man with the television camera took many shots of the setting and the crowd. Everyone was very friendly and seemed glad when the music started.

Remember as much as you can about this story.

Schema incongruent information

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- Information that deviates from a schema is often not recalled.
– Bransford & Johnson

Is this an encoding effect?

- Schemas could affect how information is encoded
- Not all there is to it
 - Pichert and Anderson
 - People read passages about 2 boys walking through a house
 - Given a context before reading passage
 - Pretend you are a burglar
 - Pretend you are potential home buyer
 - Later recall included more facts relevant to context
 - Then, people were told about the other context
 - They were able to recall additional information.

Schema intrusions

- Schemas are for comprehension
 - We are not designed to recall exactly what we see
 - We must understand events in the world
- Bower, Black, & Turner

John was feeling bad today, so he decided to go see the family doctor. He checked in with the doctor's receptionist, and then looked through several medical magazines that were on the table by his chair. Finally, the nurse came and asked him to take off his clothes. The doctor was very nice to him. He eventually prescribed some pills for John. John left the doctor's office and headed home.

Try to remember as much as you can about this passage.

Intrusions

- When asked to recall these passages, people remembered events that did not occur in the passage.
 - We naturally fill in details to aid comprehension
 - These added details may end up in memory
 - Memory may also be reconstructive
 - When we are recalling information, we may add information that makes the story more sensible.

Educational application

- Advance organizers
 - When teaching it is useful to provide a general summary of what is to come at the start of a lesson
 - Textbooks often have outlines at the front
 - A lecture might begin with an outline of what is to come
 - This structure provides a *scaffold* for later information

Summary

- Scripts and schemas
 - Knowledge structures
- Used for comprehension
- Affect memory


