



# **HUMAN NATURE: KEY STUDIES IN PSYCHOLOGY**

**Cognitive psychology**

**Jiří Čeněk**

# CONTENT

- What is CP?
- History of CP
- Key studies in CP:
  - Pictorial perception and culture



# COGNITIVE PSYCHOLOGY

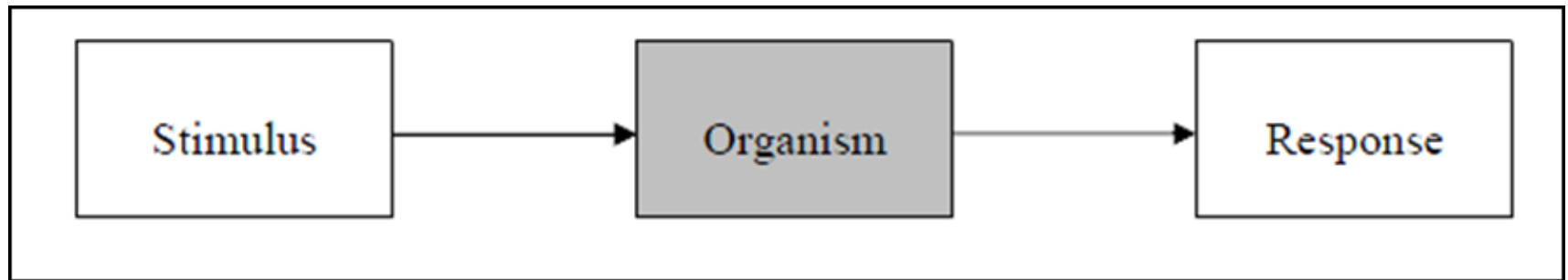
CP = study of ***mental processes*** such as:

- attention,
- language use,
- memory,
- perception,
- problem solving,
- creativity,
- thinking...

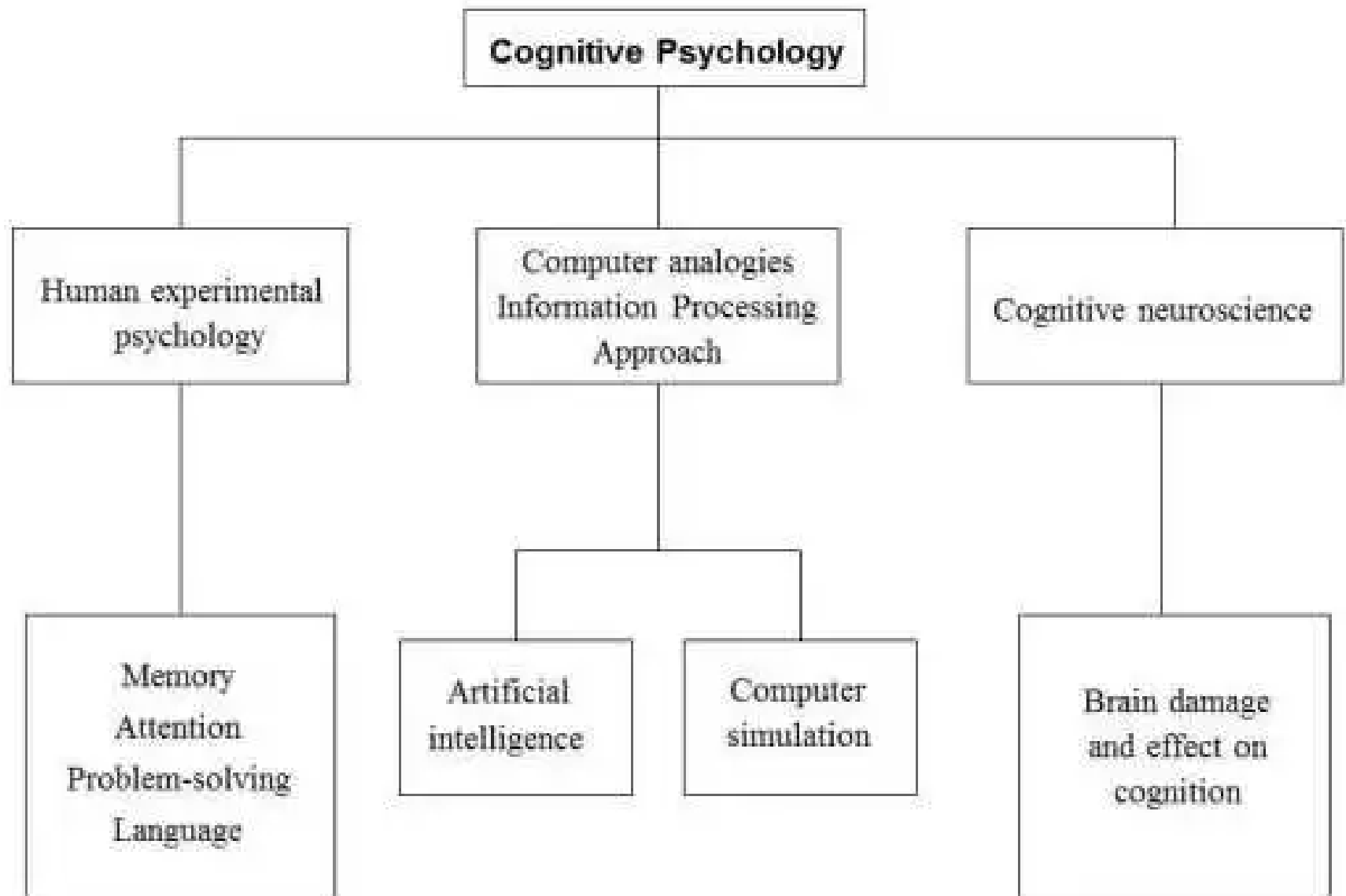


# COGNITIVE PSYCHOLOGY

- **How humans process information**



# COGNITIVE PSYCHOLOGY



# COGNITIVE PSYCHOLOGY

## Basic assumptions

- Cognitive psychology is a pure science, based mainly on **laboratory experiments**.
- Behavior can be largely explained in terms of how the mind operates, i.e. the **information processing approach**.
- The mind works in a way similar to a **computer**: inputting, storing and retrieving data.
- Mediation processes occur between stimulus and response.



# COGNITIVE PSYCHOLOGY

## Strengths:

- Scientific
- Highly applicable (e.g. therapy, EWT)
- Combines easily with other approaches:  
behaviorism + Cog = Social Learning; Biology + Cog = Evolutionary Psychology
- Many empirical studies to support theories

## Limitations:

- Ignores biology (e.g. testosterone)
- Experiments - low ecological validity
- Humanism - rejects scientific method
- Behaviorism - can't objectively study unobservable behavior
- Introspection is subjective
- Machine reductionism



# HISTORY OF COGNITIVE PSYCHOLOGY





# HISTORY

- Until 1950s:
  - Behaviorism as a dominant approach in US psychology
  - **Black box**
- 1950s: **Cognitive revolution:**
  - Better experimental methods
  - Comparison between human and computer processing of information (terminology)
- <https://www.youtube.com/watch?t=58&v=AeoyzqmyWug>



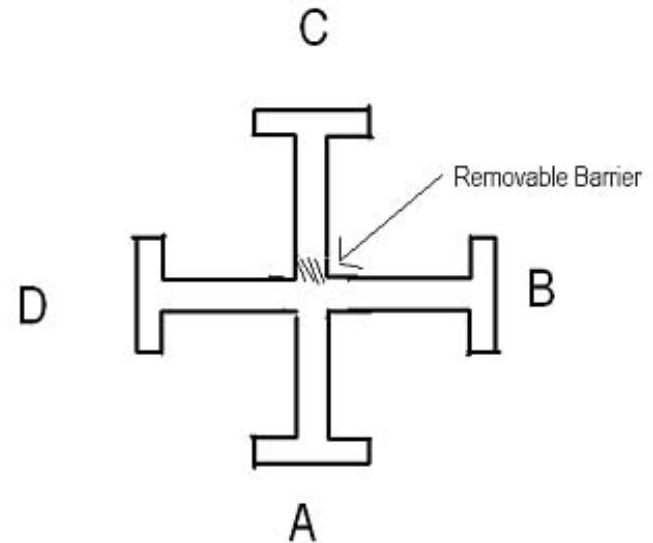
# HISTORY

## Norbert Wiener (1948)

- *Cybernetics: or Control and Communication in the Animal and the Machine,*
- Introducing terms such as input and output.

## Edward Tolman (1948)

- Cognitive maps
- Rats in mazes: animals had internal representation of behavior.
- **VIDEO:** Maze



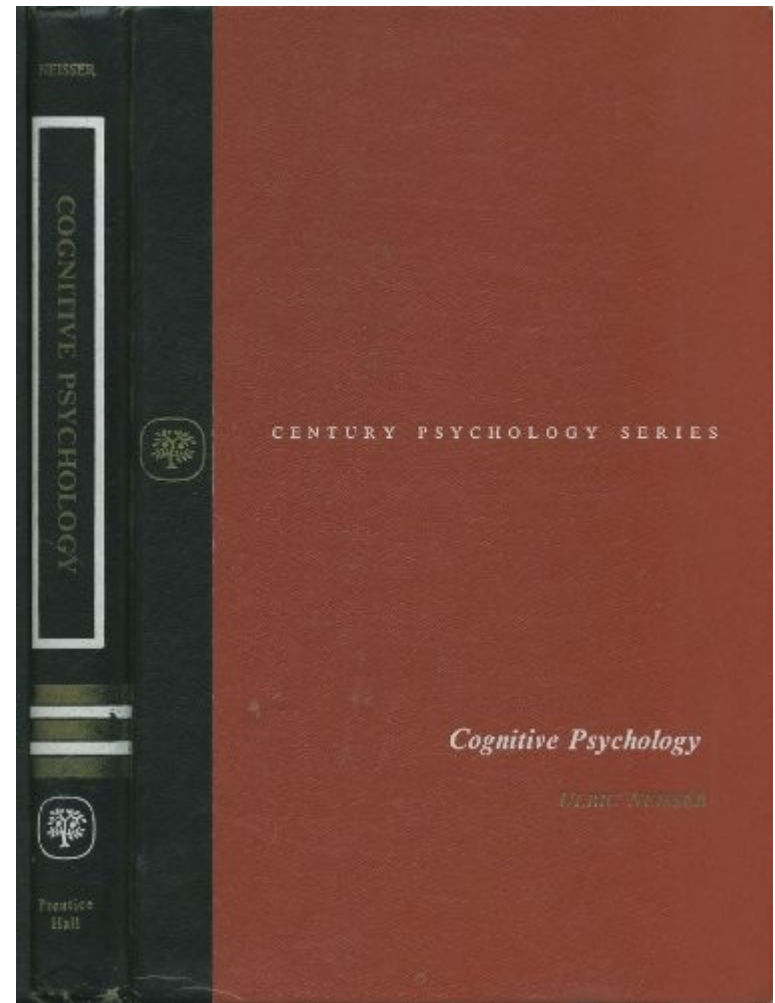
# HISTORY

## George A. Miller (1960)

- *Center for Cognitive Studies at Harvard*

## Ulric Neisser (1967)

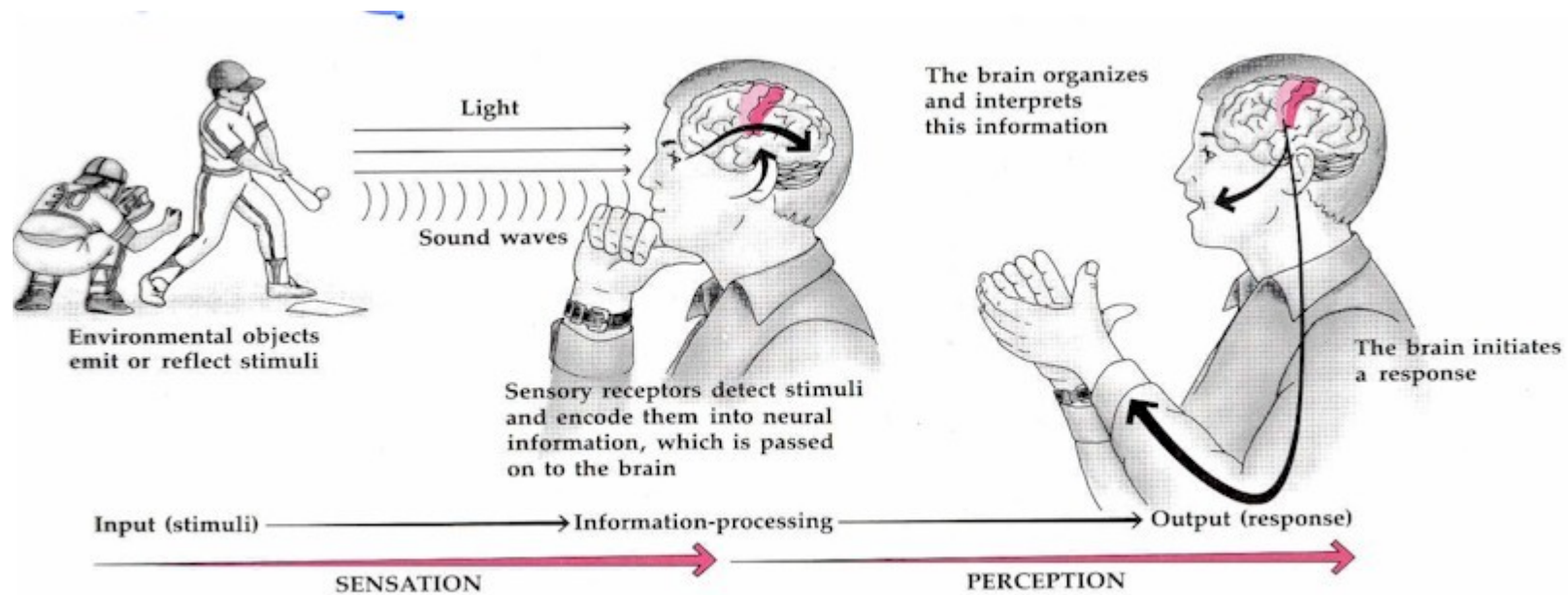
- "*Cognitive Psychology*„ = official beginning of the cognitive approach.
- Cognitive approach highly influential in all areas of psychology (e.g. biological, social, behaviorism, development etc.).



# CULTURE AND PERCEPTION OF PICTURES



# SENSATION AND PERCEPTION



## ○ Principles of interpretation:

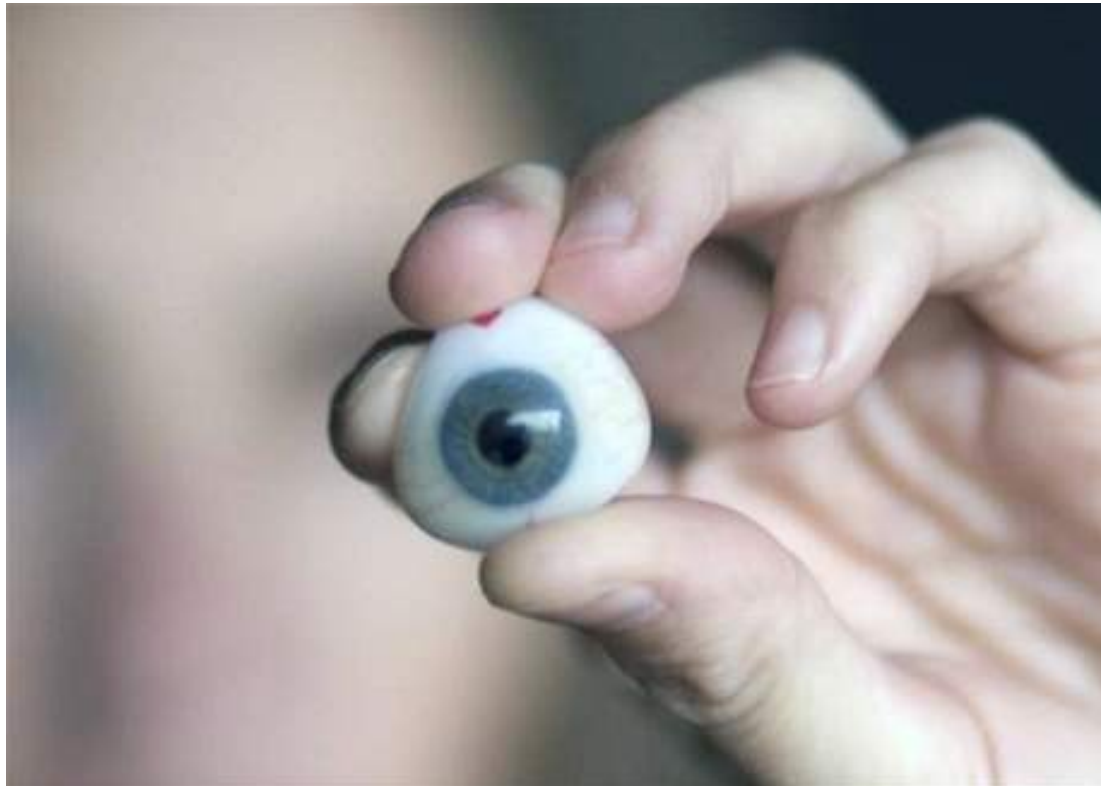
- Principle of efficiency (the simplest interpretation)
- **Principle of commonness** (interpretation which is in harmony with previous experience)



# WHY DO WE PERCIEVE DIFFERENTLY?

- **2 groups of factors**

1. Experience and environment
2. (Social factors)



# **Role of experience and environment**



# ROLE OF THE ENVIRONMENT AND EXPERIENCE WITH IT AS A DETERMINANT OF PERCEPTION





# ROLE OF THE ENVIRONMENT AND EXPERIENCE WITH IT AS A DETERMINANT OF PERCEPTION

- **Perceptual sets:** Blakemore, Cooper (1970)



- <https://www.youtube.com/watch?v=QzkMo45pcUo>



# HOW CULTURE INFLUENCES OUR PERCEPTION? - EXPERIENCE

## ○ **Perceptual set**

- = perceptual expectations
- Dependent on our previous experience with the environment.
- Some **interpretations** (memories of previous perceptions + feelings + meanings + behavior) of the reality are more likely to occur.
- *Some perceptual sets common to people from 1 culture are not necessarily developed in people from other culture. → **People from different culture perceive differently.***



# ROLE OF THE ENVIRONMENT AND EXPERIENCE WITH IT AS A DETERMINANT OF PERCEPTION

Different environment

=

Different experience

=

Different perceptual sets

=

Differences in perception



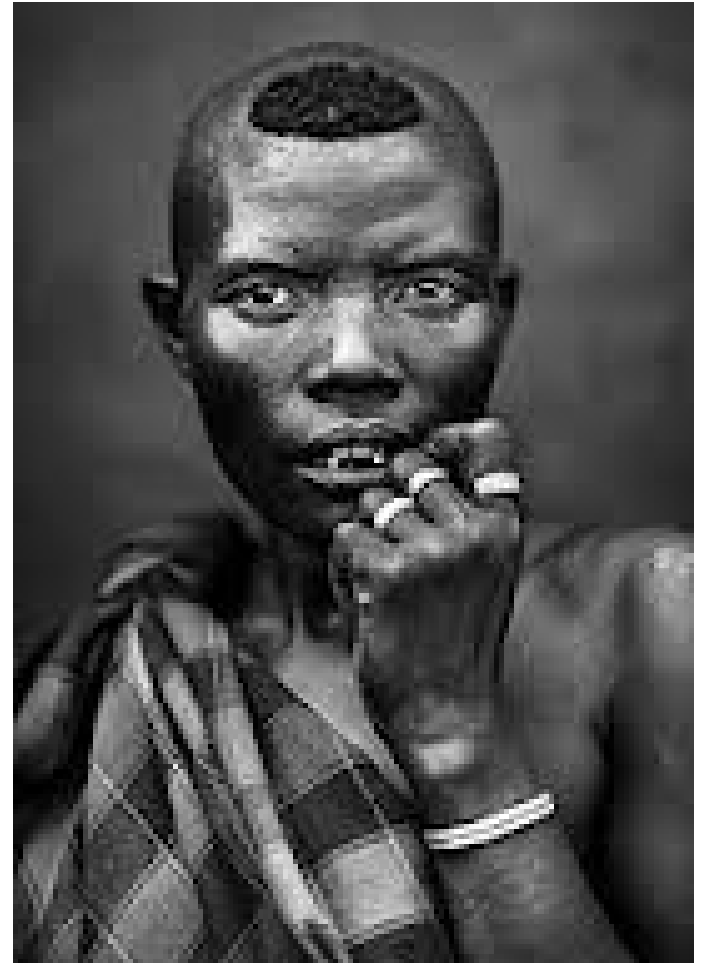
# RESEARCH FOCUS

- Civilized vs. „primitive“ cultures



# PERCEPTION OF PATTERNS AND PICTURES

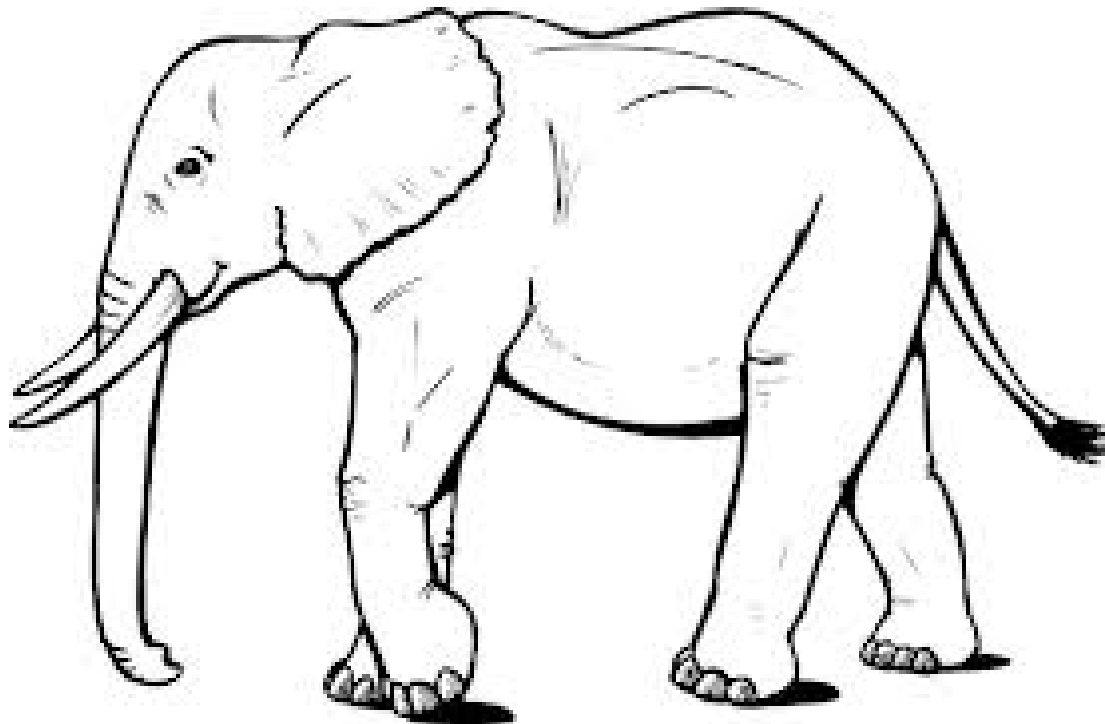
- Deregowski et al. (1972).  
*Perceptual recognition in a remote Ethiopian population.*
  - Me`en (Bodi) people in south Ethiopia.
  - Limited access to formal education, little exposure to pictures.



# PERCEPTION OF PATTERNS AND PICTURES

- Deregowski – research design:

- Pictures of animals presented
- Bodi people were able to distinguish the animal, but after some time and effort.
- Involvement of other senses: touch, smell



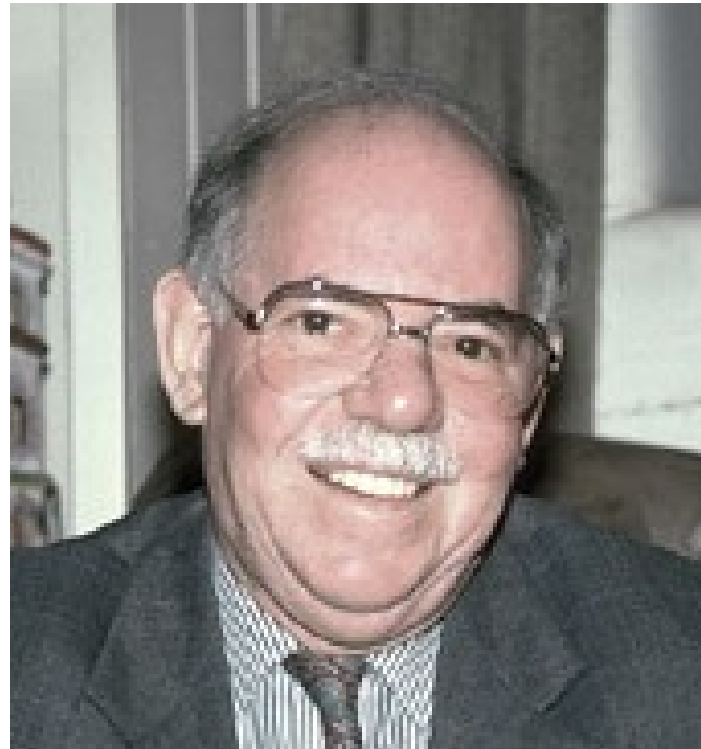
# PERCEPTION OF PATTERNS AND PICTURES

- Deregowski (1980): Experiments on native Africans



# PERCEPTION AND ENVIRONMENT

- Segall et al (1990):
  1. Carpentered world hypothesis
  2. (Foreshortening hypothesis)
  3. Sophistication hypothesis



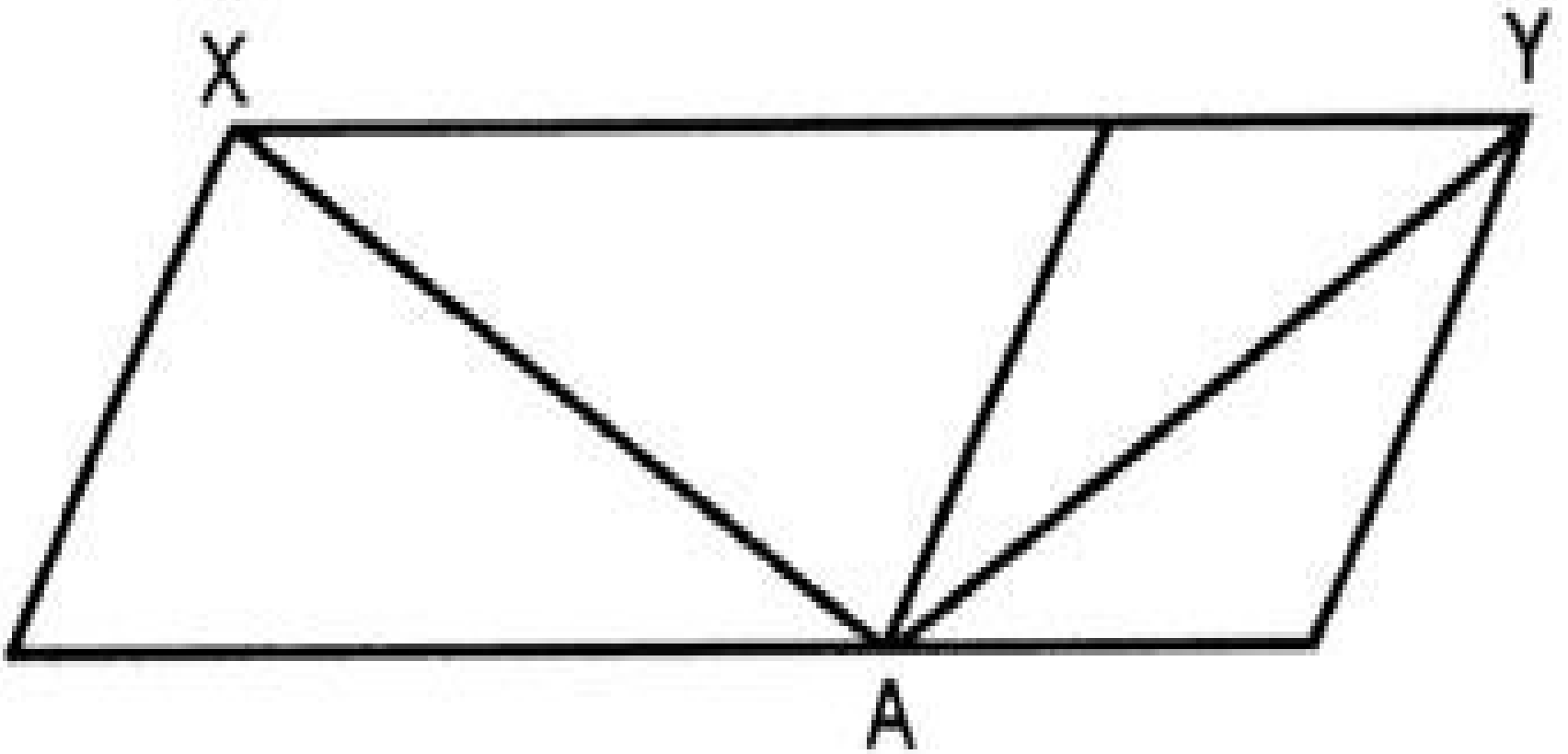


# CARPENTERED WORLD HYPOTHESIS:

- Seagall (1966): „**Carpentered world hypothesis**“
  - Degree to which visual environment is carpentered.
- Western industrialized
  - Carpentered environment
  - Right angles
- Native societies
  - No right angles
  - No straight lines
- **Differences in susceptibility to visual illusions, differences in perceiving pictures.**



# CARPENTERED WORLD HYPOTHESIS:



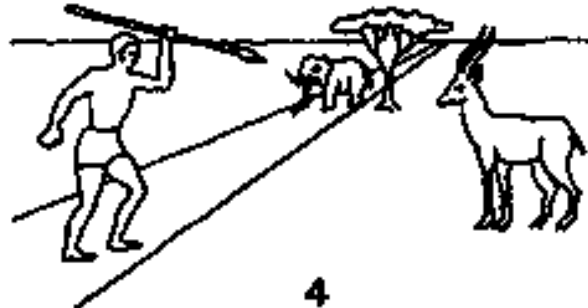
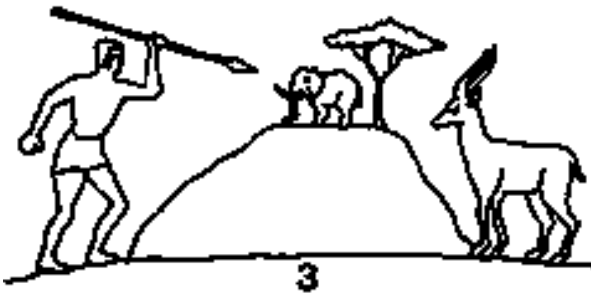
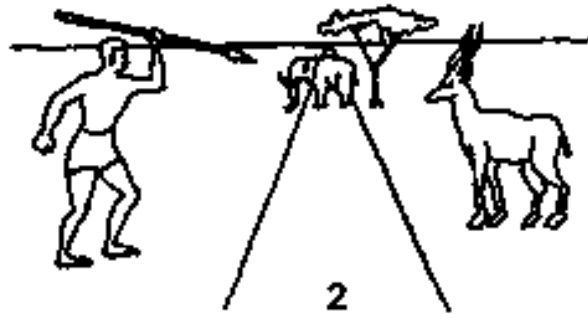
# SOPHISTICATION HYPOTHESIS

- Experience with pictures: determine the ability to interpret perceptual cues
- **Perceptual (depth) cues**
  - Convergence
  - Binocular disparity
  - Linear perspective
  - Interposition
  - Shape and size constancies, relative size
- 2D a 3D „percievers“



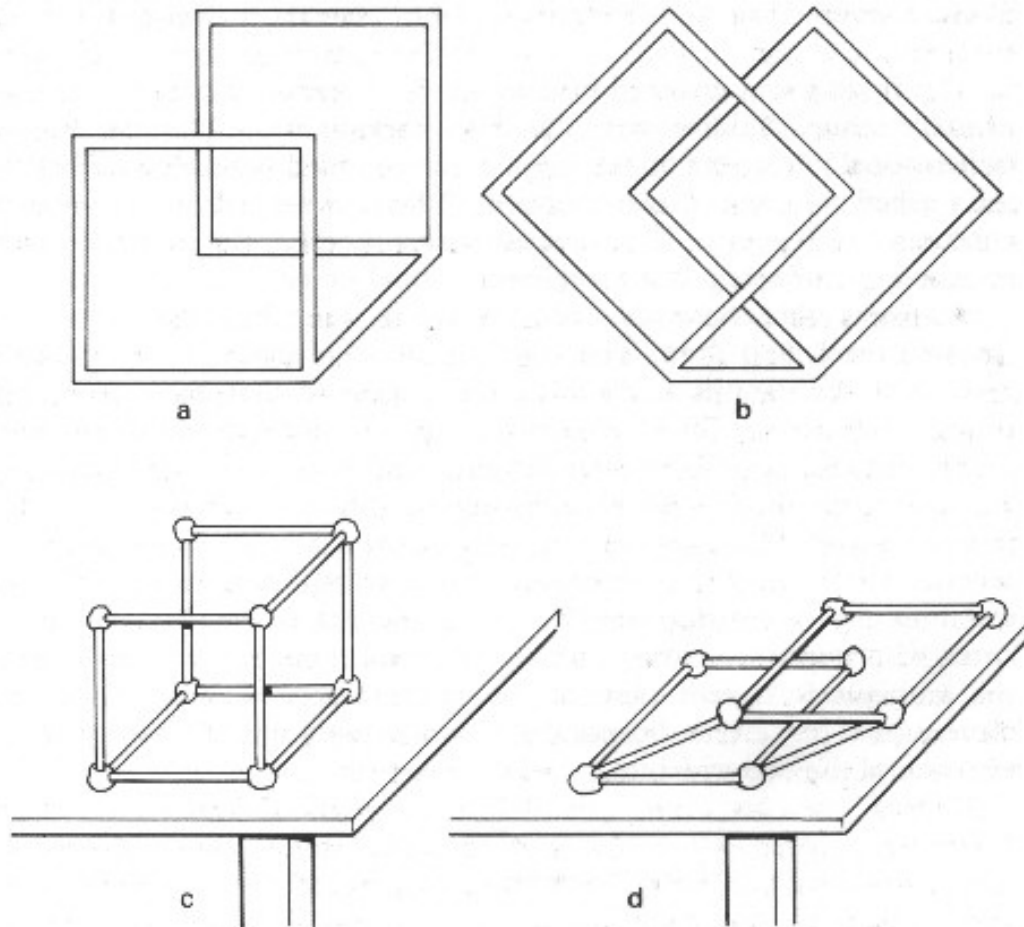
# SOPHISTICATION HYPOTHESIS

- Hudson (1960). *Pictorial depth perception in sub-cultural groups in Africa.*
  - Study of depth cues (relative size, linear perspective, interposition)
  - Illiterate people in South Africa

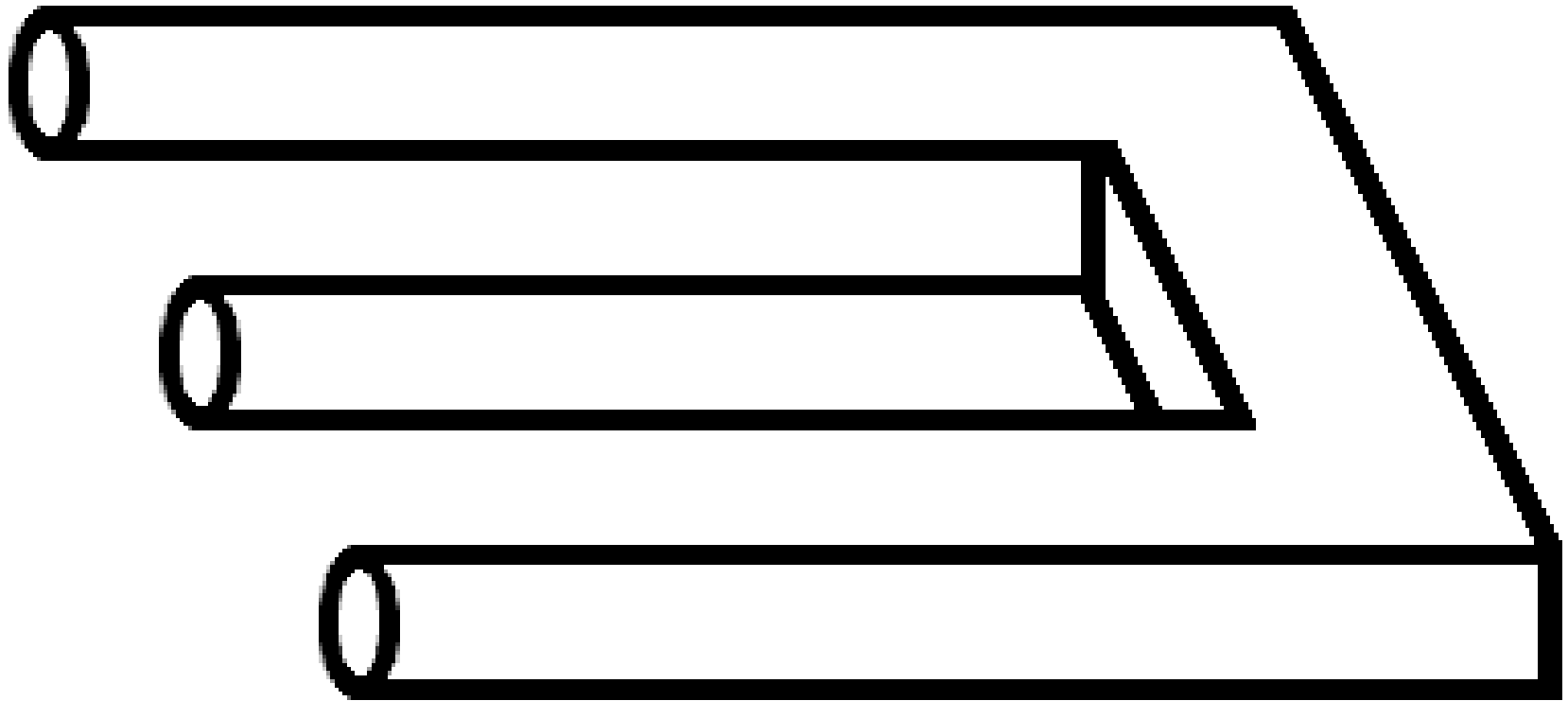


# SOPHISTICATION HYPOTHESIS

- Deregowski (1980). *Illusions, patterns and pictures a Cross-cultural perspective.*



# SOPHISTICATION HYPOTHESIS



# SOPHISTICATION HYPOTHESIS

- Conclusion:
  - Picture perception involves a set of skills
  - = deal with variety of cues + use these cues appropriately to a given situation
  - = one has to learn to read the pictures as representations of the real space
  - Cultures differ in:
    - The cues which are used
    - The relative importance attached to the cues
- = One culture may not be able to interpret drawings from another culture.



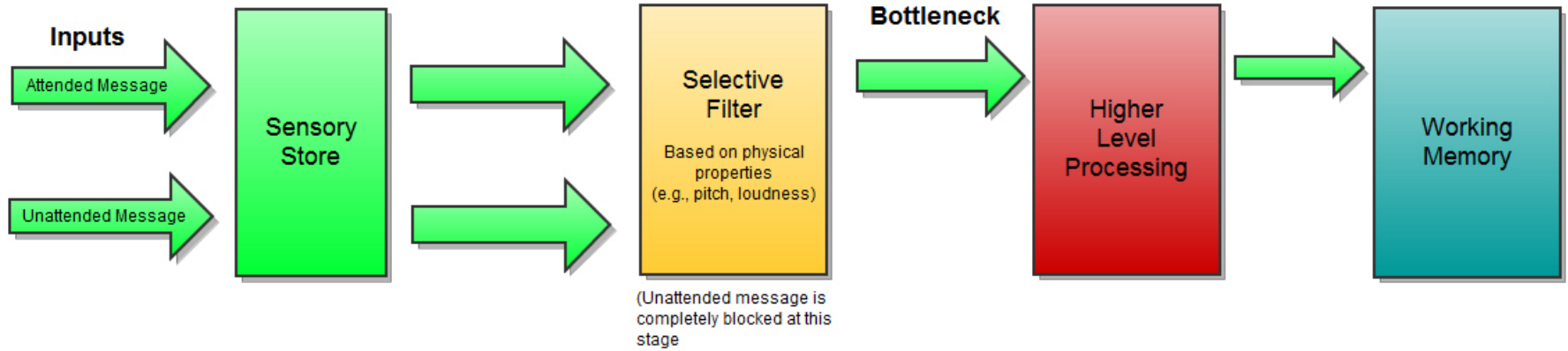
# ATTENTION, MEMORY AND ITS NATURE





# ATTENTION

## *Broadbent's Filter Model*



- Attention as a spotlight



# SELECTIVE ROLE OF ATTENTION

## Change-blindness experiments:

- Video: Count the number of passes!



- Video: <https://www.youtube.com/watch?v=Qb-gT6vDrmU>



# MEMORY

**What is the nature of memory?**




# MEMORY AS A CAMERA

## Extremely emotional experience

- = „flashes“, eidetic memories
- (Neisser, Hyman, 1999)
- Memories on the crash of Challenger space shuttle, 1 day, 2,5 years later

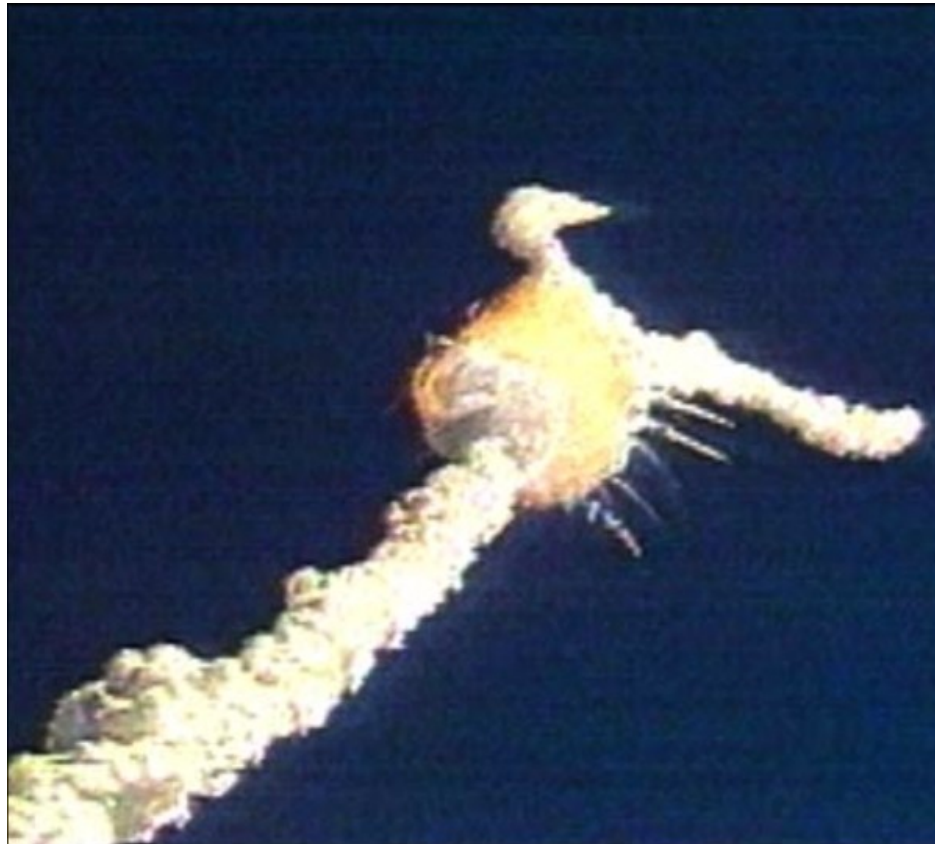


# MEMORY AS A CAMERA

- Description 1. *“I was in my religion class and some people walked in and started talking about [it]. I didn’t know any details except that it had exploded and the schoolteacher’s students had all been watching which I thought was so sad. Then after class I went to my room and watched the TV program talking about it and I got all the details from that.”*
  - Description 2. *“When I first heard about the explosion I was sitting in my freshman dorm room with my roommate and we were watching TV. It came on a news flash and we were both totally shocked. I was really upset and I went upstairs to talk to a friend of mine and then I called my parents.”*
- 

# MEMORY AS A CAMERA

- Distortions occur even in the case of eidetic memories.
- **Conviction** about the high accuracy of the memory
- Low correlation of the conviction and the factual accuracy



# EYE-WITNESSES



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# PHASES OF MEMORY PROCESS PRONE TO DISTORTION:

1. Perception and attention focus
  2. Coding in memory
  3. Storing in memory – forgetting
  4. Recall – tendency to confabulate
- Variables: time and duration of the event, gender, age, intelligence, „face memory“, emotions, personality,...





# CAUSES OF DISTORTION:

## Nature of memory:

- NOT **reproductive** – doesn't copy, what we have experienced
  
- BUT **reconstructive** – memories + convictions, needs, emotions



# CREATION OF FALSE MEMORIES

- Loftus (1993): **Lost in a shopping mall**
- [https://www.youtube.com/watch?v=PQr\\_IJvYzbA](https://www.youtube.com/watch?v=PQr_IJvYzbA)



- Chris had to state everything he remembered:
  1. Few information
  2. Reconstruction of elaborate memory
- Similar experiments: animal attack, injury, medical intervention, bullying,...



# THE HUMAN CAMERA – STEPHEN WILTSHIRE

- <https://www.youtube.com/watch?v=a8YXZTIwTAU>



THANK YOU!

