

# Piaget's Stage Model of Development

- Qualitative differences across age
- Child is an active participant in their own development
- Built in interest in new or novel experience
- Child has a coherent view of their world even if it differs qualitatively from an adult

# How Does Cognitive Change Occur?

- **Assimilation** – processing incoming information according to existing knowledge and way of thinking
- **Accommodation** – modifying one's knowledge and way of thinking based on new information or experience
- **Equilibration** – balance between assimilation and accommodation

## **Example of Assimilation & Accommodation**

A two year old encounters a man who is bald on the top of his head and has long, frizzy hair growing out from each side. The child gleefully shouts “*Clown, clown.*”

Dad tells his child that the man is not a clown, even though his hair is like a clown’s. The man was not wearing a funny costume and wasn’t trying to make people laugh.

*Child initially assimilates the man to his concept of a clown.*

*After feedback from Dad the child accommodates his idea of “clown” to the concept’s standard meaning.*

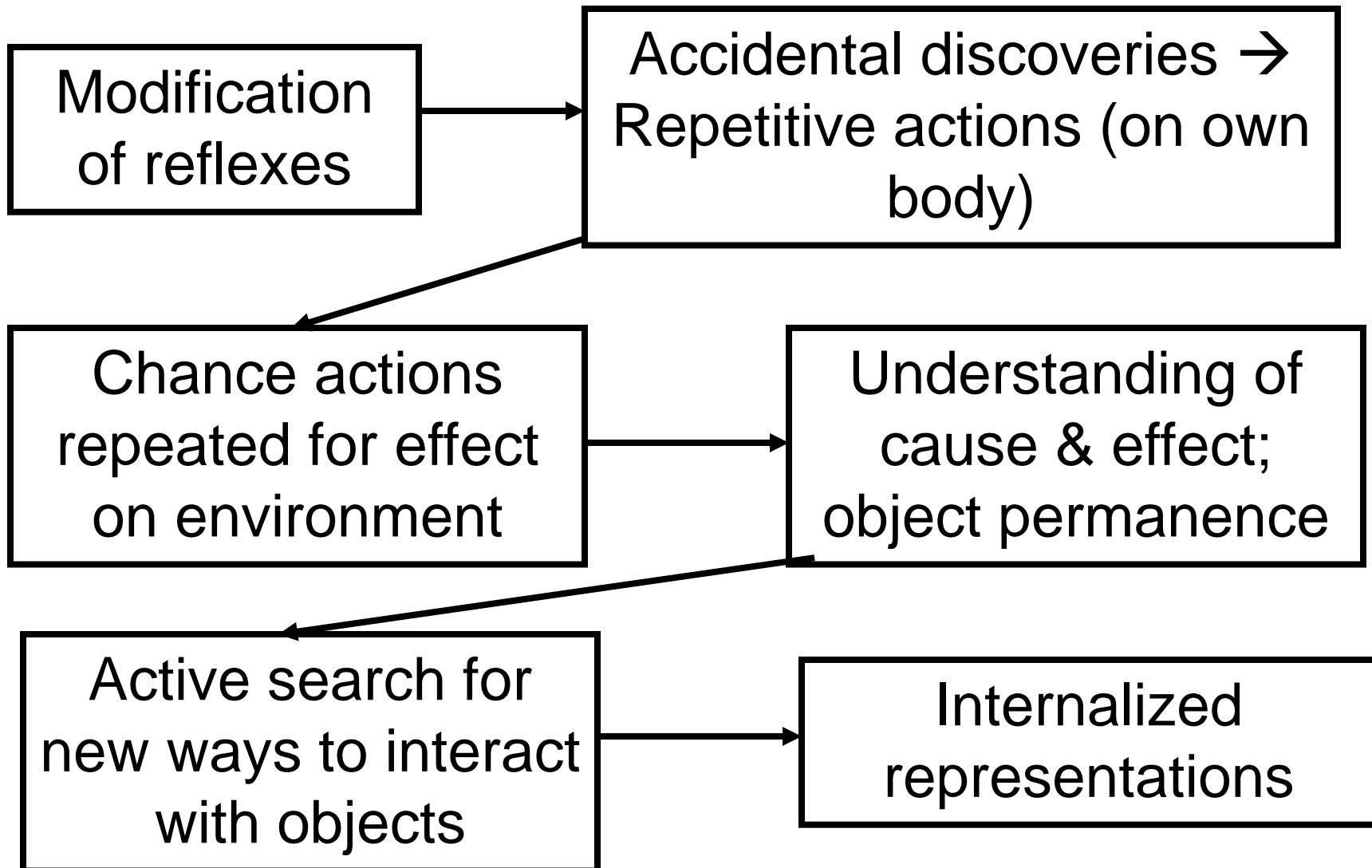
# **Piaget's Stage Model of Development**

- Sensorimotor period (Birth - 2 years)
- Preoperational period (2 - 6 years)
- Concrete operational period (7 - 11 years)
- Formal operational period (11 years onward)

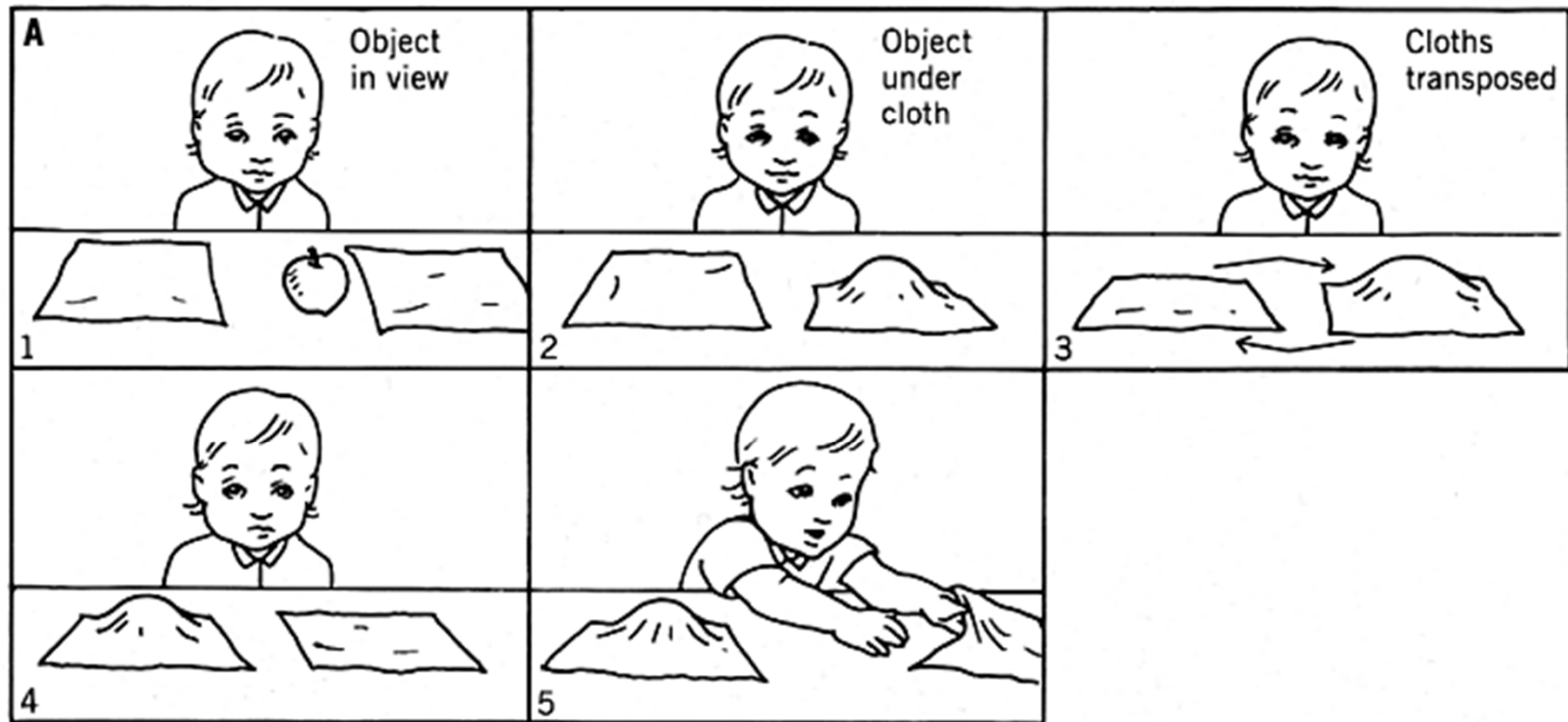
# Sensori-Motor Period

- “Thought is Action”
- Understanding of environment built up by manipulating objects
- Major Development: Object Concept

# Sensorimotor Period



## Assessment of Object Permanence



# Pre-operational Period

- Key development = growth of representational ability
- Early symbolic representation
  - Deferred imitation
  - Problem Solving via Mental Combination



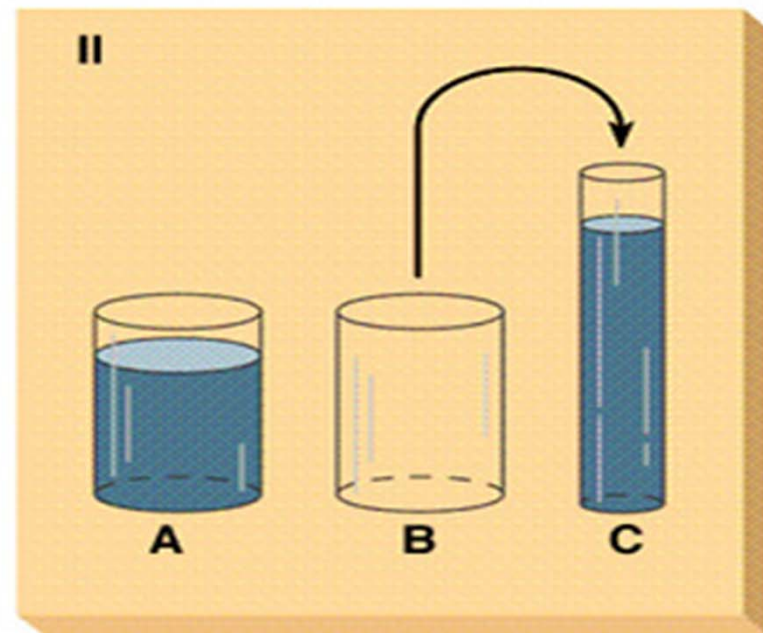
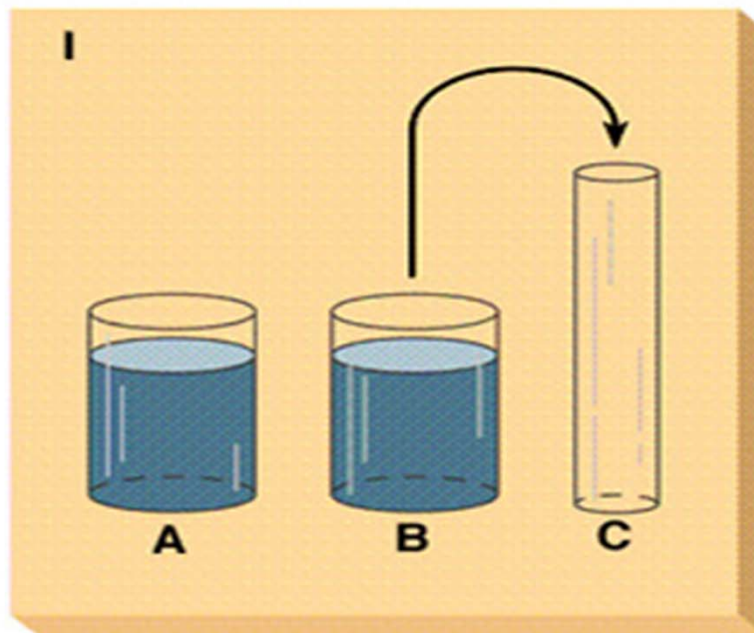
# **Pre-operational Period: Limits on Thought**

- Child focuses on only one, perceptually striking aspect of a task (centering)
- Child focuses on states rather than transformations
- Child's thought is irreversible
- Child is egocentric

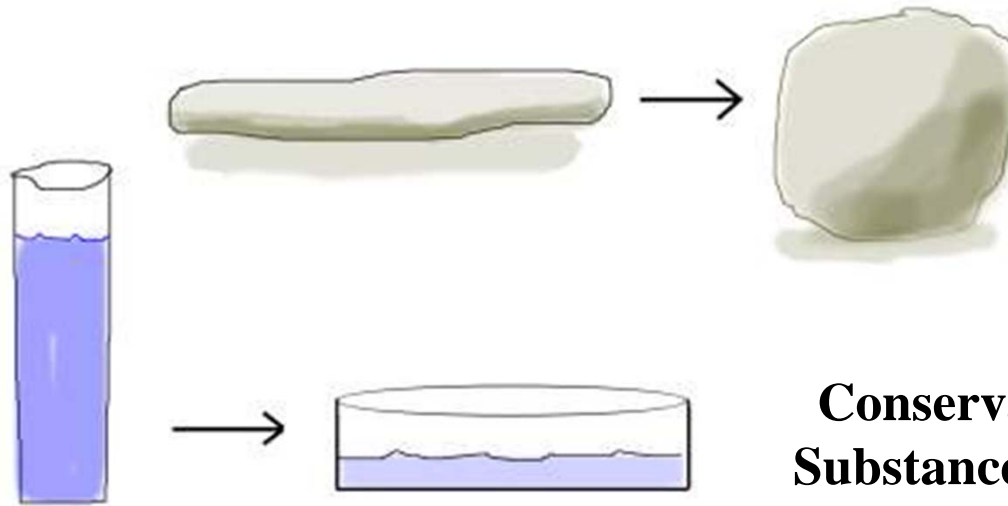
# Conservation of liquid quantity

Papalia, Human Development, 7e. Copyright © 1998. McGraw-Hill Companies, Inc. All Rights Reserved.

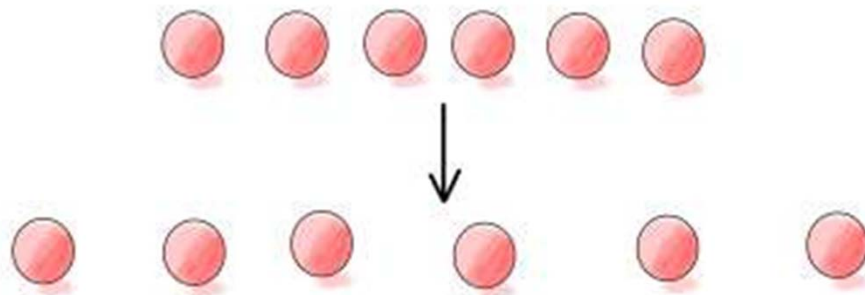
## Piaget's Conservation Task



**Conservation of Solid Substance: Is there more, less, or same amount of clay?**



**Conservation of Liquid Substance: Is there more, less, or same amount of blue liquid?**



**Conservation of Number: Are there more, fewer, or same number of spheres?**

# Pre-operational Period: Egocentric Speech

Mary: They wiggle sideways when they kiss.

*John: (vaguely) What?*

Mary: My bunny slippers. They are brown and red and sort of yellow and white.

*John: I have a piece of sugar in red pieces of paper. I'm gonna eat it and maybe its for a horse.*

Mary: We bought them. My mom did. We couldn't find the old ones. They were in the trunk.

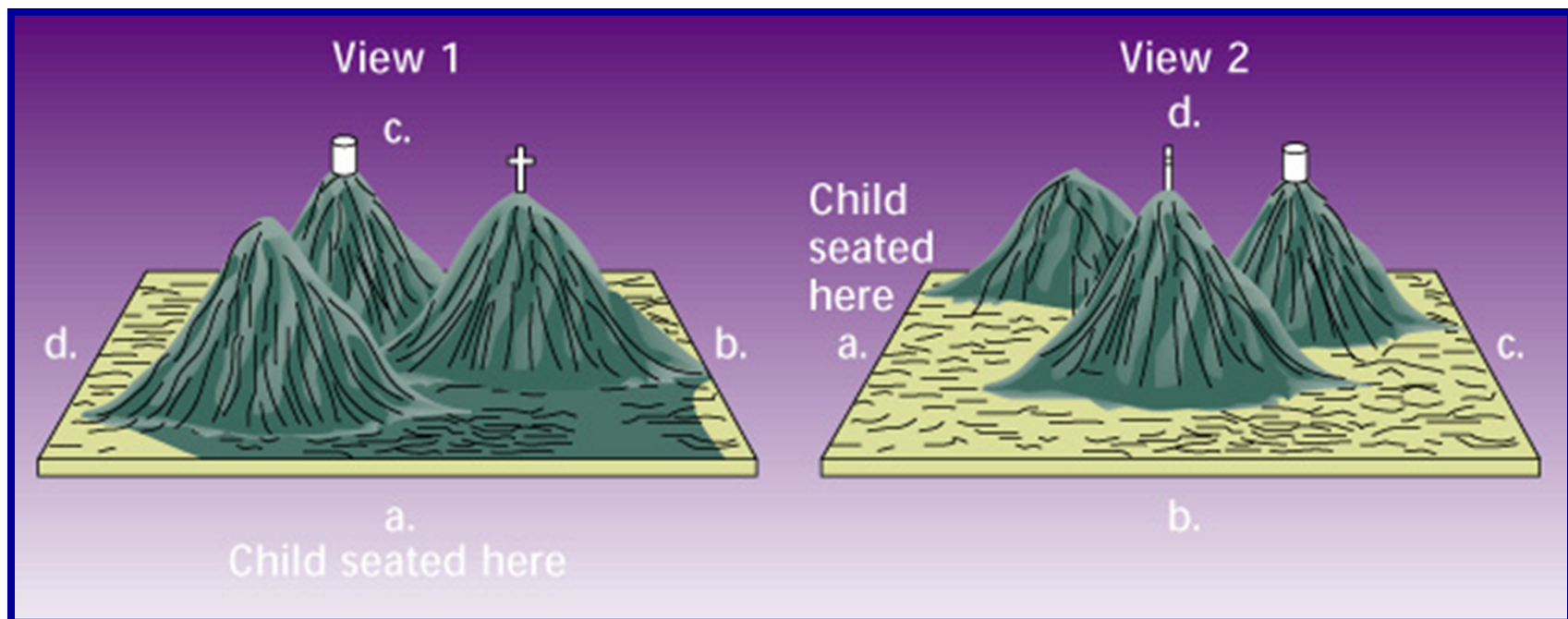
*John: Can't eat the piece of sugar, not unless you take the paper off.*

Mary: And we found Mother Lamb. Oh, she was in Poughkeepsie in the trunk in the house in the woods.

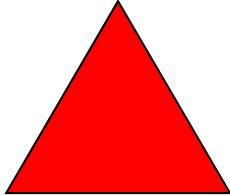
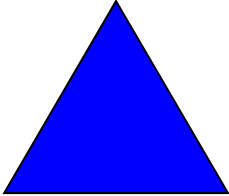
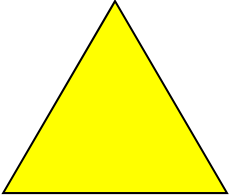
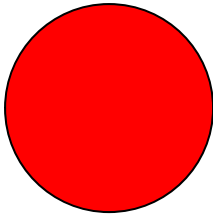
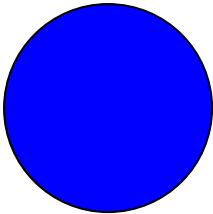
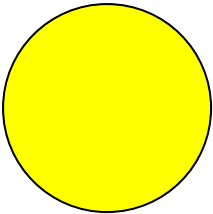


*John: Do you like sugar? I do, and so do horses.*

# Pre-operational Period: Spatial Egocentrism

## The Three Mountain Tasks



# Understanding Classes & Relations

		
		
		?

# Concrete Operational Period

- Key development = mental representations of dynamic and static aspects of the environment
- Example: Conservation Tasks
  - substance, liquid & solid
  - number

# Concrete Operational Period: Limits on Thought

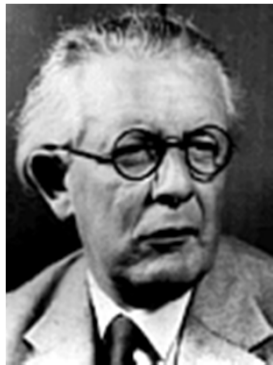
- Child cannot systematically evaluate alternatives
- Child cannot reflect on his/her own thought processes
- Child cannot engage in hypothetical thinking



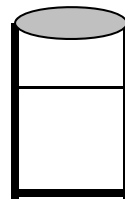
# Classic Problem

## Jean Piaget: Mixing Colors Problem

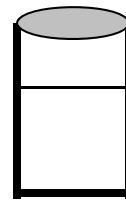
- 1,2,3,and 4 contain colorless, odorless liquids.
- X contains an “activating solution”.
- Some combination of liquids (always including X) will give a YELLOW color.
- How can you find the combination that makes YELLOW?



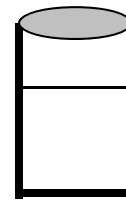
**Jean Piaget (1896-1980)**  
Children's Cognitive Development  
University of Geneva



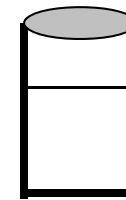
1



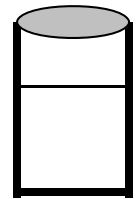
2



3



4

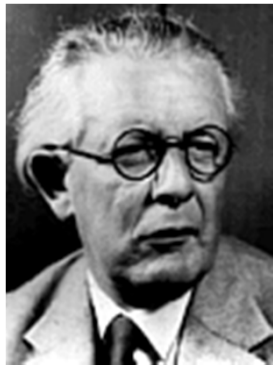


X

# Classic Problem

## Jean Piaget: Mixing Colors Problem

$1+x$	$1+2+x$	$1+2+3+x$	$1+2+3+4+x$
$2+x$	$1+3+x$	$1+2+4+x$	
$3+x$	$1+4+x$	$1+3+4+x$	
$4+x$	$2+3+x$	$2+3+4+x$	
	$2+4+x$		
	$3+4+x$		



**Jean Piaget (1896-1980)**

Children's Cognitive Development  
University of Geneva

# Classic Problem

## Inductive Reasoning: Inferring a Simple Rule

- You will be presented a series of geometric figures.
- Large or small, square or circle, black or white.
- **+** = Conforms to the rule.      **-** = Violates the rule.
- What is the rule?



Jerome Bruner, Ph.D.

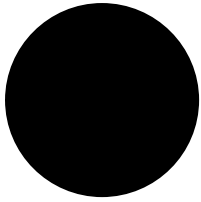
**A Founder of Cognitive Psychology**

Harvard University, Center for Cognitive Studies 1960-72

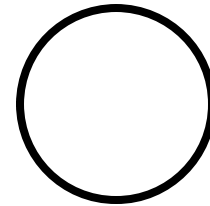
Oxford University 1972-80

New School for Social Research 1980 -

What is the Rule?



+



+



+



+



-



+



+



-

# Formal Operational Period

- Key development = abstract reasoning emerges
- Child is now able to solve problems systematically, considering all alternatives
- Child can reflect on his/her own thought processes (metacognition)