Jean Piaget (1896-1980)

- Piaget was born in Neuchâtel Switzerland
- Prodigious writer, writing over 60 books and publishing hundreds of papers
- Worked as a teacher at a school for boys run by Alfrend Binet, the developer of the Binet intelligence test

Piaget and Cognitive Development

- Where does Piaget's theory sit on the continuum from radical to social constructivism?

Three major steps in the development of intelligence

- Sensory-motor activity – the cradle of intelligence
- Egocentric thought – transitory thought form between autistic and rational thought
- Rational (communicable) thought

Sensorimotor Activity

- “At the beginning of mental life, the world appears to the child as a series of pictures which are centered about activity and lack any intrinsic stability.” (pp. 159-160)
- “The absence of permanent objects and of the objective organization of space seems thus to go hand in hand with a radical and unconscious egocentricity, so that the subject does not consider himself as one thing among many but only conceives of things in relation to his own actions.” (pp. 160)

Characteristics of Egocentric Thought

A. Egocentric logic is more intuitive than deductive…its reasoning is not made explicit
B. Little value is attached to checking or proving propositions
C. Personal schemas of analogy are made use of, which control the present course of reasoning without openly manifesting their influence
D. Visual schemas also play an important role, and can even take place of proof in supporting the deduction that is made
E. Judgments of value have far more influence on egocentric than communicable thought

Communicated Thought

A. Far more deduction, more of an attempt to render explicit the relations between propositions by such expressions as *therefore*, *if...then*, etc.
B. Greater emphasis is laid on proof.
C. Schemas of analogy tend to be eliminated, and to be replaced by deduction proper
D. Visual schemas are also done away with, first as incommunicable, and later as useless for purposes of demonstration
E. Personal judgments of value are eliminated in favor of collective judgments of value

Piaget's Stage Theory

- Piaget introduced four different stages of cognitive development. Each stage depends on physiological maturation for the hardware necessary to ascend the ladder of mental functioning. His four stages are:
  - Sensorimotor – object permanence http://www.youtube.com/watch?v=6NGq6SHOE5k&mode=related&search=
  - Preoperations – egocentric, fails conservation tasks
  - Concrete operations – egocentric, masters conservation tasks http://www.youtube.com/watch?v=Q8yKhbXhkk0&mode=related&search=
  - Formal Operations – abstract reasoning, propositional thinking, masters control, 'All things being equal…"

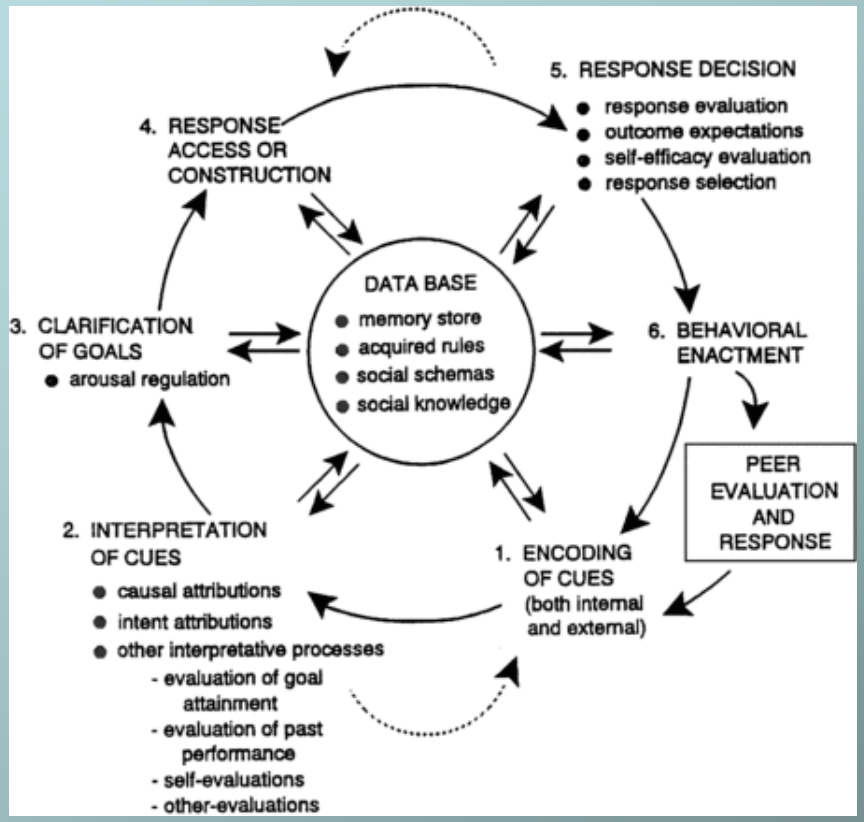
Piaget's Stage Independent theory

- Piaget also introduced several important *stage-independent* concepts, concepts cutting across the different stages. They are:
  - Schema
  - Operation
  - Assimilation
  - Accommodation
  - Equilibrium
  - Disequilibrium
  - Adaptation

Schema

- Schemas are generalized patterns of behavior and thought that are meaningful and reproducible (e.g., grasping schema in infancy, and the “all other things being equal” schema in adolescence).
- Schemas are prevalent in pre-operational thinking, although we continue to use schema even with logical thinking

Social Information Processing Theory: Schematic thinking goes wrong!



Source: Crick, N. R. and K. A. Dodge (1994). A review and reformulation of social information processing mechanisms in children's social adjustment. Psychological Bulletin **115**: 74-101.

Operation

- Mentally acting on an object
- Two examples are:
  - **Reversibility** – Numbers and objects can be changed and then returned to their original state (e.g., 1+1=2, 2-1=1)
  - **Classification** – Ability to arrange objects by similarity (e.g., color, shape, size).

Conservation is the mother of all operations!

- Piaget wrote: “Yet at the other extremity (from infantile egocentricity) of the development of the universe is considered as being formed of permanent objects whose movements take place in a space independent of us, and whose many relationships form a series of invariables which prolong the conservation of the object itself; invariables of number, quantity,...One may therefore say that, in so far as egocentricity is reduced by co-ordination of the individual point of view with other possible ones, the co-ordination which explains this reduction explains also the formation of logical instruments of conservation (ideas of ‘groups,’ systems of relations, etc.) and the formation of invariables in the world of reality (ideas of the permanence of the object, of quantities, weights, etc.).” (p. 160-161)

Piaget proposed two biologic functions: Organization and adaptation

- Organization, he proposed to have a regulative intellectual function.
  - The aim of organization is to attain ideal intellectual states, consistent with experience, through assimilation and accommodation.
  - We organize our conceptions to make sense of our experience
  - The ideal is cognitive equilibrium, in which our conceptions easily assimilate experience; Our conceptions are sufficient to explain our experience, and we are at mental peace

Equilibrium

- Equilibrium is a relaxed vegetative state when present understanding matches experience
- Disequilibrium is the opposite of equilibrium – absence of peace; we are wanting more
- Thus, desire is an indicator of equilibrium

Desire is an indicator of disequilibrium

- Piaget wrote:
  - *"Ideals and values are totalities in the making, values being merely the expression of desirability on the various levels [of organization]. Actually, desirability is an index showing that an equilibrium has been disrupted or a totality [in the making] has not yet been consummated. It is an indicator that a missing element is sought or is to be created in order that equilibrium be attained." (p. 190, Piaget, 1951)*

Disequilibrium

- Desirability indicates tension between an ideal (outcome) and the intrinsic value of the ideal, the greater the value, the greater the tension
- Cognition, from the perspective of biological organization, therefore, implies cognitive work to attain the ideal, and a return to equilibrium, a vegetative state
- Therefore, desirability may be an ideal indicator of disequilibrium, because of its relationship to mental work (wanting)

Adaptation

- Piaget wrote:
  - *"Intelligence is an adaptation. In order to grasp its relation to life in general, we must first define the relationship between the organism and its environment. Life is a continuous creation of ever more complex forms, and a progressive equilibrating of these with the environment. To say that intelligence is a particular case of biological adaptation implies, therefore, that it is essentially an organization, the function of which is to structure the universe just as the organism structures its immediate environment." (p. 180, Piaget, 1951)*

Adaptation

- “As seen from another vantage point, adaptation is simply organization at grips with environmental occurrences.” (p. 192, Piaget, 1951)

Adaptation

- According to Piaget:
  - "...adaptation occurs when the organism is so changed by the environment that its integration with the environment increases and its conservation is thereby promoted." (p. 182, Piaget, 1951)
  - This implies a restful (vegetative) end state in which energy is conserved

Assimilation

- The inverse of adaptation is assimilation
  - Assimilation occurs when a cognitive structure integrates information, interpreting information to fit the structure
    - As such, structure supersedes experience
  - However, because experience is broader than any structure, assimilation ultimately fails, necessitating adaptation

Assimilation

- Piaget wrote:
  - *"…intellectual adaptation, like any other adaptation, is a succession of equilibria between the complementary mechanisms of assimilation and accommodation. The mind is adapted to reality only if accommodation is complete, that is, if no further change occurs in reality that would necessitate an alteration of the subject's schemata. (p. 185, Piaget, 1951)*

Social information processing and adaptation: how do we fix a socially maladjusted individual?

- If you worked with a socially maladjusted adolescent male with severe social phobia, how would you apply Piagetian psychology to help this adolescent overcome his problem?

Formation of intelligence

	Non-communicable thought	Communicable thought
Undirected thought	Autistic thought	Mythological thought
Directed thought	Ego-centric thought	Communicated intelligence

Piaget Reference

- Piaget, J. (1951). The biological problem of intelligence. Organization and pathology of thought. New York, Columbia University Press: 176-192.