The Child’s Perception of Pictorial Space

A study based on the theories of Jean Piaget

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Jean Piaget Fun Facts

- TIME magazine top 100 scientists and thinkers of the century
- Published nearly 60 scholarly books
  - The Child’s Conception of Space
- Collaborated with Barbel Inhelder and reviewed the research of many others to formulate pictorial perception stage theories
How does drawing and thinking relate?

- As child assimilates and accommodates schemes these are revealed through drawings
- Egocentrism - how it looks to me
- Decentration - shown from another point of view
The Problem

- Is it possible to determine the stage of a child’s development by having them draw a picture of a tree behind a house?

- Will children who are the same age be in the same stage of development?
Hypothesis

Yes, it is possible to determine the stage of development with the “draw a tree behind a house” task.

“Gifted” students will show more advanced stage of development than same age children in a regular class.
Stages of Pictorial Perception

- Scribbling
- Topological Relationships
- Stage 1: Synthetic Incapacity
- Stage 2: Intellectual Realism
- Stage 3: Visual Realism
Scribbling

- No purpose or aim
- No variation
- Unable to close a line to form a shape
  - Sensori-motor stage of development
  - Up to age 2;11
Topological Relationships

- Evolve from scribbling
- Acquired in order
- Form the foundation for stages.
  - Rule of proximity
  - Rule of separation
  - Rule of order
  - Rule of enclosure
  - Rule of continuity
Stage I: Synthetic Incapacity

- Predominance of topological relationships
- Age 3-4
- Early preoperational stage of development
Stage I: Synthetic Incapacity
Stage II: Intellectual Realism

- Drawing not what child actually sees but “everything that is there”
- Age 4-8
- Late preoperational stage to early concrete stage
Stage II Characteristics

- Drawings include more details
- Euclidean and projective relationships emerge
- Topological relationships applied
Stage II “Errors”

- Transparencies
- Mixed Views
- Fold-out drawings
- Figures side-by-side, flat, no depth
- Lack of occlusion
- Right angle bias
Stage III: Visual Realism

- Viewpoint of observer is respected
- Age 8-12
- Late concrete operational to early formal operational stage
Stage III Characteristics

- Proper perspective
- Show left, right, in-front & behind
- Straight lines, angles, curves, distance
- Foreshortening possible
- Details, details
Stage III Samples
Settings of Evaluation

- Youngest children evaluated in home of caregiver.
- Gathering of mutual friends
- After Sunday School
- After-school art program
- After-school enrichment program
Research Methods

- Student asked to “draw a tree behind a house”
- Task 1: clay balls
- Task 2: three-mountains
- Task 3: shapes made by OJ can
Limitations

- Difficult to evaluate pictorial stage based on one drawing
- Some can’t conserve but can do other tasks
- Lack scheme-had to adapt to soda or soup can
  - “What is an Orange Juice can?”
- Motivation of child changes during study
  - Get tired of drawing
  - Wants to be with friends
  - Could be influenced by other students
Scoring and Evaluation

- Drawings scored: 1 point per object
- Answers to three tasks evaluated
- Added a step of evaluating drawings according to characteristics of each stage of pictorial perception
Age vs. Drawing Score

Age vs. drawing score
Synthesis of Analysis & Scores

- Visual Realism
  - Drawing scores from 20-142
  - Age range from 8;11 - 11;3
  - Stages of development
    - Formal - 3 children
    - Concrete/Formal - 4 children
    - Concrete - 1 child
    - Preoperational - 1 child (an anomaly?)
Synthesis of Analysis & Scores

- **Intellectual Realism**
  - Drawing scores from 7 - 79
  - Age range from 5;7 - 11;10
  - Stages of development
    - Concrete - 8 children
    - Preoperational/concrete - 4 children
    - Preoperational - 4 children
Synthesis of Analysis & Scores

- Synthetic Incapacity
  - Drawing scores from 1 - 5
  - Age range from 3;0 - 4;1
  - Stage of development
    - Preoperational
What about the “gifted” kids?

- Too few to make analysis against same aged children in regular class
- Students in LEAP program (I.Q. 140+) showed great detail in drawings and answered tasks quickly compared to other students
- Research shows giftedness appears in children’s artwork
Conclusion

- Drawing house task best identifies extremes
- Drawings give evidence of stage of cognitive development
- Same stage of development does not mean similar solutions