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Moving with and beyond Vygotsky  
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# ACTIVITY THEORY APPROACH IN DEVELOPMENTAL NEUROPSYCHOLOGY

Yulia Solovieva and Luis Quintanar

Master Program in  
Neuropsychology  
Autonomous University of Puebla,  
Mexico

[www.colegiokepler.edu.mx](http://www.colegiokepler.edu.mx)

[www.neuropsicologia.buap.mx](http://www.neuropsicologia.buap.mx)

[yulia.solovieva@correo.buap.mx](mailto:yulia.solovieva@correo.buap.mx)

[luis.quintanar@correo.buap.mx](mailto:luis.quintanar@correo.buap.mx)

# Common separation of Neuropsychology & Activity Theory

Is it possible to establish any relation?

# ACTIVITY THEORY PRINCIPLES

1. Cultural activity as the origin of psychological development.
2. Unit of external and internal activity.
3. External activity as the previous stage necessary for internal activity (interiorization).
4. Subject – object (subject) participation.

## **Activity is a complex system which includes different levels**

**Psychological Development can not be understood without  
analysis of child's activity according to psychological age.**

**Only specific activity may guarantee formation of ideal plan  
(Ilienkov, 1979) of action (of personality as well),  
not by a "tool" or "artefact" itself**

Cultural  
activity:  
separation  
of object and  
action with  
this object:

ideal plan



According to activity theory we can analyse systemic psychological structure or unit: “action” according to goal or “activity” according to motiv.

(Leontiev, Galperin, Talizina)

## **CONCEPT OF ACTION:**

**Process of a subject (agency)  
directed to specific  
goal objective which is determined  
by general  
motiv of correspondent activity.**

# Action (in developmental research)

process directed to a goal

According to Vigotsky,  
such actions are not individual,  
but include two participants:  
adult and child  
“joint action situation”



# Structure of action (ACTIVITY):

- Motiv
- Objective (goal)
- Orientation
- Sequence of operations
- Result



**LEVELS OF ANALYSIS OR  
LEVELS OF FORMATION OF ACTION  
( after P.Ya. Galperin)**

Material (concrete)

Symbolic external

Perceptive concrete (images)

Perceptive symbolic

External oral language

Written language

Mental concepts (ideal)

(ideal form of action exists from the very  
beginning, not only at the end of the process)

## Variations in Structure of action:

- Motiv: external or internal object of action, image, concept, person)
- Objetive (goal): same
- Orientation: same
- Secuence of operations: any level
- Result: any level

# Process of school learning:

Passive process which depends on biological or social conditions?

Observation and registration

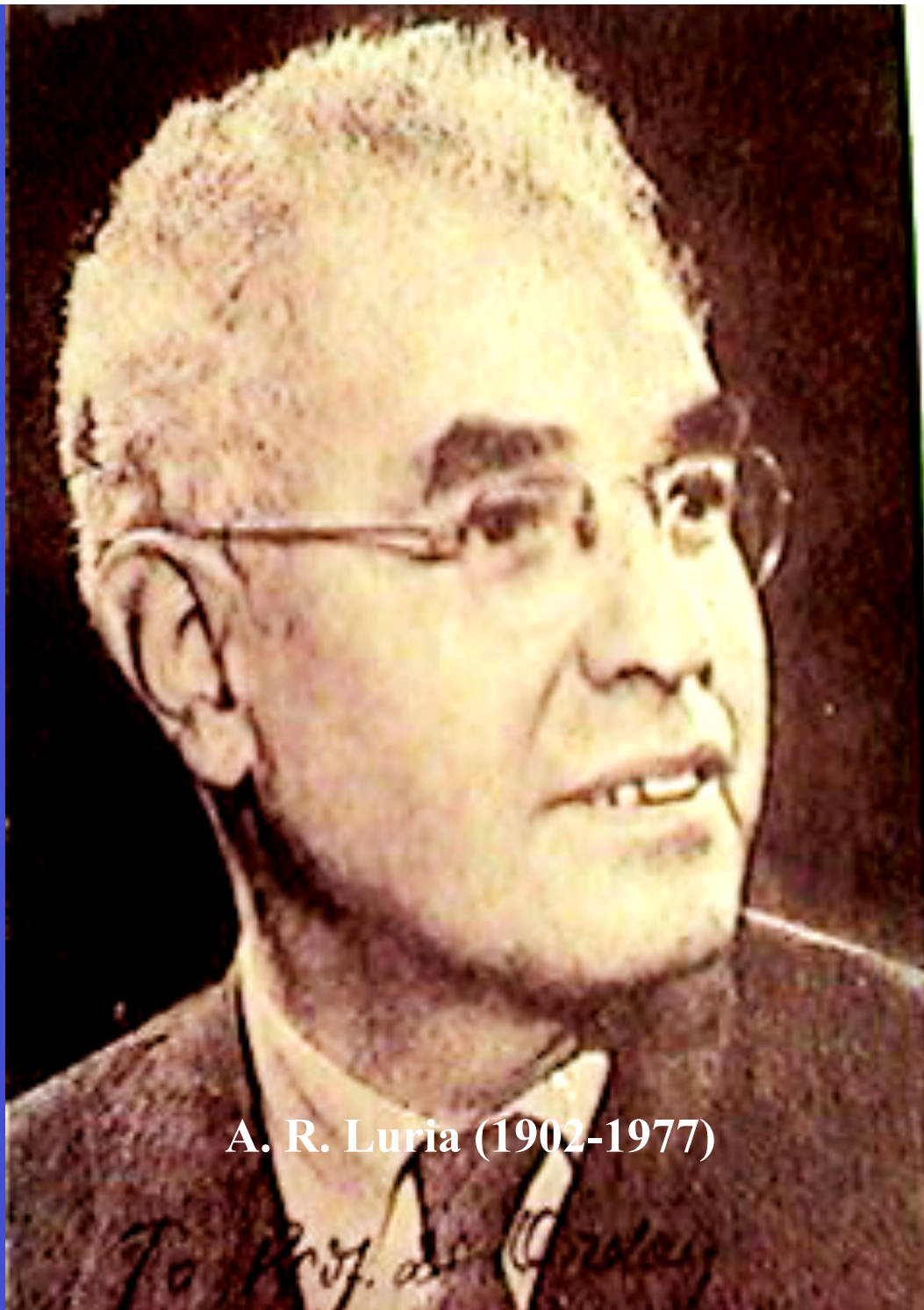
Active process which depends on organization of pupil's activity? Genetic experiment or formative method

# CULTURAL DEVELOPMENT

*“Cultural development penetrates in all levels of maturation and organic development and can not be separated from it”*

**(L.S.Vigotsky, free translation)**

**Culture is an ideal plan of development and  
can not be achieved without specific activity**



A. R. Luria (1902-1977)

¿How many functions do we have?

¿How we can determine them?

¿What is the origin?

¿Which are Elementary and which are Superior?

¿How they influence on each other?



Functional (neuro)  
psychology:  
perception,  
attention,  
language,  
thinking,  
executive functions?  
What else?

We can call such function as “superior” or “elementary”, but we still work or assess functions even if we say that they are related to each other

# Neuropsychology:

Studies relation between brain and activity  
or better: brain mechanisms of activity  
which are forming during development  
of a child (kind of activity)

# Development Neuropsychology

New goal: not only to describe difficulties or assess development, but also to propose methods & strategies to support correspondent activity

# Psychological Activity

**Activity** – condition and mean of existence of human psyche

**Levels of activity:**

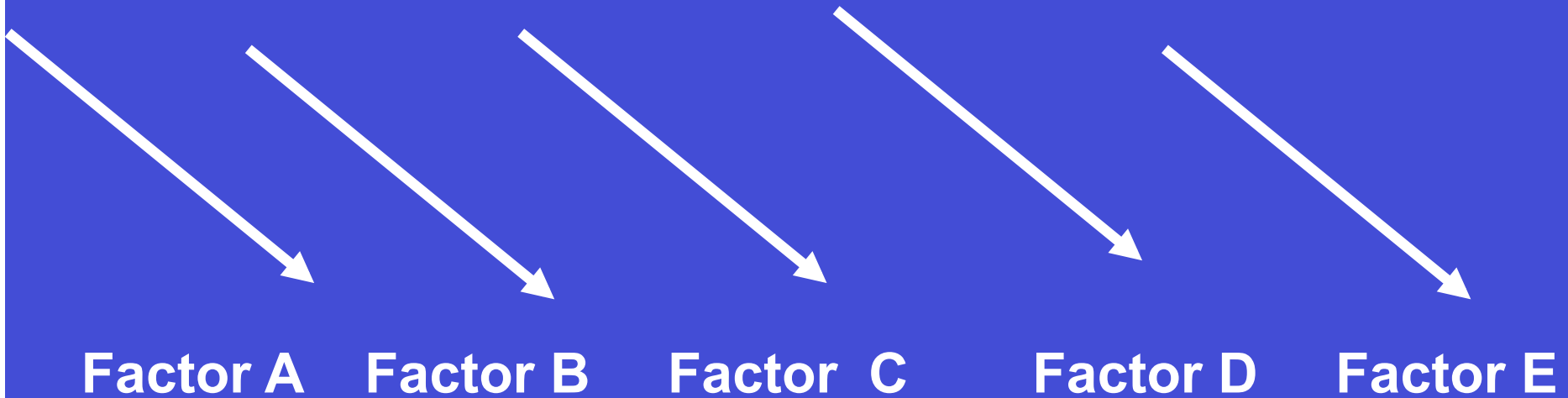
**Activity** – motiv

**Action** – objective

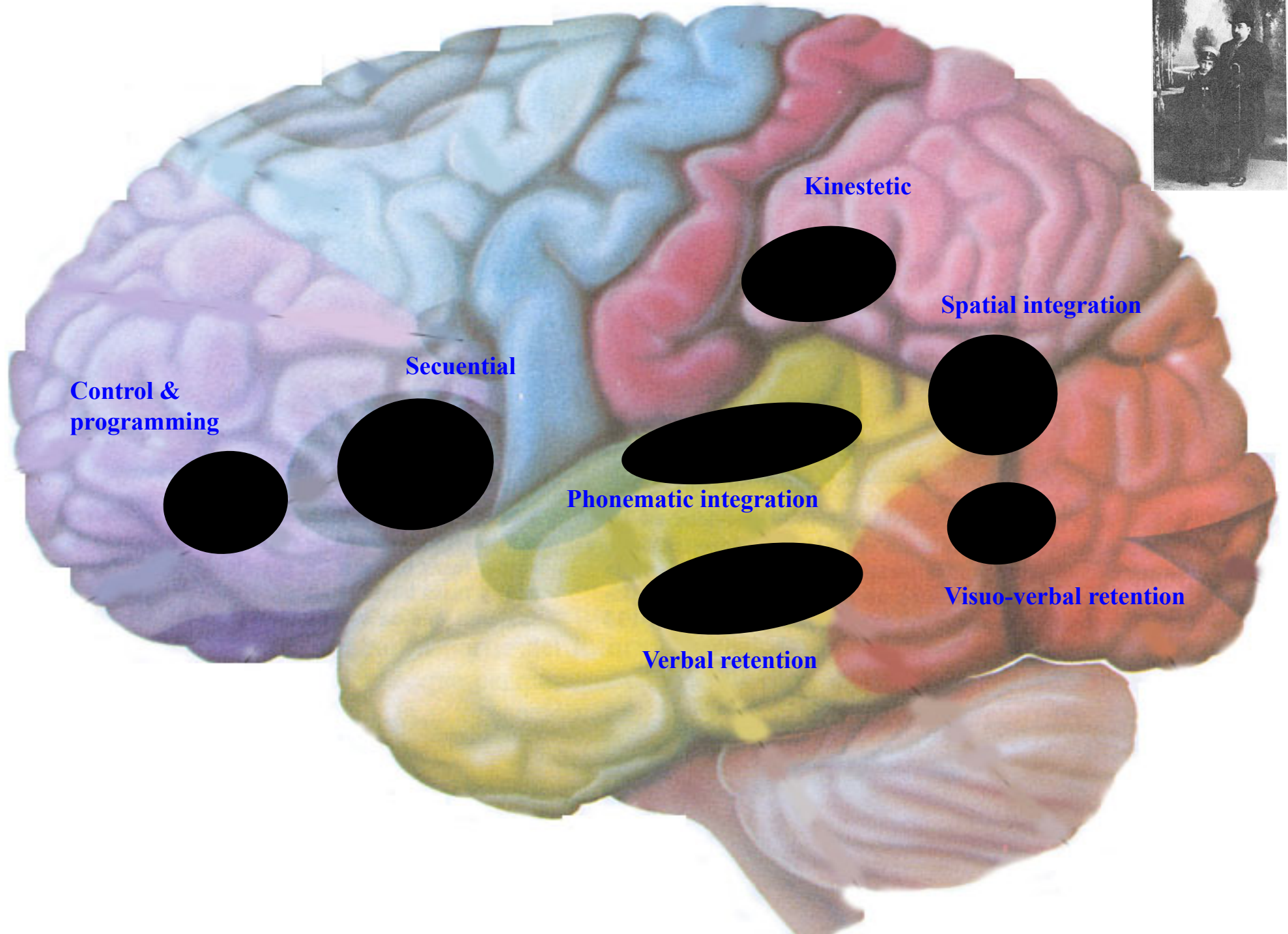
**Operations** – means and conditions

**Neuropsychological mechanisms (brain mechanisms)**

# Action 1



Each action represents a system,  
and includes different mechanisms, not necessary all of them



# Factors (brain mechanism) A

Action 1

Action 2

Action 3

Action 4

Action 5

Action .... N

Same mechanism take part in different actiones, never only 1

Not all mechanisms take part in all actions

# Action of writing (dictation)

Operations (automatized processes):

1. Phonological analysis.
2. Election of letters and its elements.
3. Organization of writing.
4. Verification.



# Phonological analysis

## Neuropsychological mechanisms:

- Phonematic analysis and synthesis
- Cinesthetic analysis and synthesis
- Audio-verbal retention (short-term verbal memory)

# Election of letters and its elements

## Neuropsychological mechanisms:

- Global perception
- Analytic perception
- Visuo-spatial retention

# Organization of writing

## Neuropsychological mechanisms:

- Global perception
- Cynethic motor melody

# Verification

## Neuropsychological mechanisms:

- Programming and control
- General no specific activation

**Case of learning disabilities.  
Problems with complex spatial synthesis  
(10 years)**

**Writing:**

- ✓ Impossibility to assimilate global image of the words and letters;
- ✓ Omissions of vocals;
- ✓ Absence of stable visual graphic image (proportions, inclination, shape);
- ✓ Disortography;
- ✓ Difficulties with spatial organization of the line and borders;
- ✓ Difficulties with orientation in internal space of the words and letters.

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# Other actions which suffer:

## Reading:

- Impossibility to comprehend complex logic and grammar constructions and the sense of texts

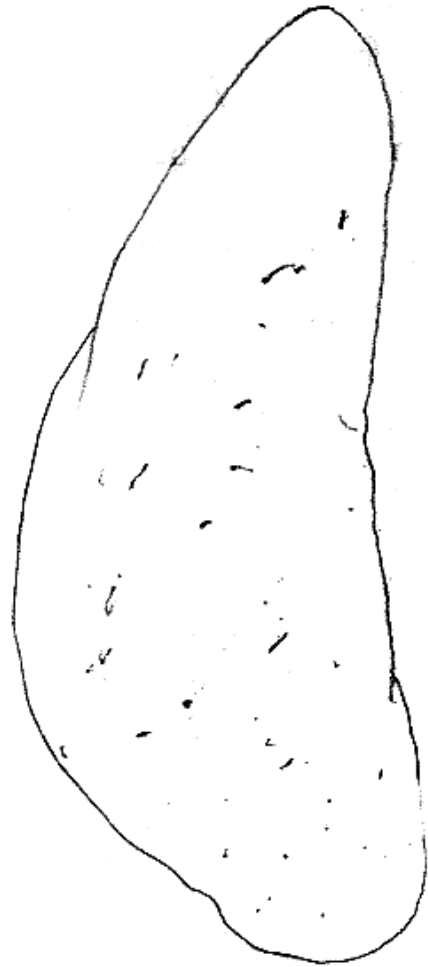
## Drawing:

- Problems with global orientation and presentation of images of objects

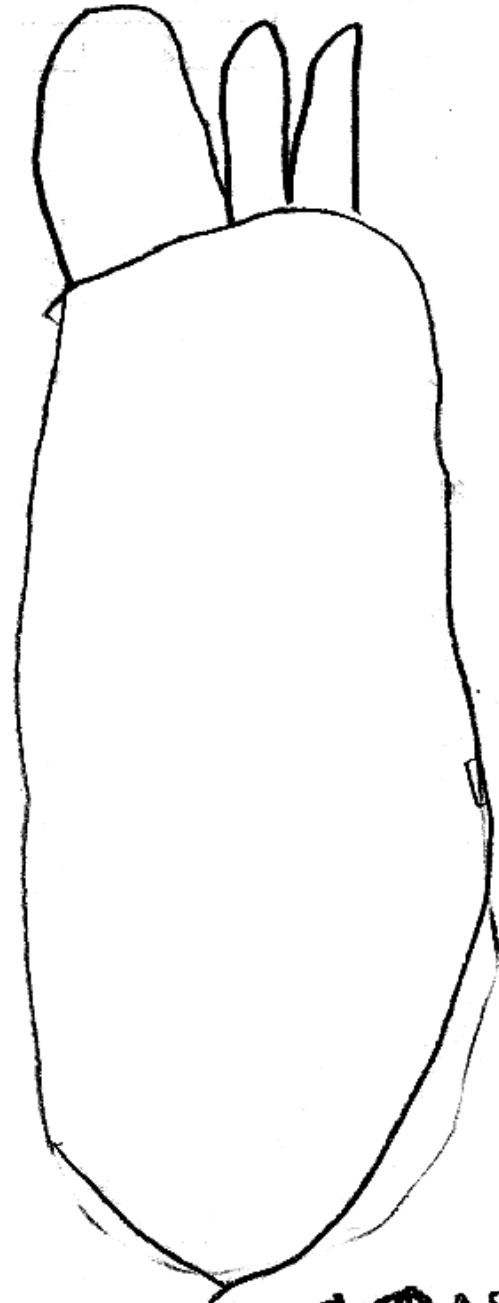
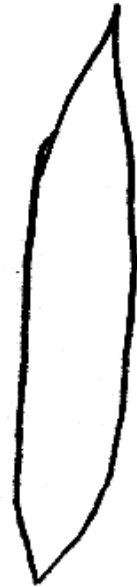
## Problem solving:

- Misunderstanding of the sense and structure of number and of problems and order of arithmetic operations

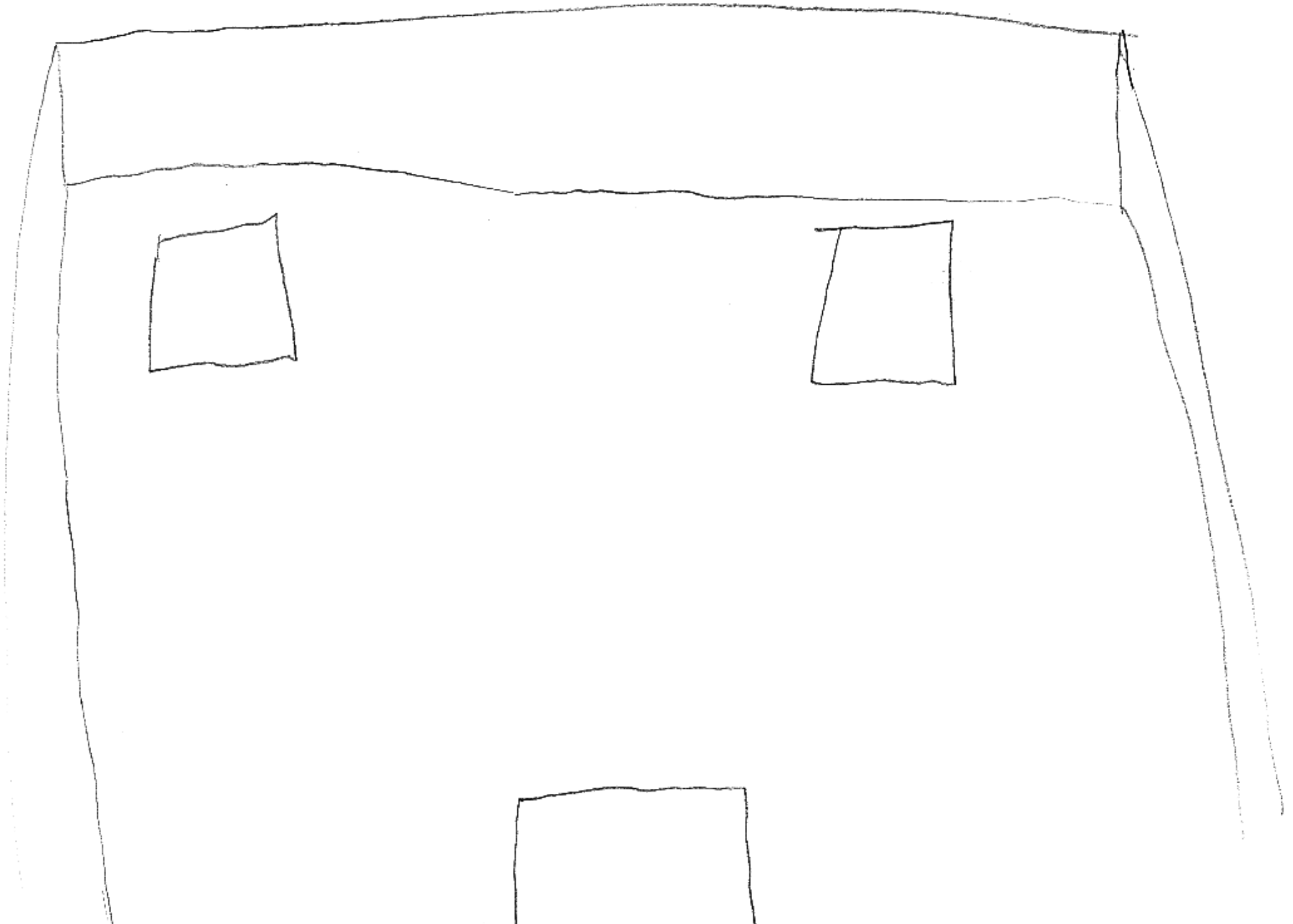


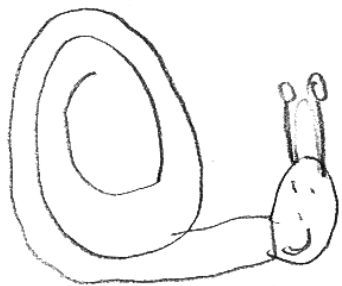


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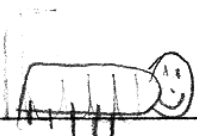


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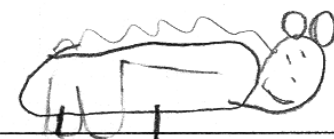
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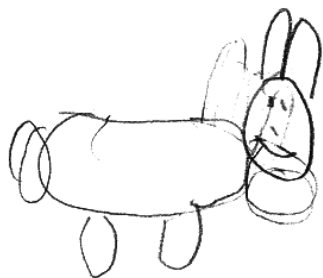
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Cento cincuenta y dos

Stephanie K. O. B. Cabo

23/01/07

# Objective of correction of writing

Formation of conscient actions and its  
conversion in operations:

1) Election of letters

2) Organization of writting

- with the help of constant orientation.

# Objective of previous stage

Include spatial global orientation in different actions.

## Levels of formation of actions:

- Material (objects)
- Materialized (symbols, schemes)
- Concrete perceptive (images of objects)
- Generalized perceptive (images of symbols, schemes)
- Verbal (reading)

# Orientation of Research & Practice



- ◆ Examples: Method for formation of Drawing Activity for pre-school children
- ◆ Step by step methodology: from external to internal action
- ◆ Analysis of diverse features of concrete and perceptive objects
- ◆ Actions of symbolic representations (after Vigotsky & Luria)
- ◆ Constant verbal and external orientation: usage of global shapes
- ◆ Drawing of real objects by model
- ◆ Independent drawing (internal orientation)

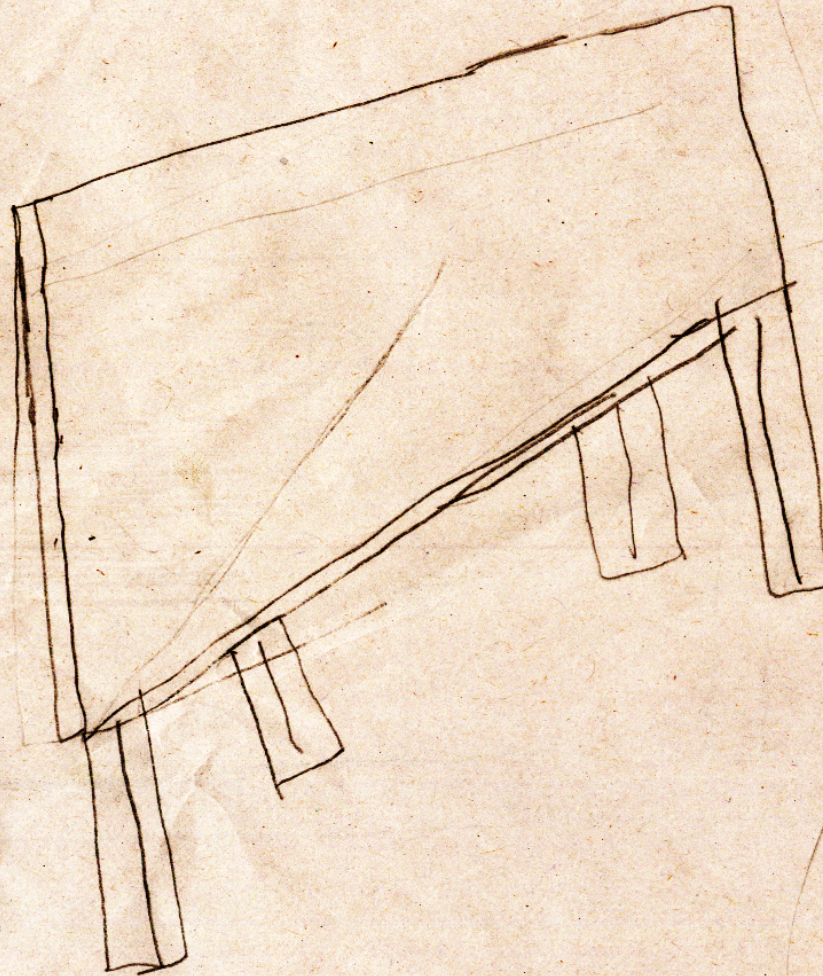
Initial task. Free drawing of table.

Bogotá





# Final task. The table

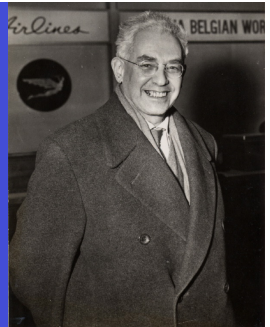
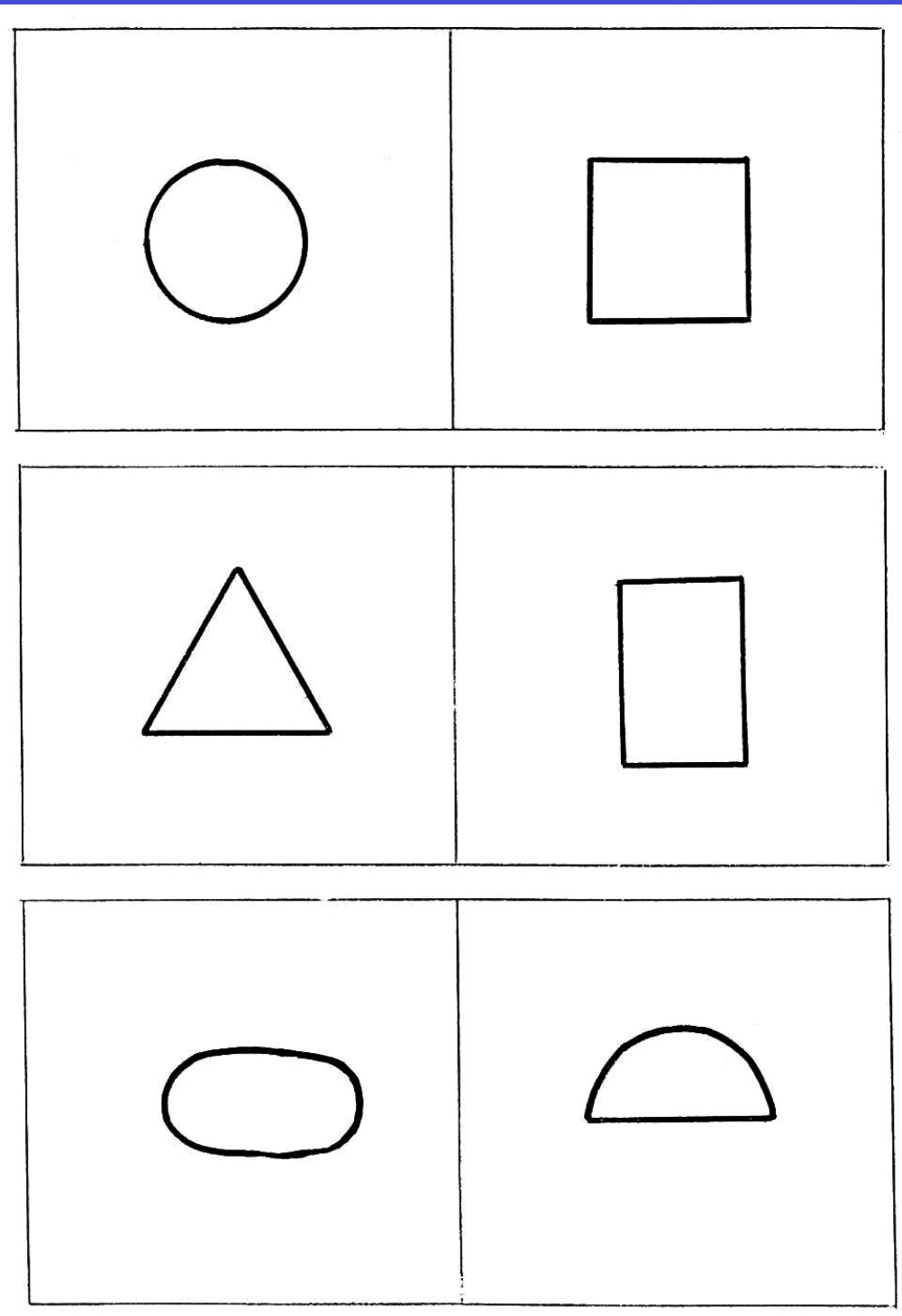


# Importance of visuo-spatial functions for school learning

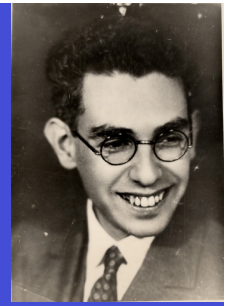


Inclusion of spatial global orientation in different actions in levels:

- Material (objects)
- Materialized (symbols, schemes)
- Concrete perceptive (images of objects)
- Generalized perceptive (images of symbols, schemes)
- Verbal (reading)



# WORKING WITH SHAPES



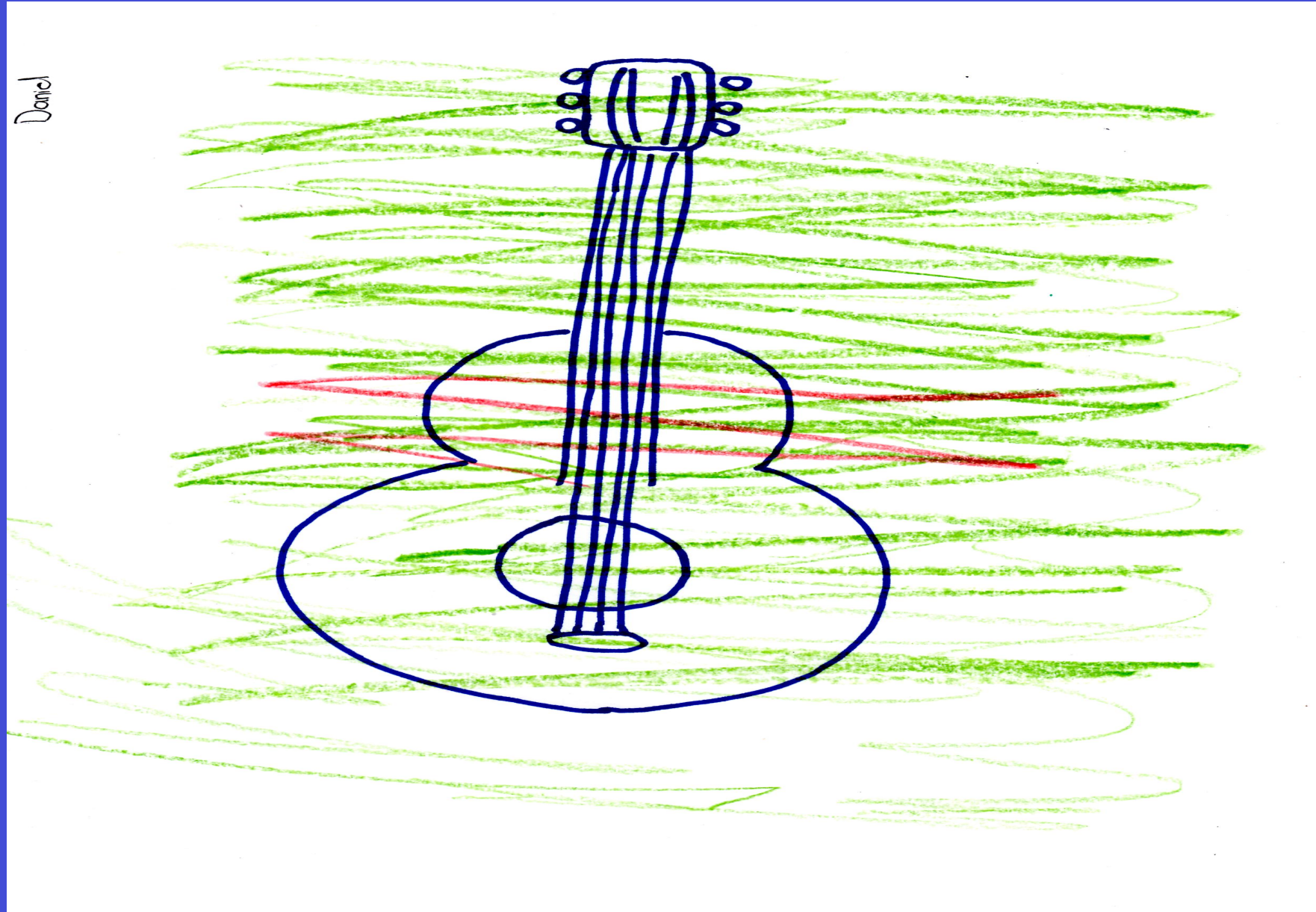
# Analysis and usage of shapes for objects construction



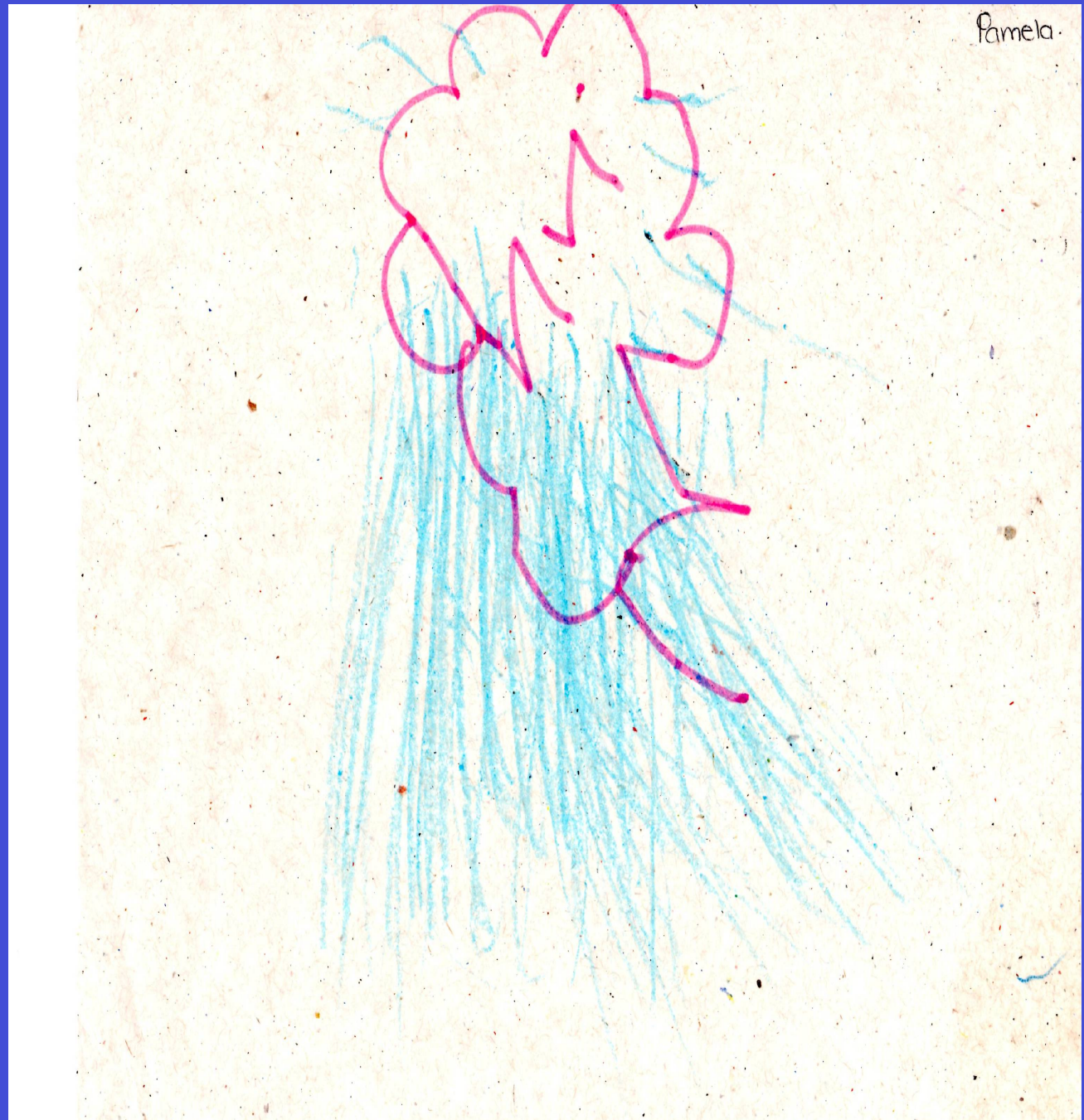
# Líneas horizontales



Daniel



Lluvia  
Líneas verticales



Misha  
8-Sep-2010





Pintamos la  
pared



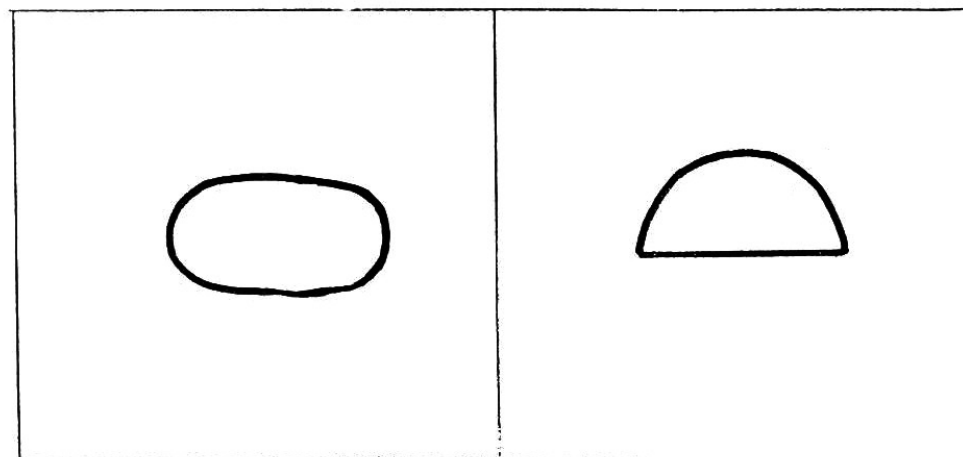
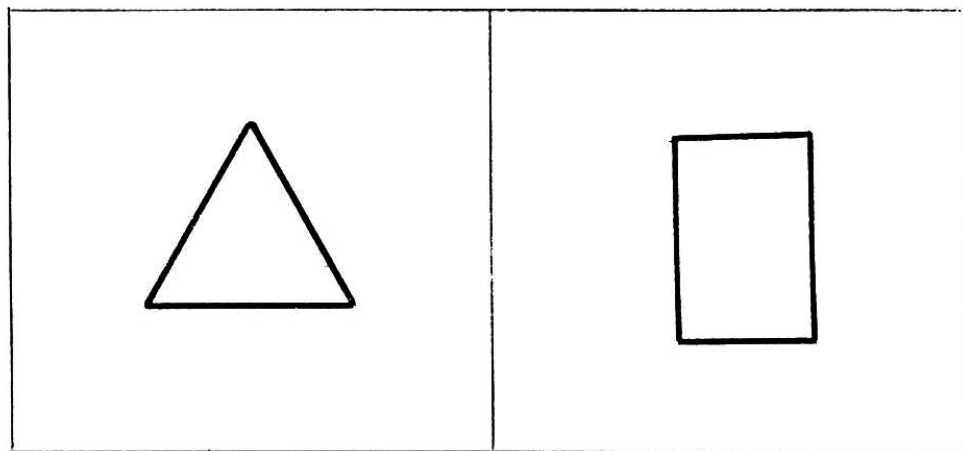
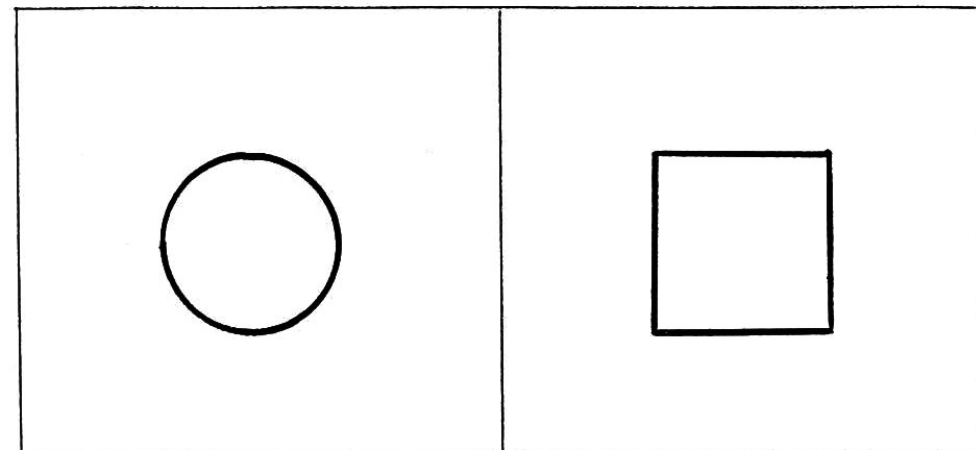
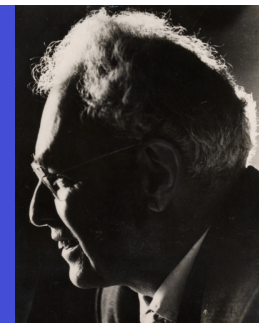
Pintamos  
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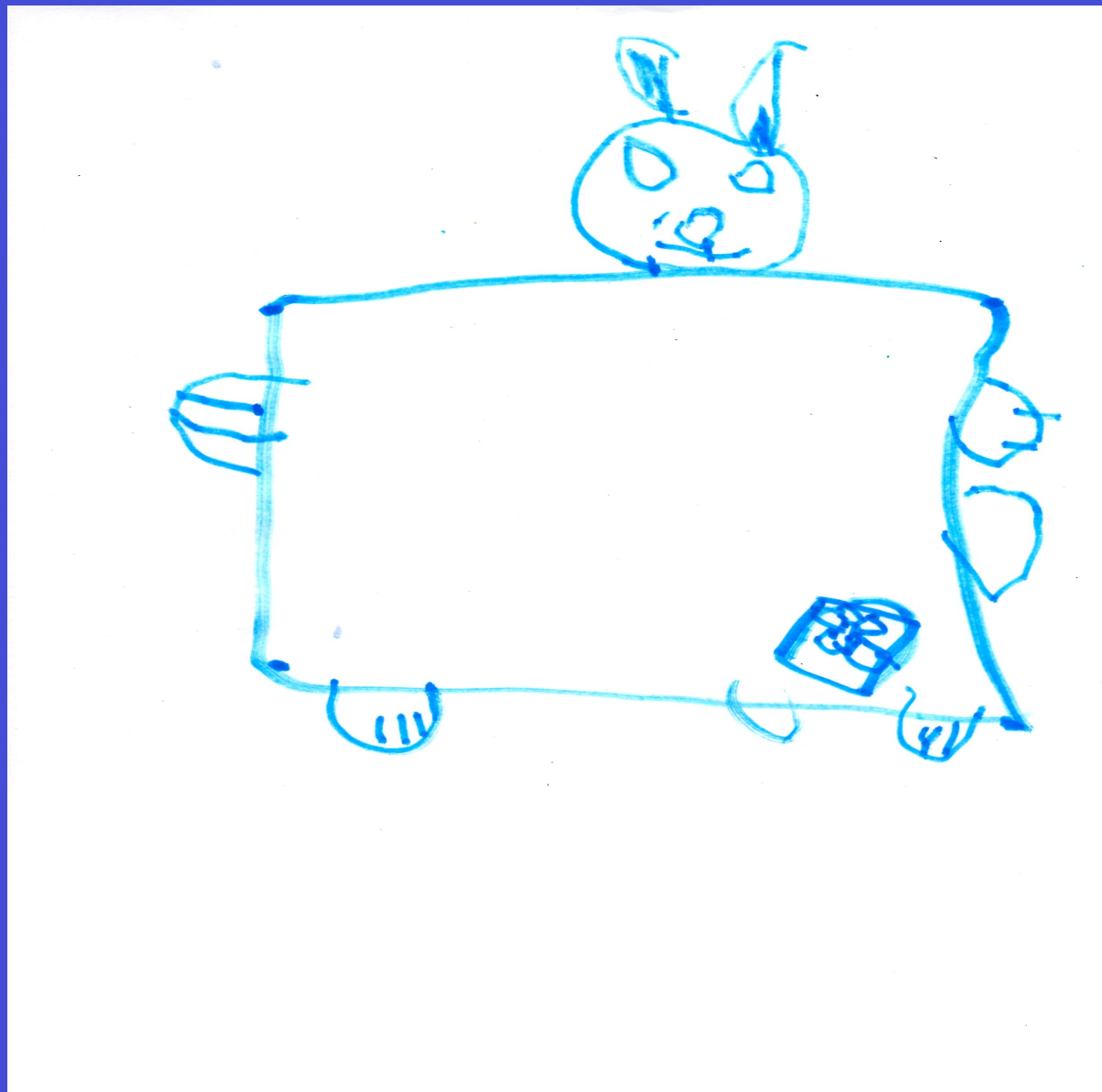
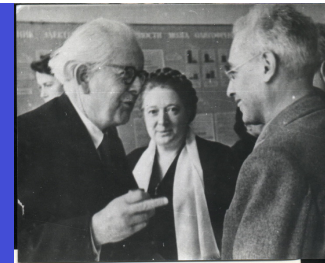
Suena la  
campana

Líneas  
horizontales





Shapes for objects  
3 years old



Juegote Líneas 4

