

Building Transformation: Frameworks and Practices

Ruben R. Puentedura, Ph.D.

Transformation

Redefinition

*Tech allows for the creation of new tasks,
previously inconceivable*

Modification

Tech allows for significant task redesign

Augmentation

*Tech acts as a direct tool substitute, with
functional improvement*

Substitution

*Tech acts as a direct tool substitute, with no
functional change*

Enhancement

Step 1

The teacher provides a description, explanation, or example of the new term

Step 2

Students restate the explanation of the new term in their own words

Step 3

Students create a nonlinguistic representation of the term

Step 4

Students do activities that help them add to their knowledge of vocabulary terms

Step 5

Students are asked to discuss the terms with one another

Step 6

Students are involved in games that allow them to play with the terms

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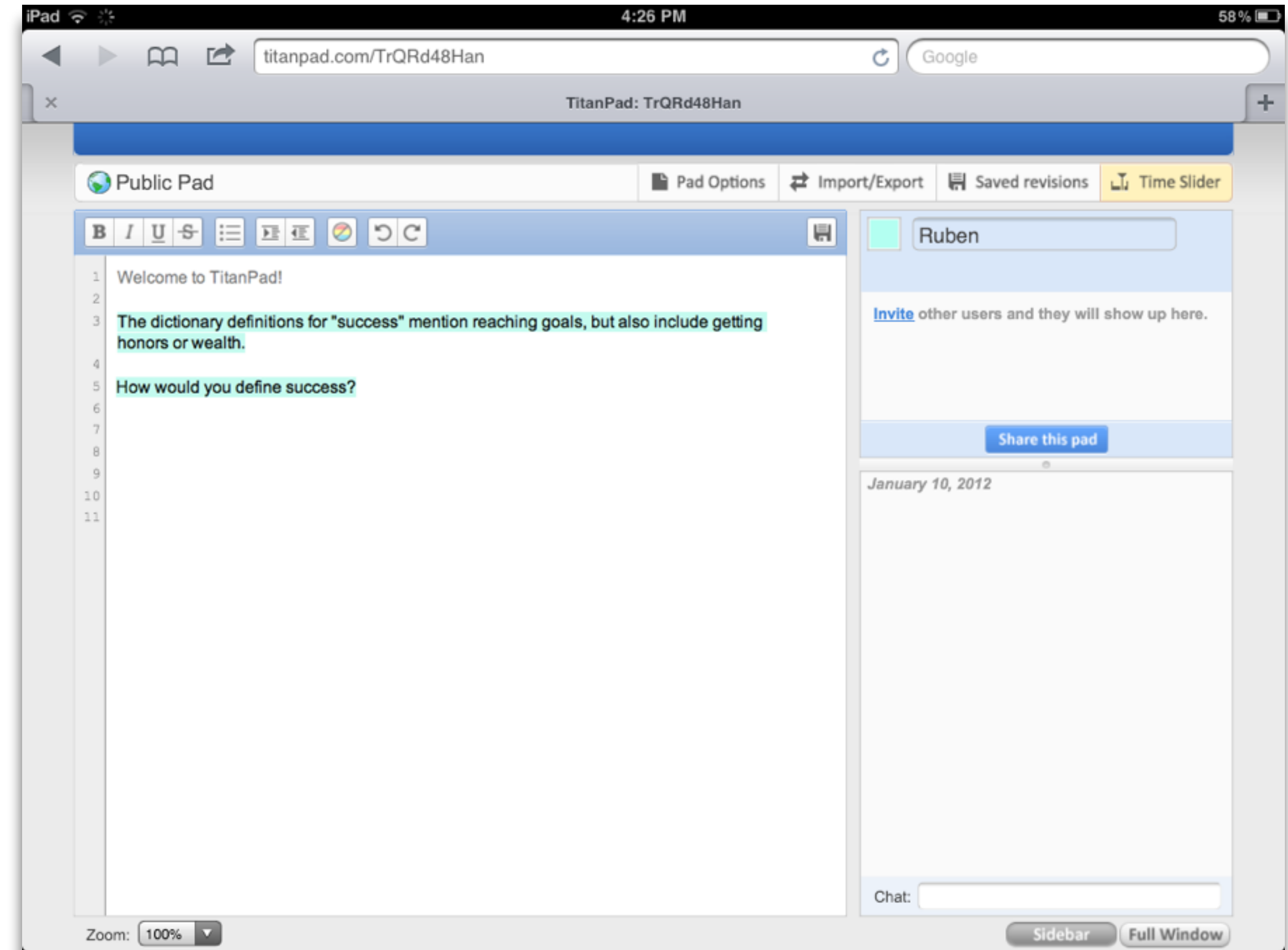
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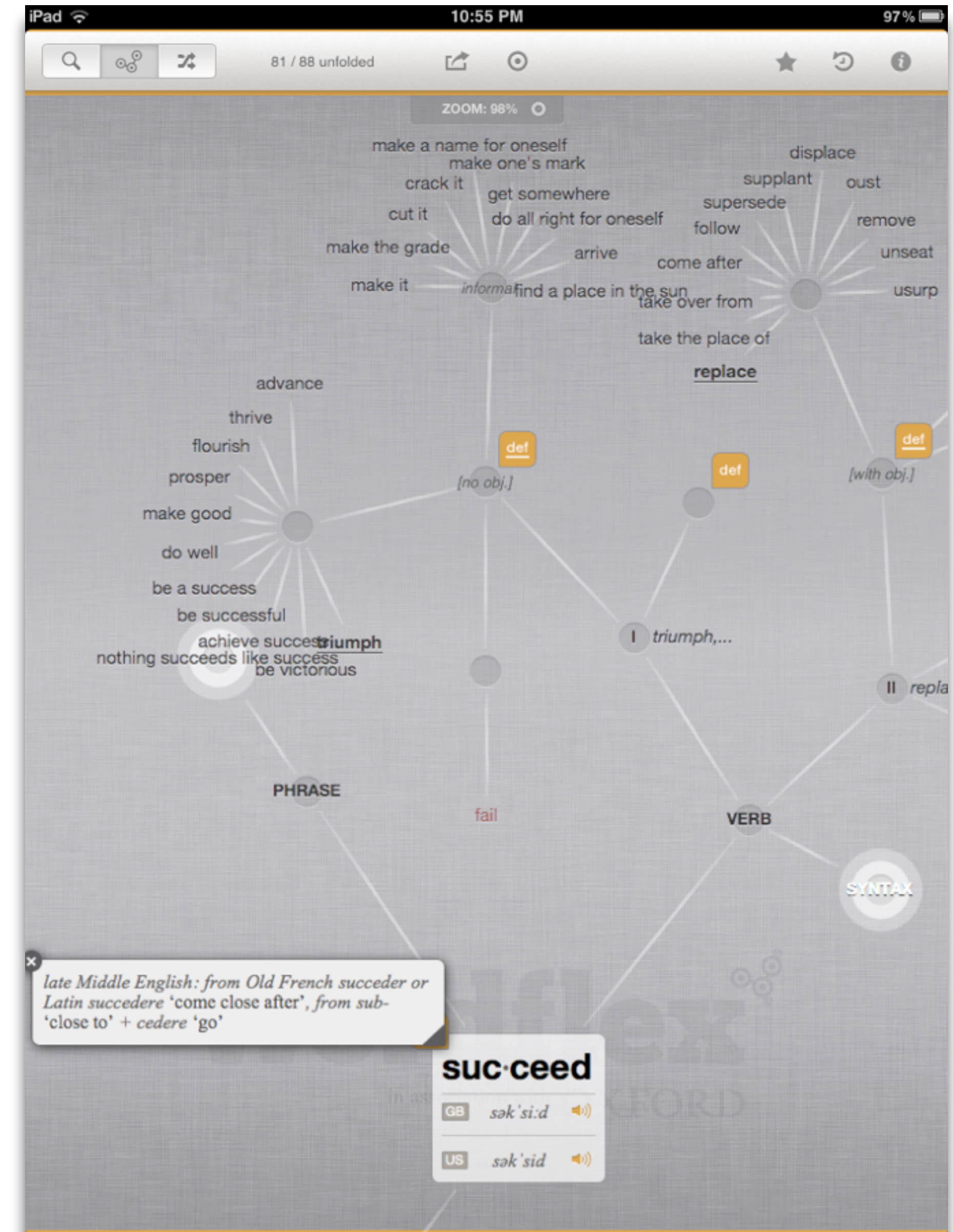
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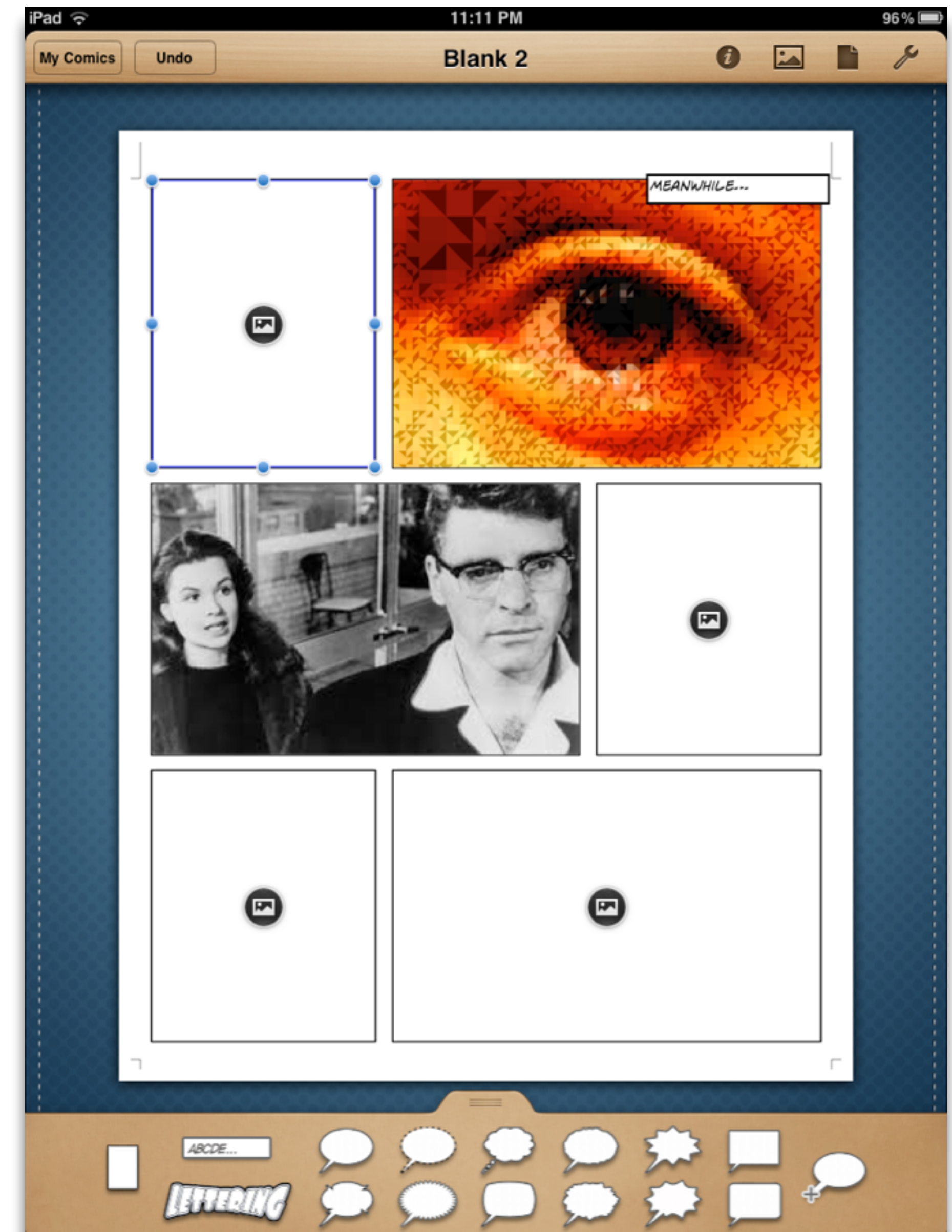
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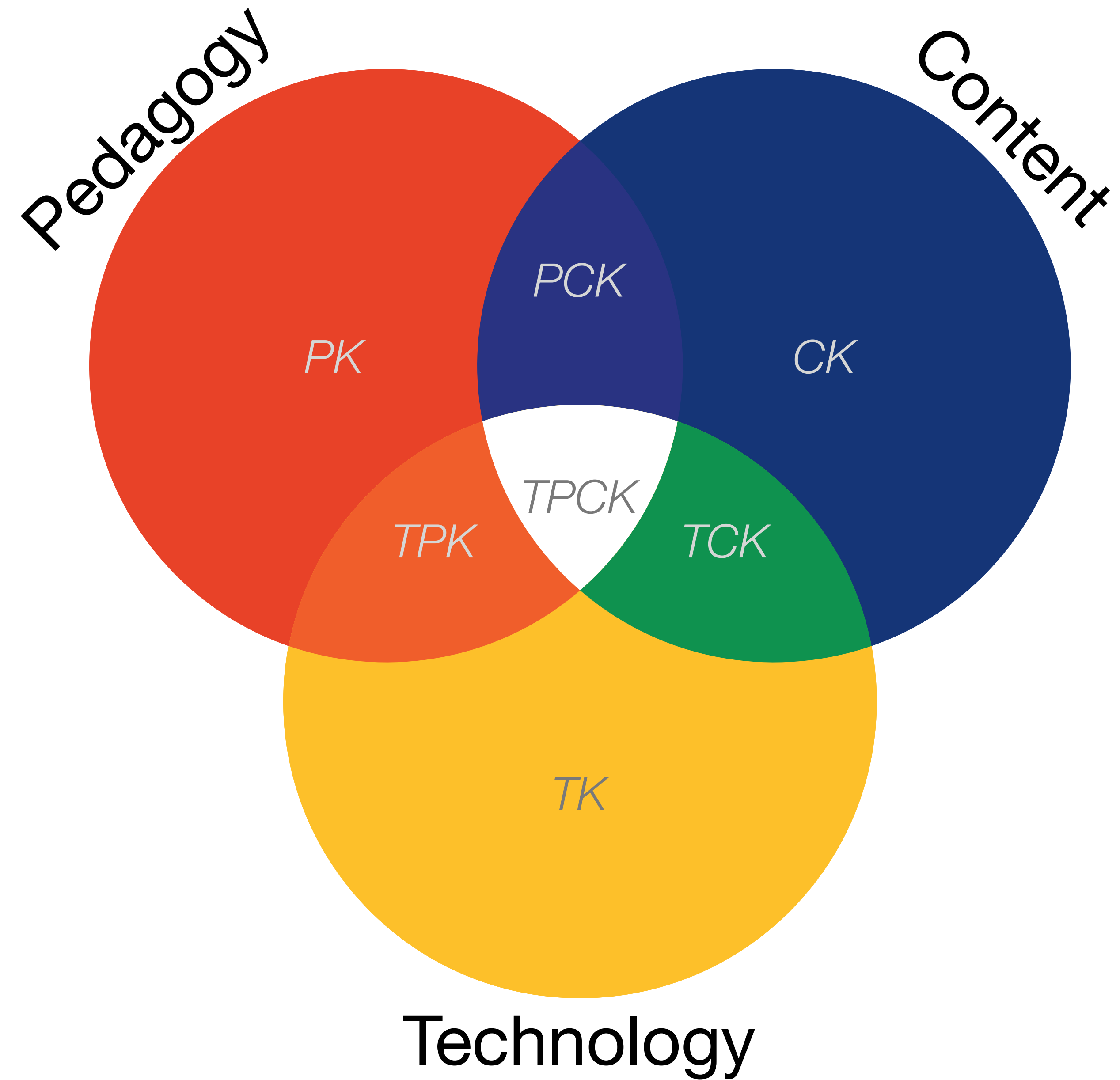
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Study	SAMR Level	Description	Effect Size
Ligas (2002)	S	CAI system used to support direct instruction approach for at-risk students.	0.029
Xin & Reith (2001)	A	Multimedia resources provided to contextualize learning of word meanings and concepts.	0.264
Higgins & Raskind (2005)	M	Software/hardware used for text-to-speech, definitions, pronunciation guide for children with reading disabilities.	0.600
Salomon, Globerson & Guterman (1989)	R	Software presents students with reading principles and metacognitive questions as part of the reading process.	1.563

Study	SAMR Classification	Description	Effect Size
Algebra I <i>Effectiveness of Cognitive Tutor Algebra I at Scale</i> , by John F. Pane, Beth Ann Griffin, Daniel F. McCaffrey, Rita Karam	S to A	S: Computerized algebra drills, some tied to real-world scenarios A: Tools for basic visualization; adaptive response to student progress	≈ 0.2 50th perc. → 58th perc.
Earth Science <i>Using Laptops to Facilitate Middle School Science Learning: The Results of Hard Fun</i> , by Alexis M. Berry, Sarah E. Wintle	A to M	A: Interactive tools for concept exploration and visualization M: Narrated animation as final project	≈ 0.6 50th perc. → 73rd perc. (≈ 1.4 a month later) (50th perc. → 92nd perc.)



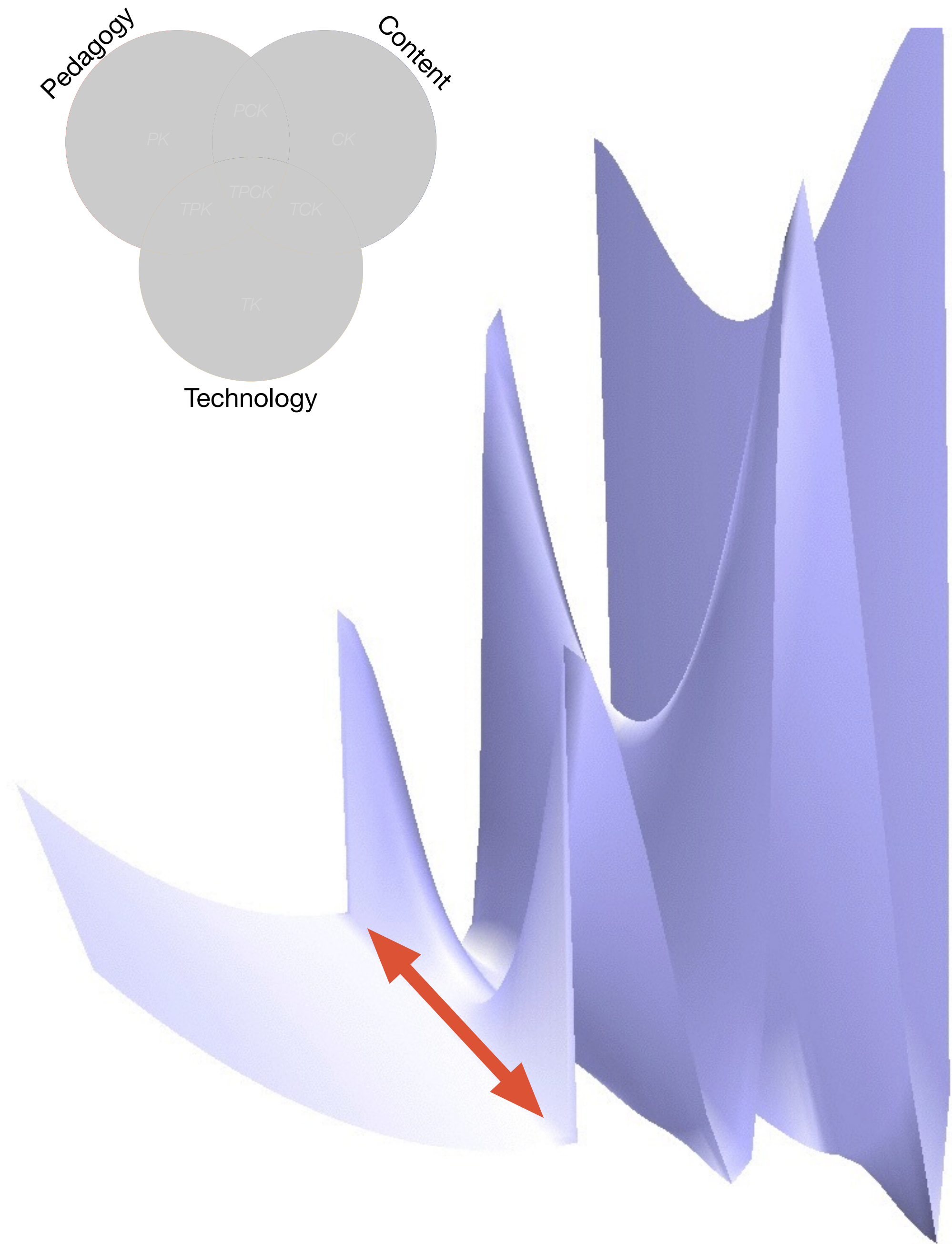


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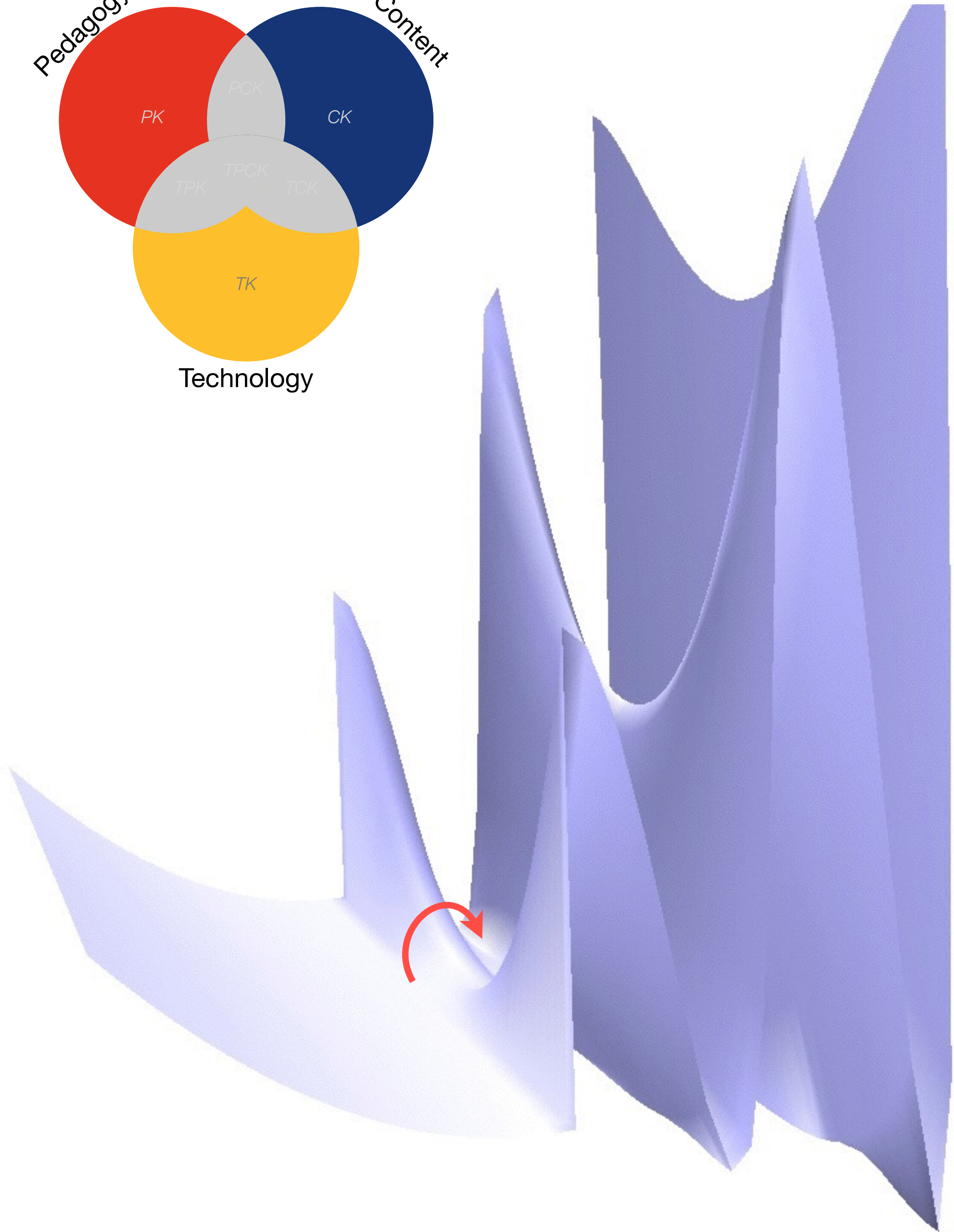
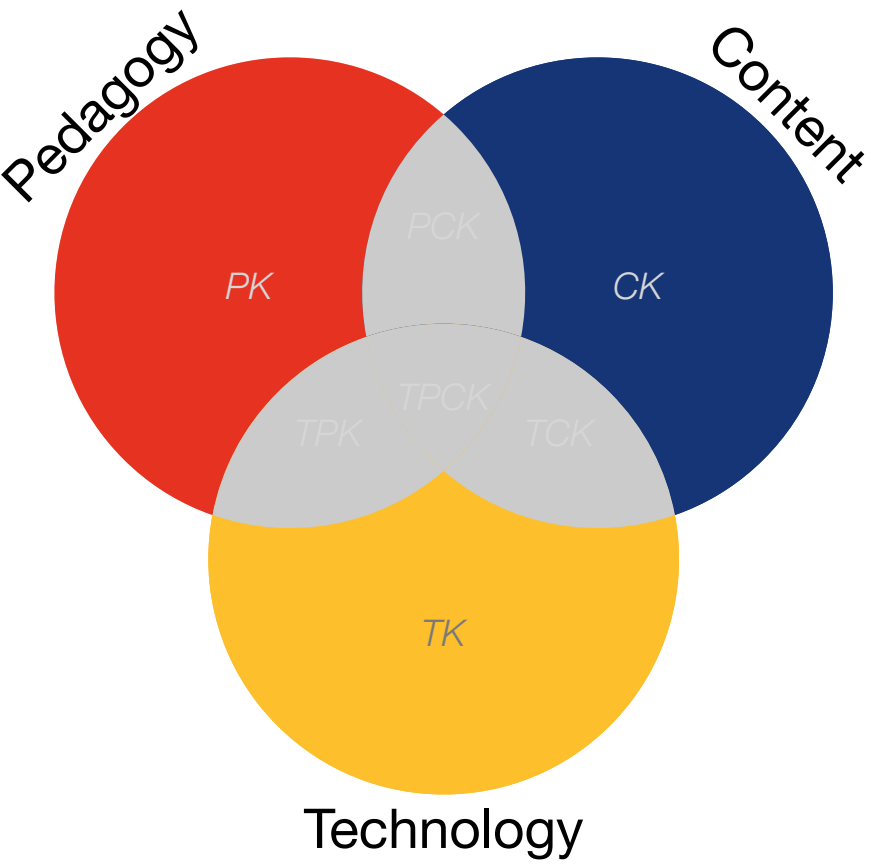


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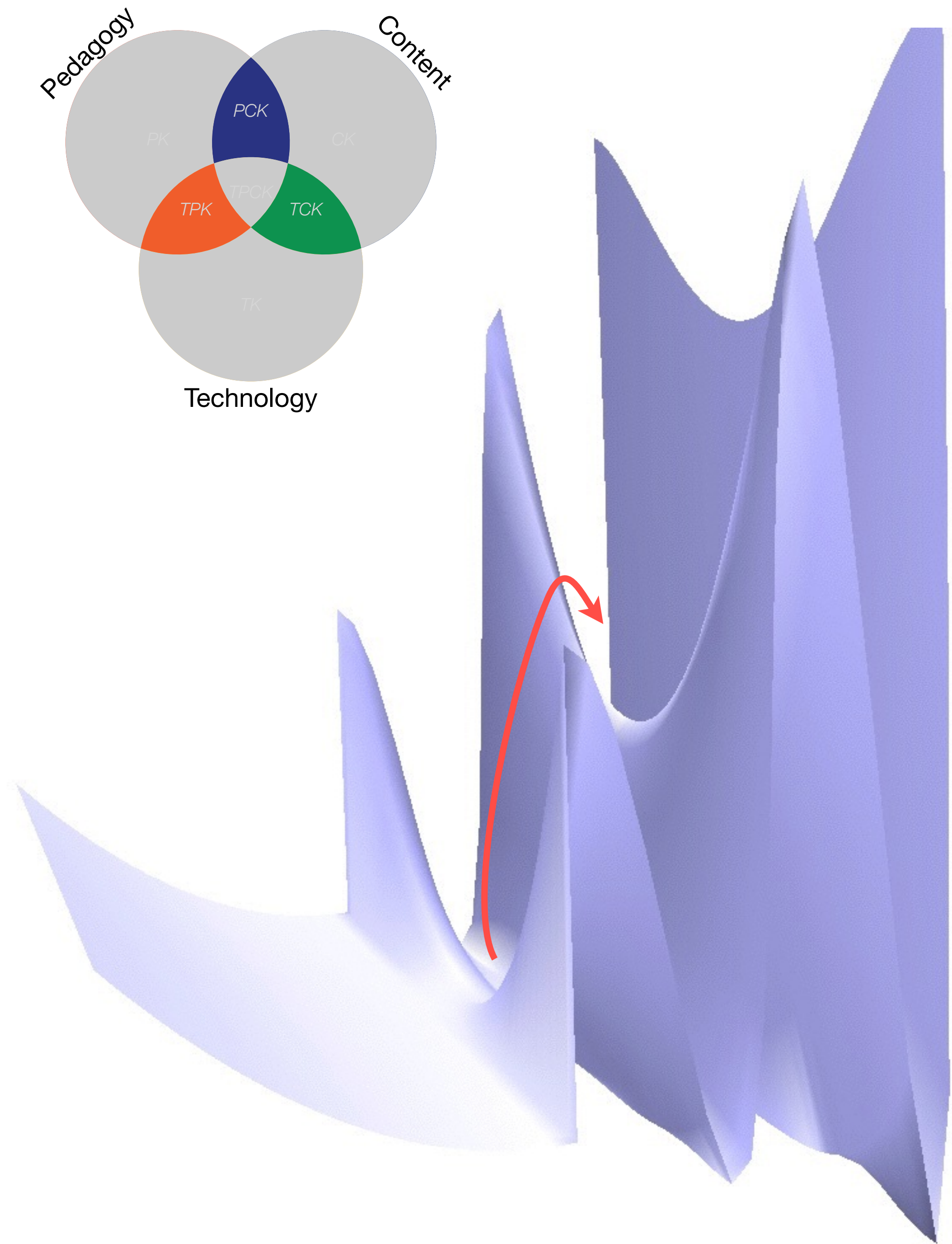


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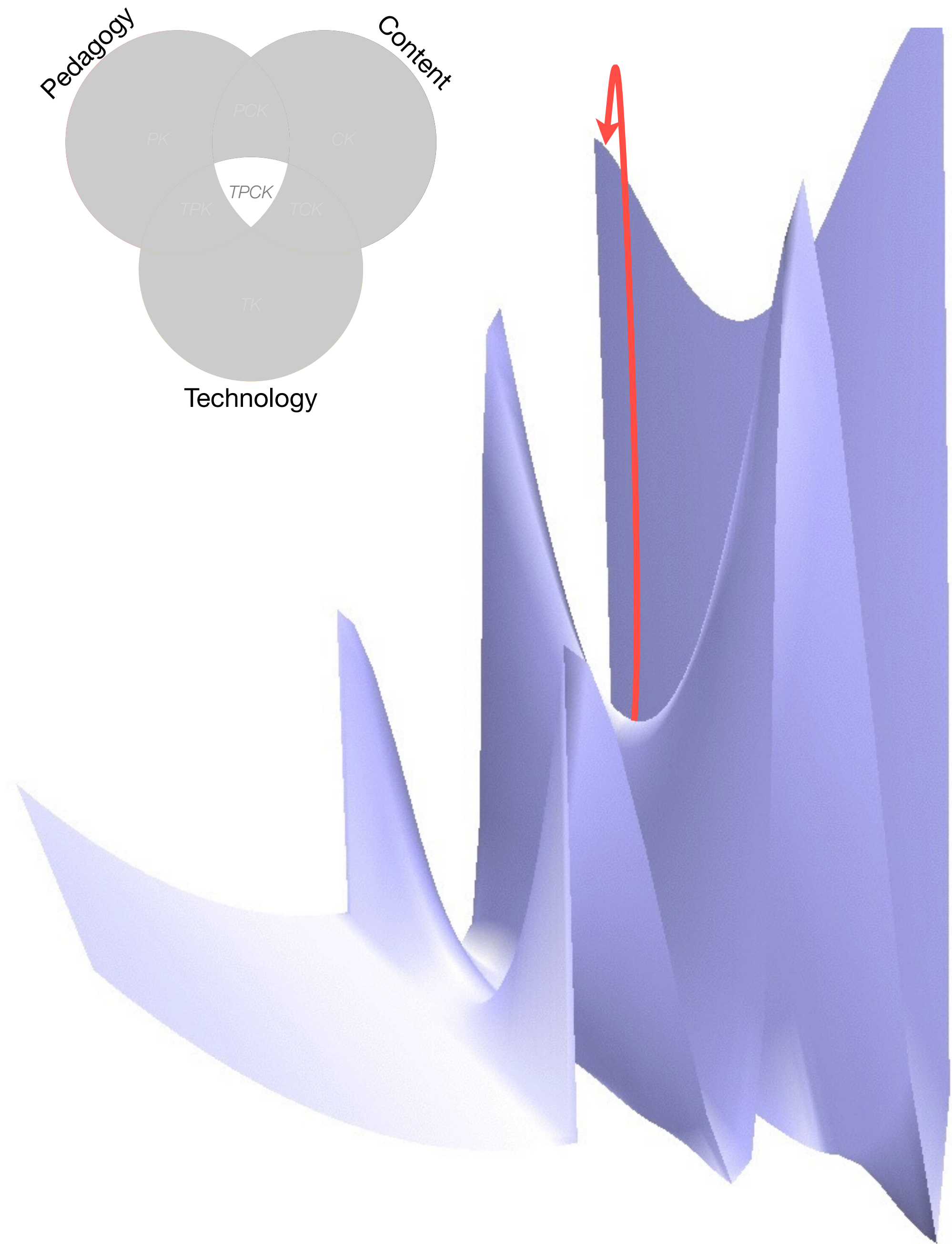


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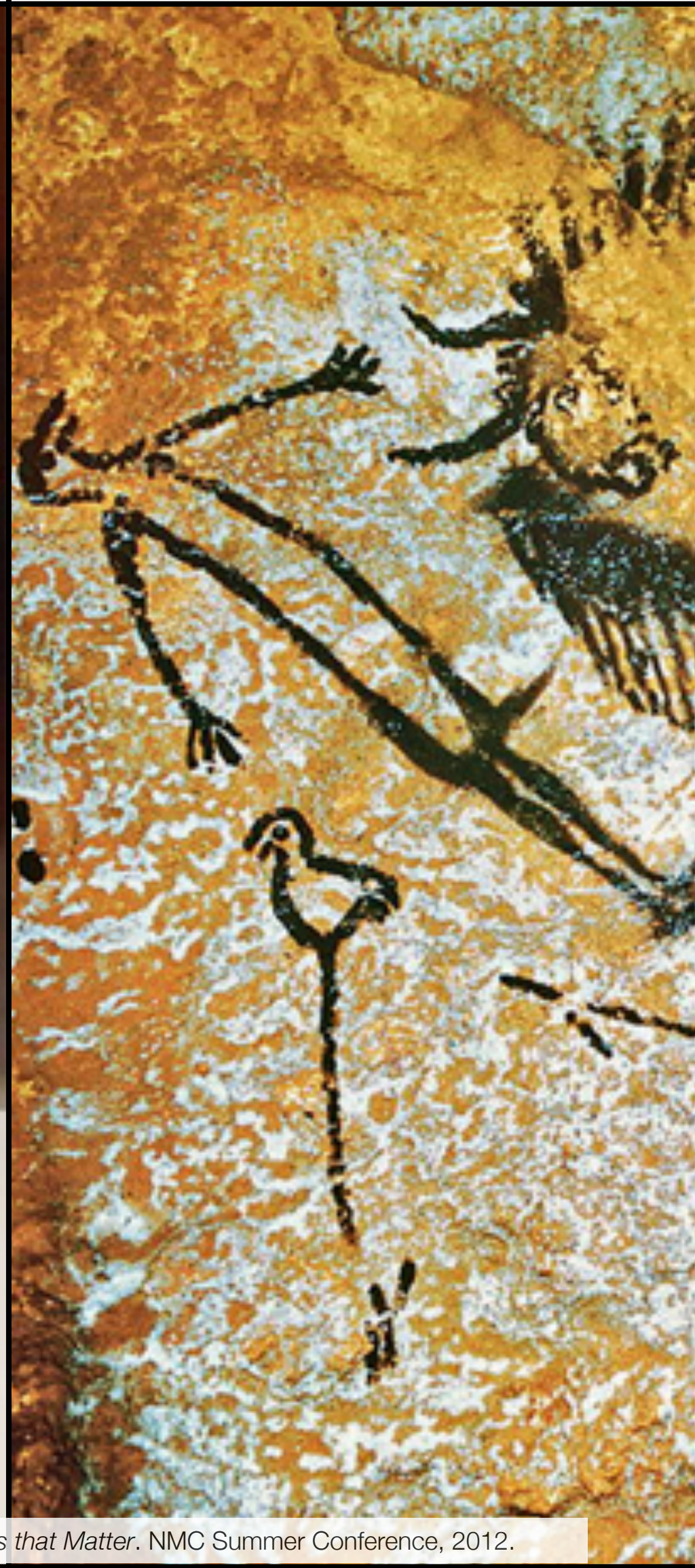
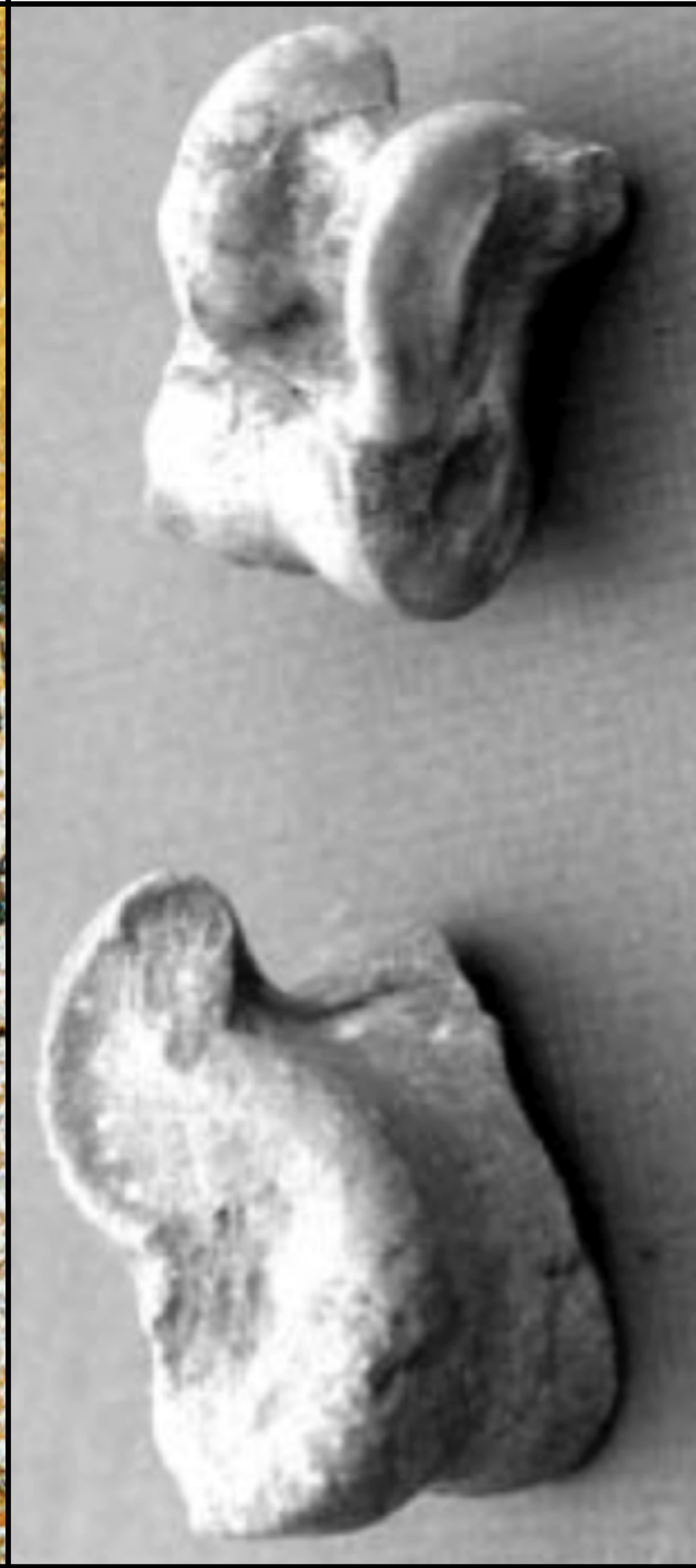
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200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
				

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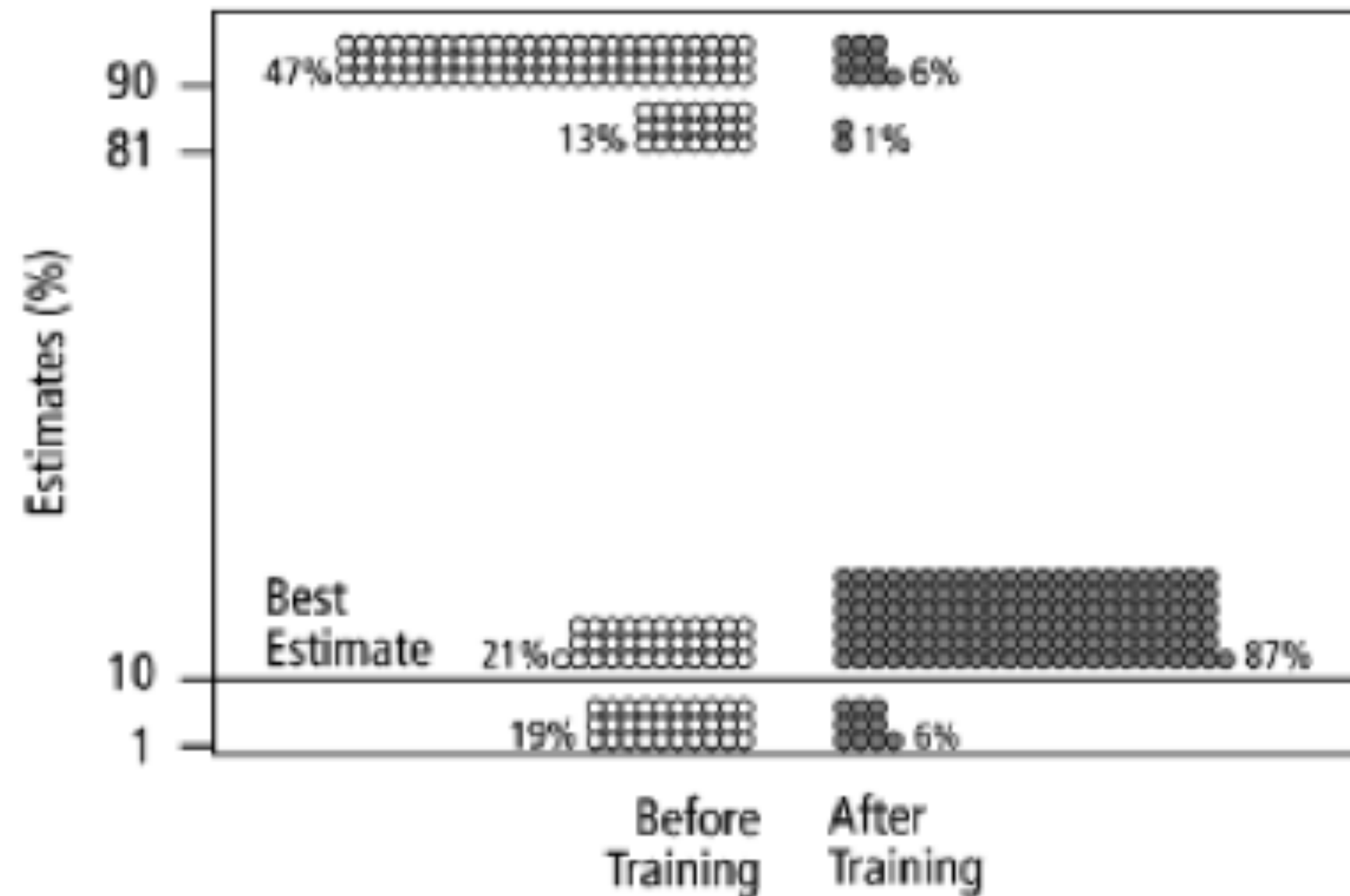
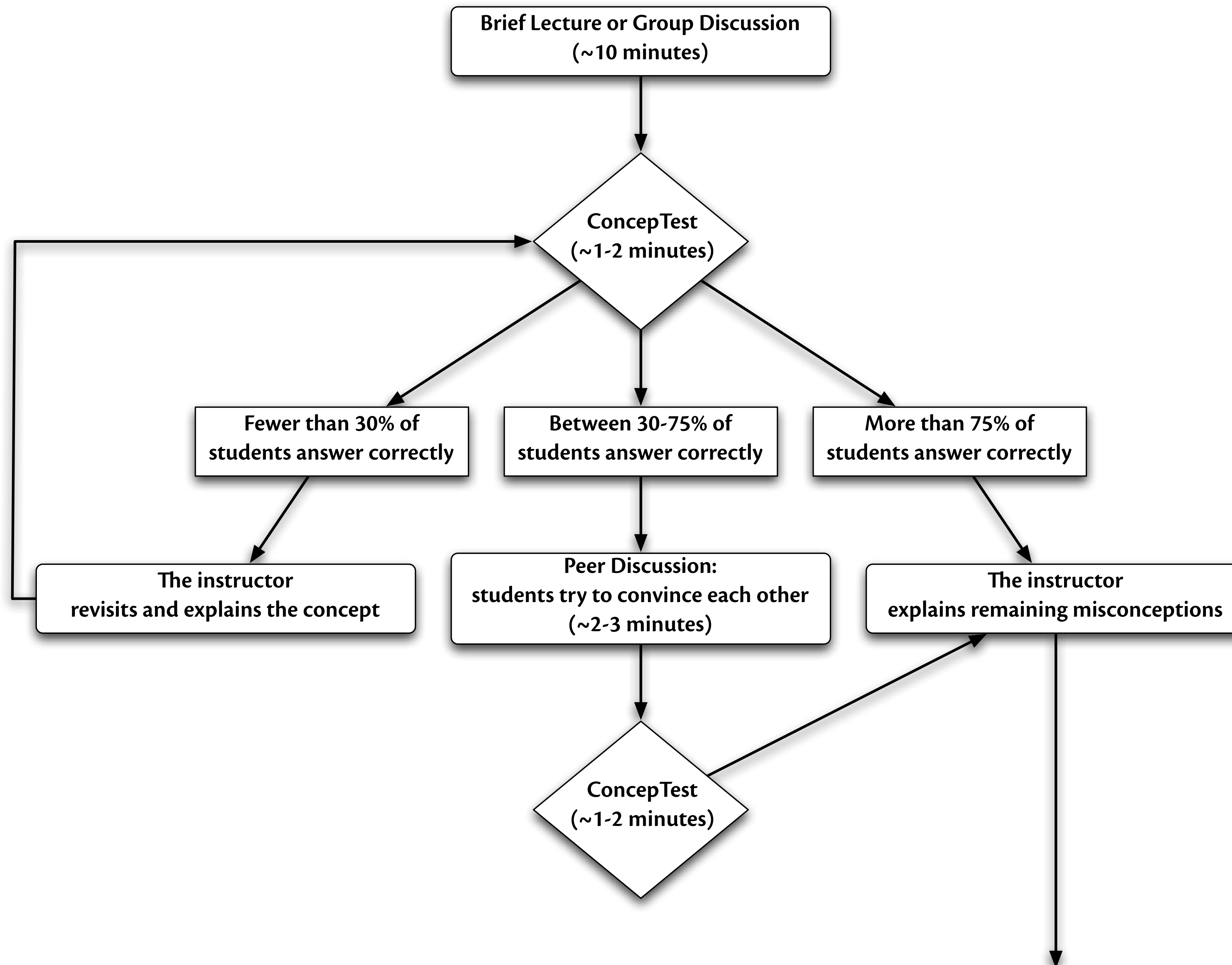


Fig. 2. Estimates by 160 gynecologists of the probability that a woman has breast cancer given a positive mammogram, before and after receiving training in how to translate conditional probabilities into natural frequencies.



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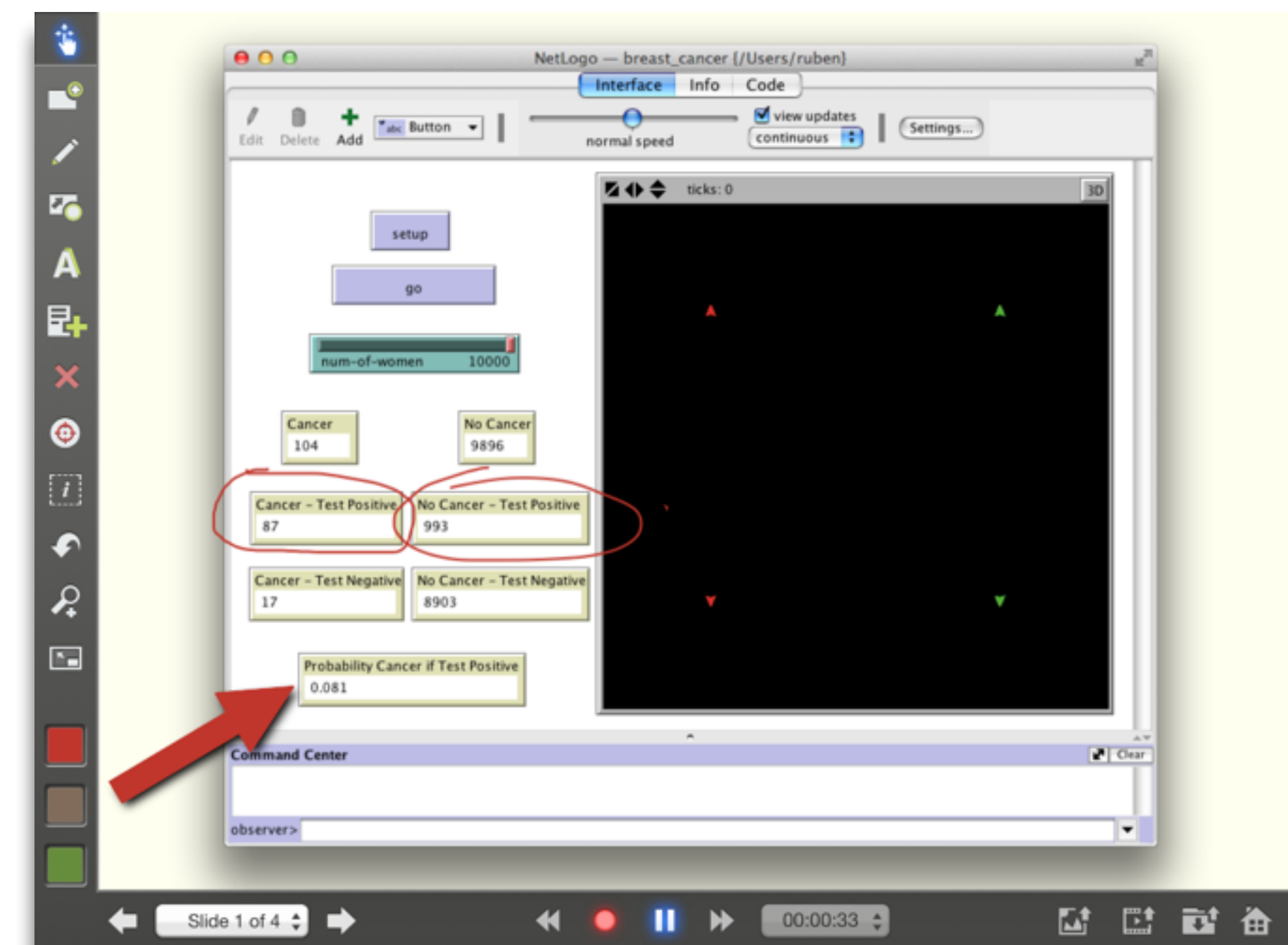
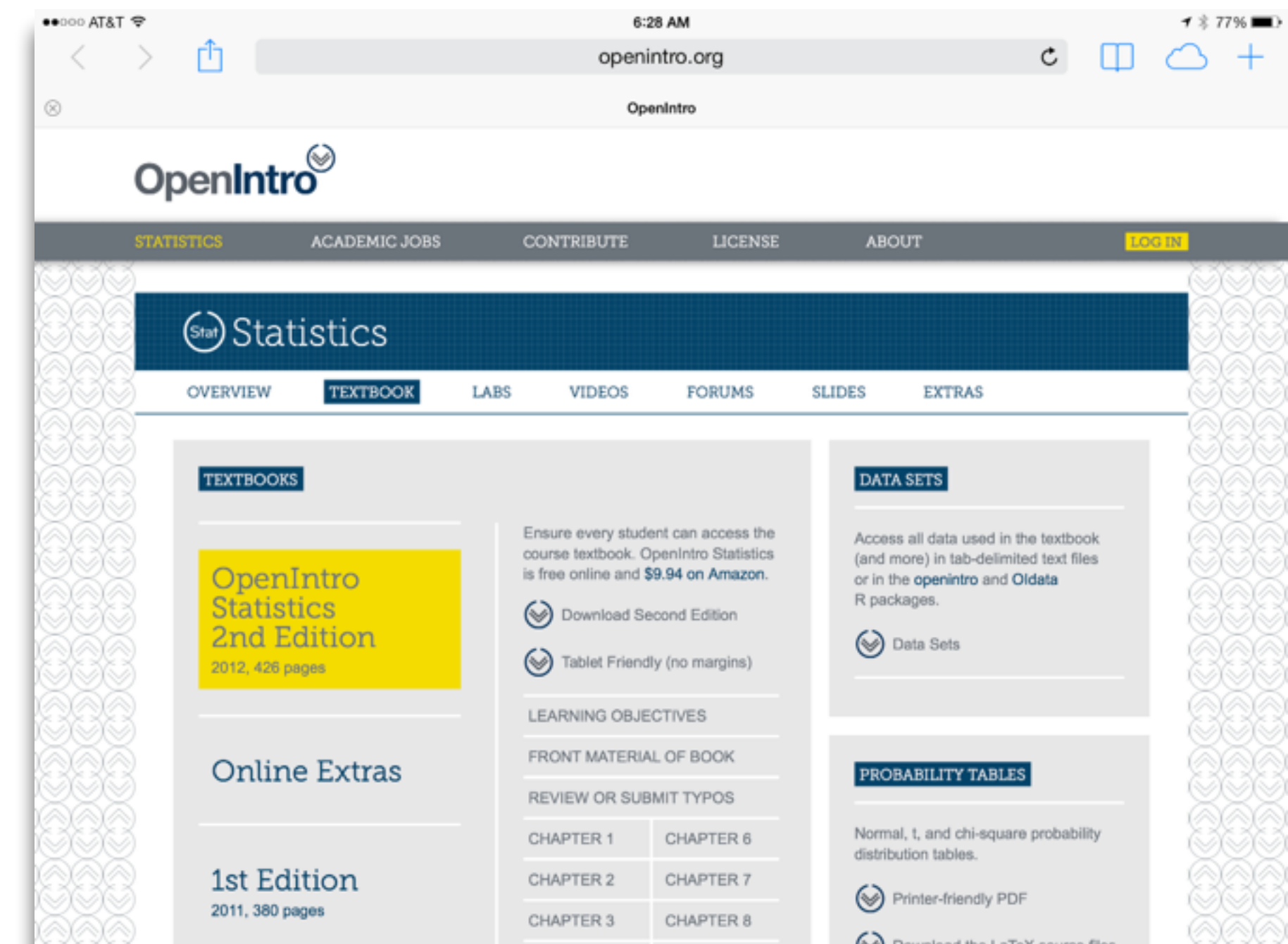
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AT&T LTE 1:00 PM 56%

Computing Not So Basic Probabilities from

DataSet = 2 Seed = 64

in the table below, dosage calculations from a sample of 56 doctors are sorted according to whether the label on the drug bottle contained a concentration or a ratio, and whether the calculation was correct or wrong.

	Correct	Wrong	Row Totals
Concentration	22	6	28
Ratio	4	24	28
Column Totals	26	30	56

a) What is the probability that a calculation in the sample was based on a concentration or was correct?

☐ Check the box to see the answer to (a).

b) Given that a calculation in the sample was correct, what is the probability that the calculation was based on a ratio?

☐ Check the box to see the answer to (b).

Number

- ☐ ANm1 = 22
- ☐ ANm2 = 6
- ☐ ANm3 = 4
- ☐ APrb = 0.571
- ☐ ATot = 32
- ☐ BDnm = 26
- ☐ BNum = 4
- ☐ BOp = 0
- ☐ BPrb = 0.154
- ☒ DataSet = 2
- ☐ GrTt = 56
- ☐ OpANm1 = 1
- ☐ OpANm2 = 1

Input Bar

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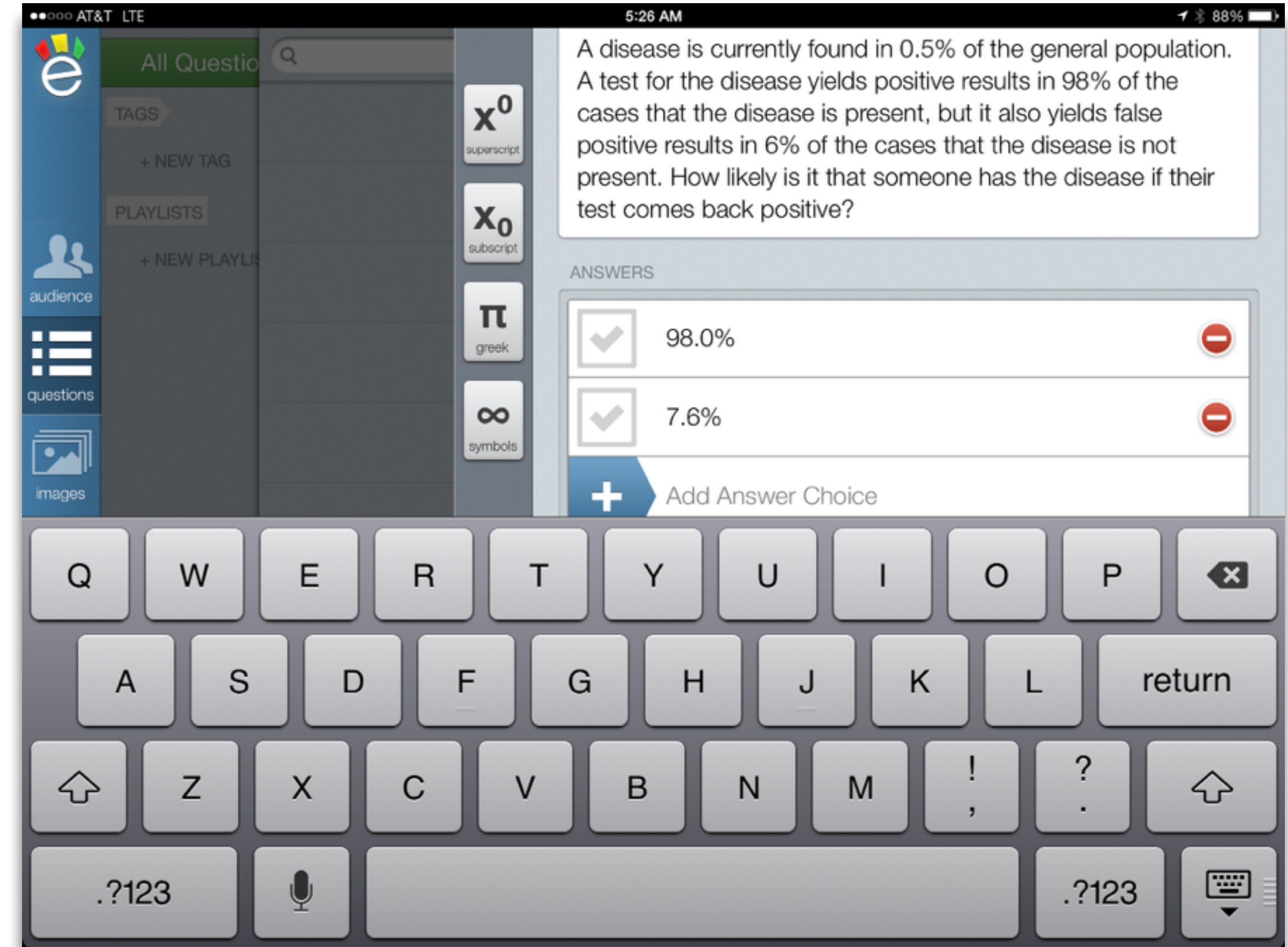
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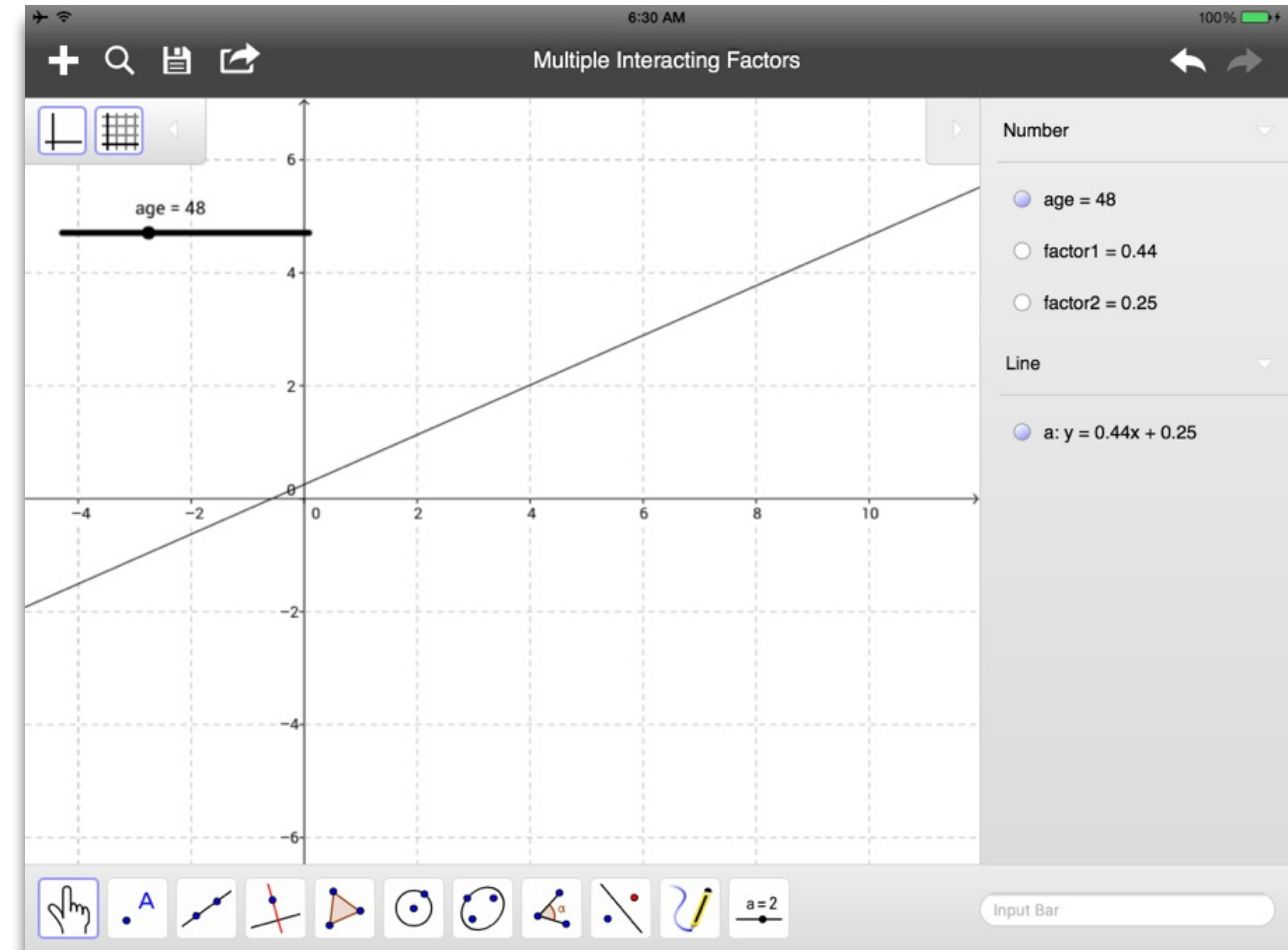
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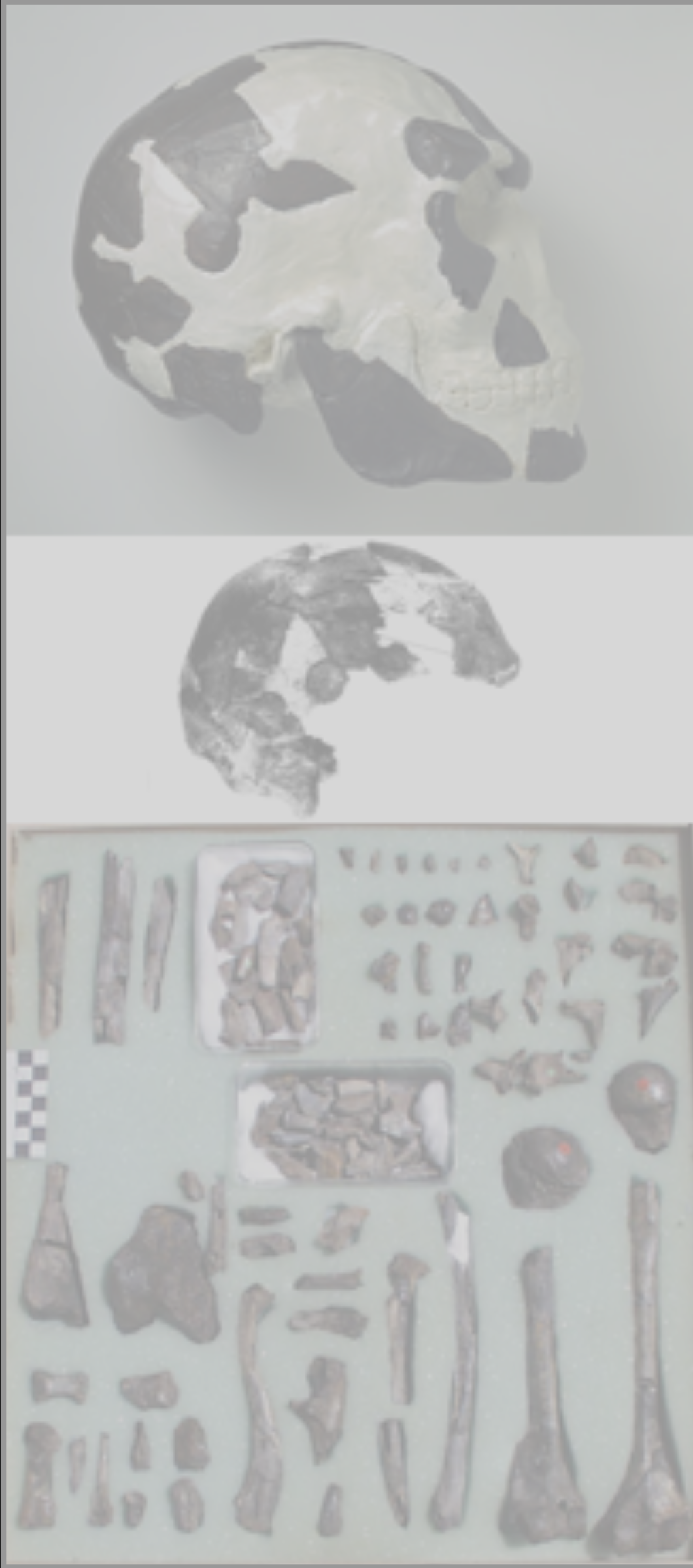


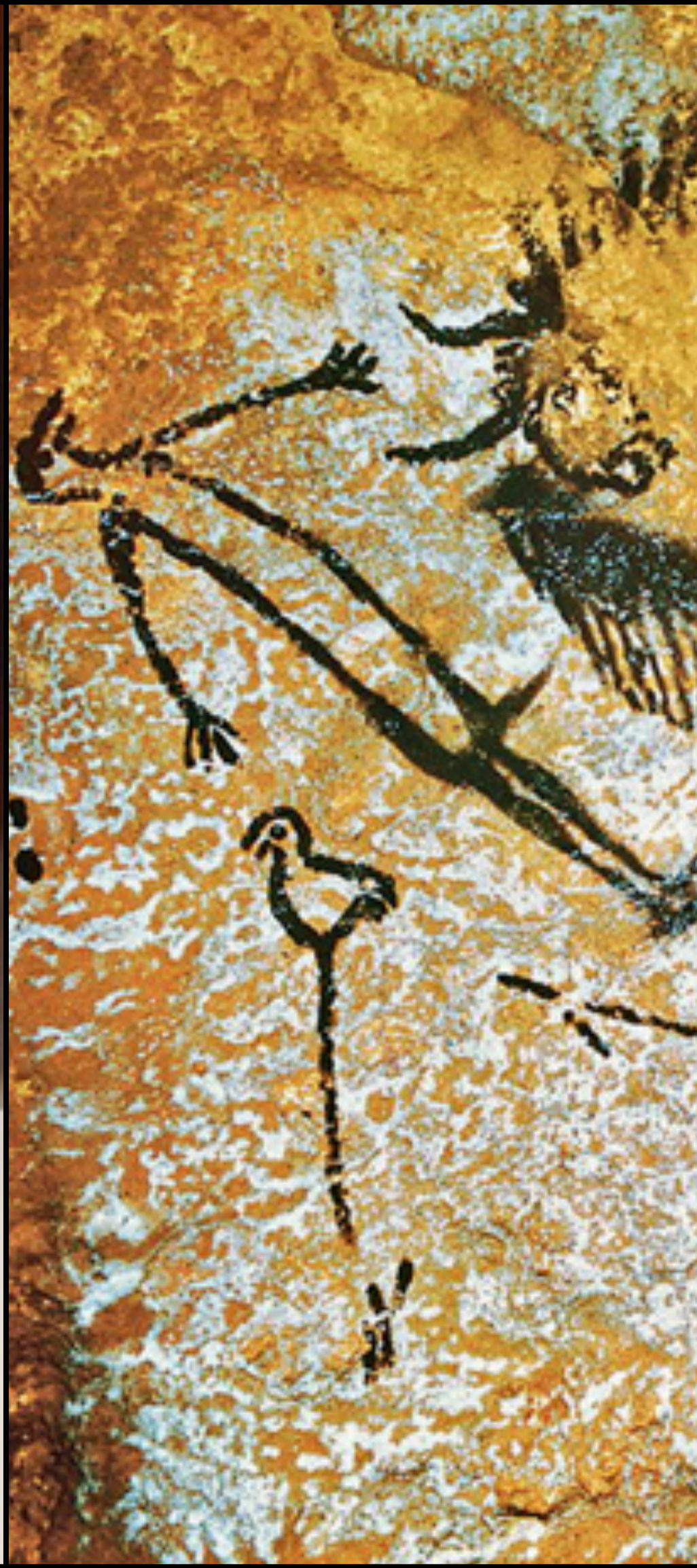

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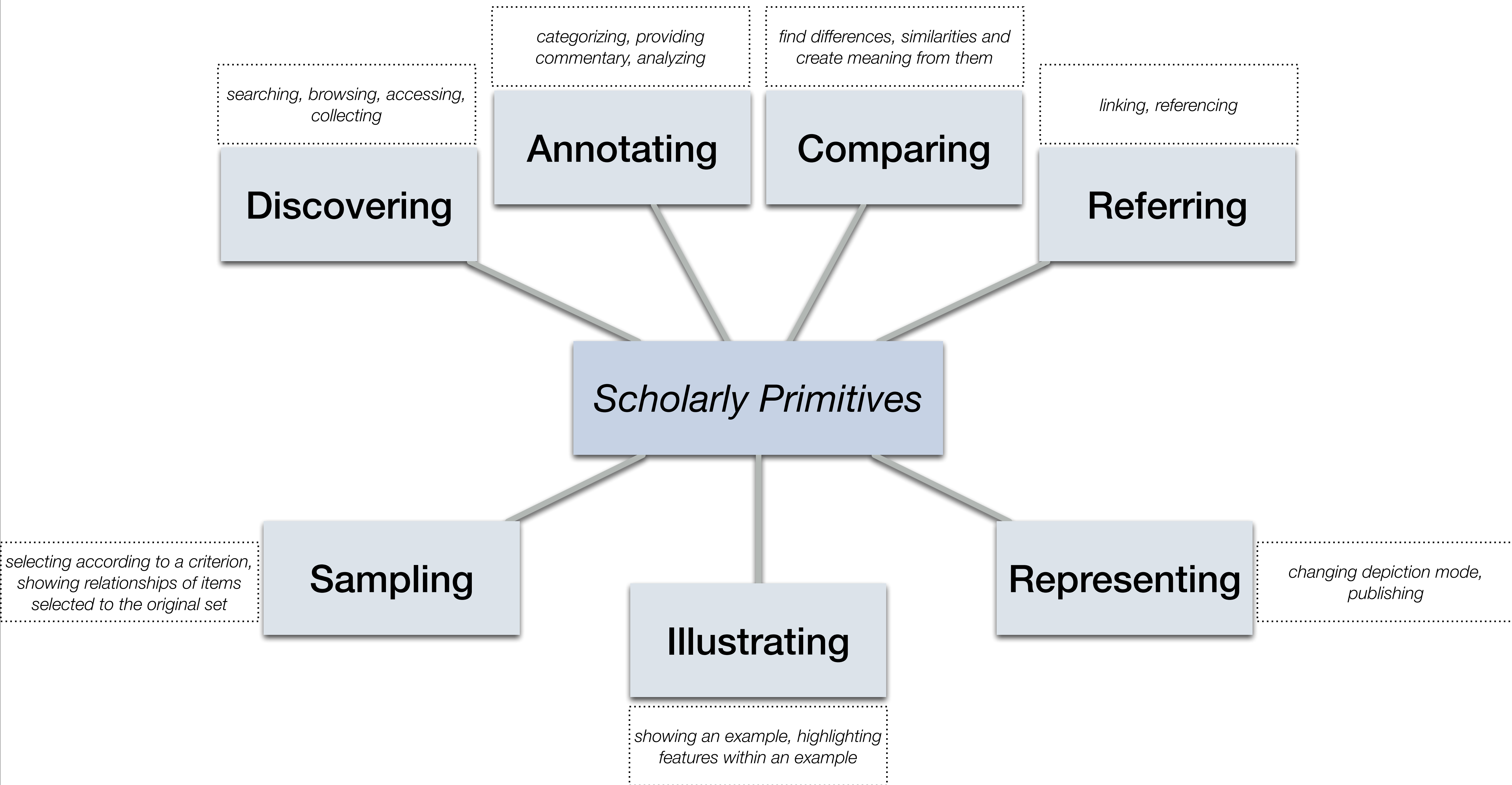
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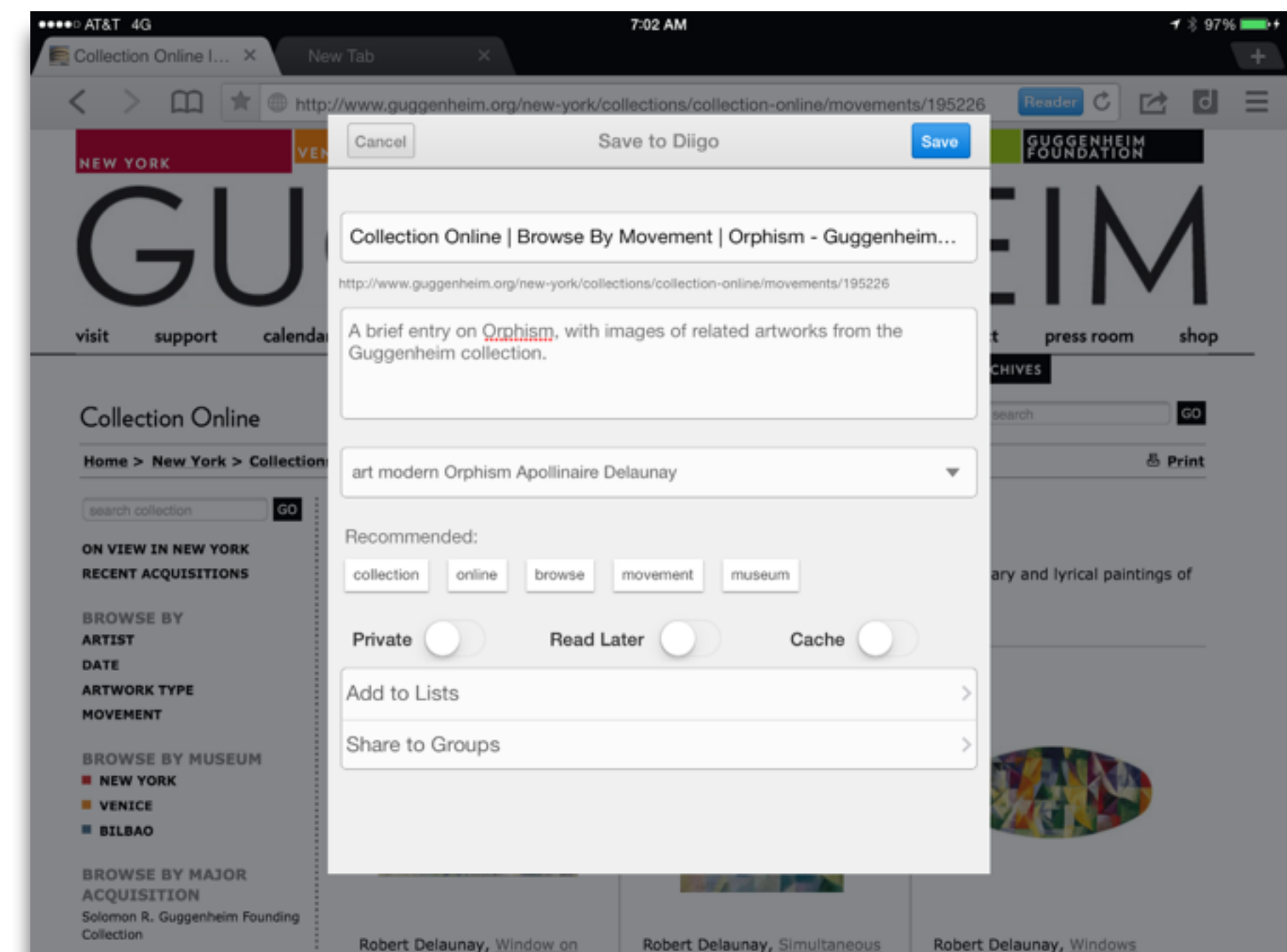
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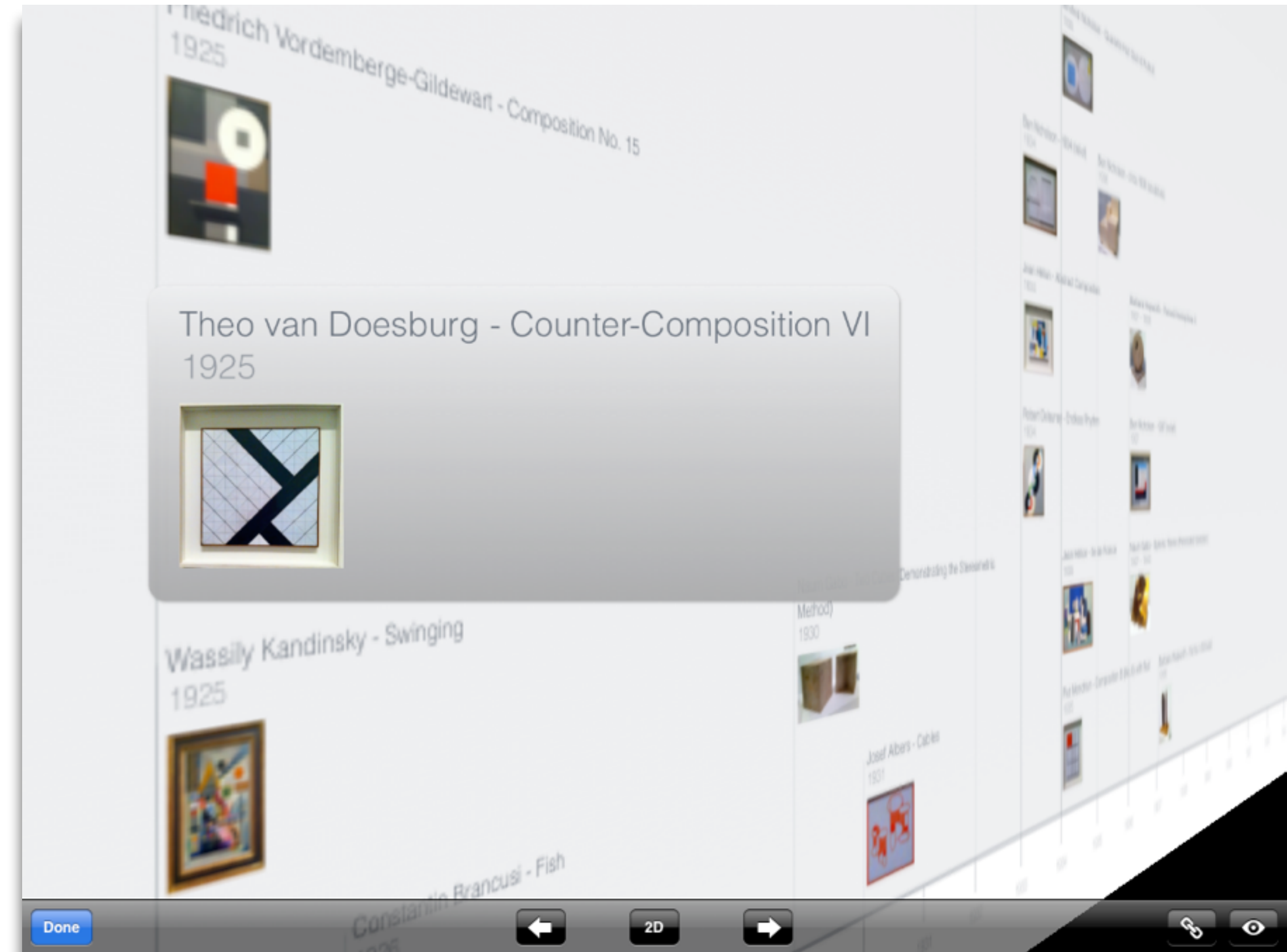
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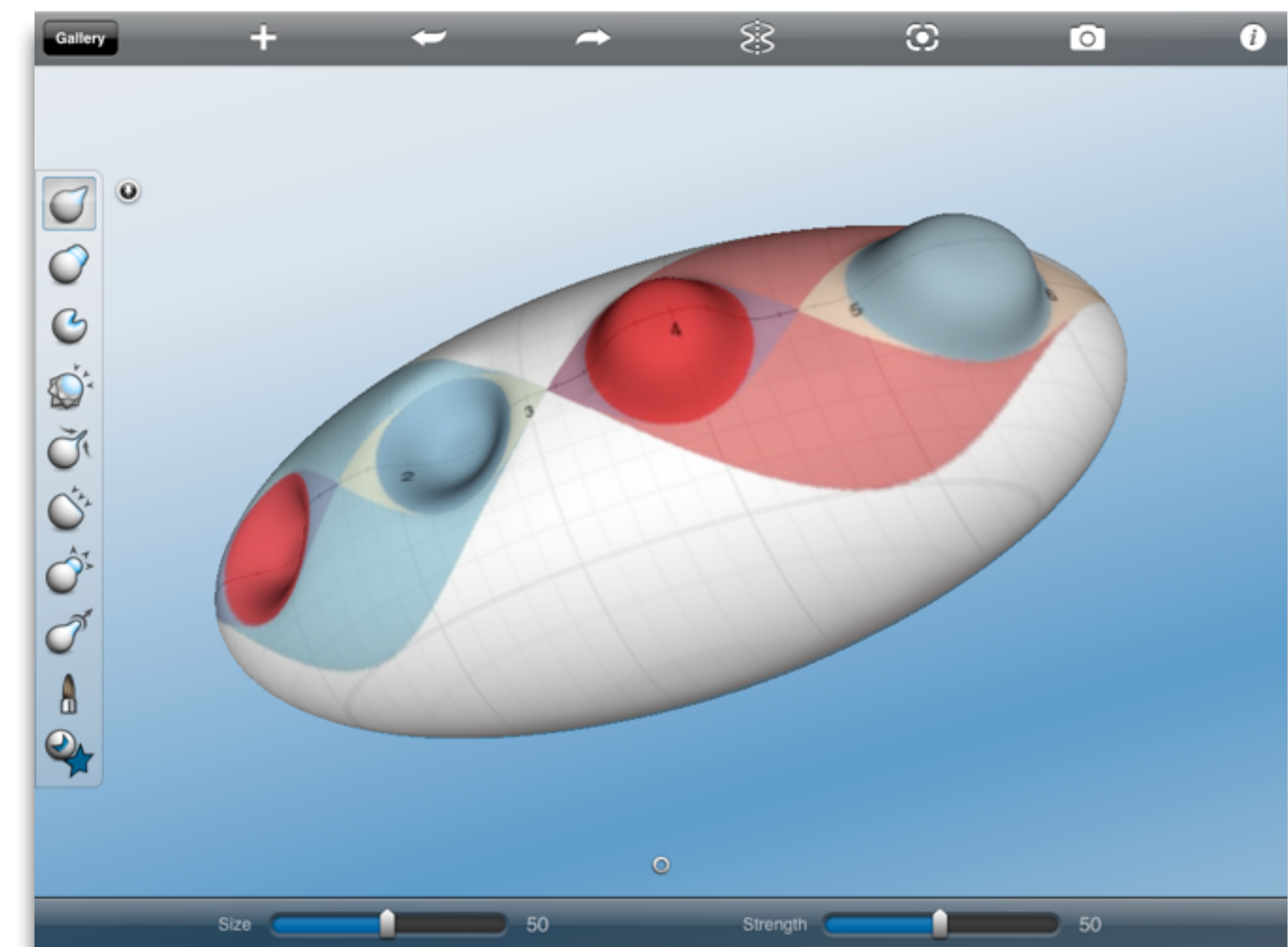
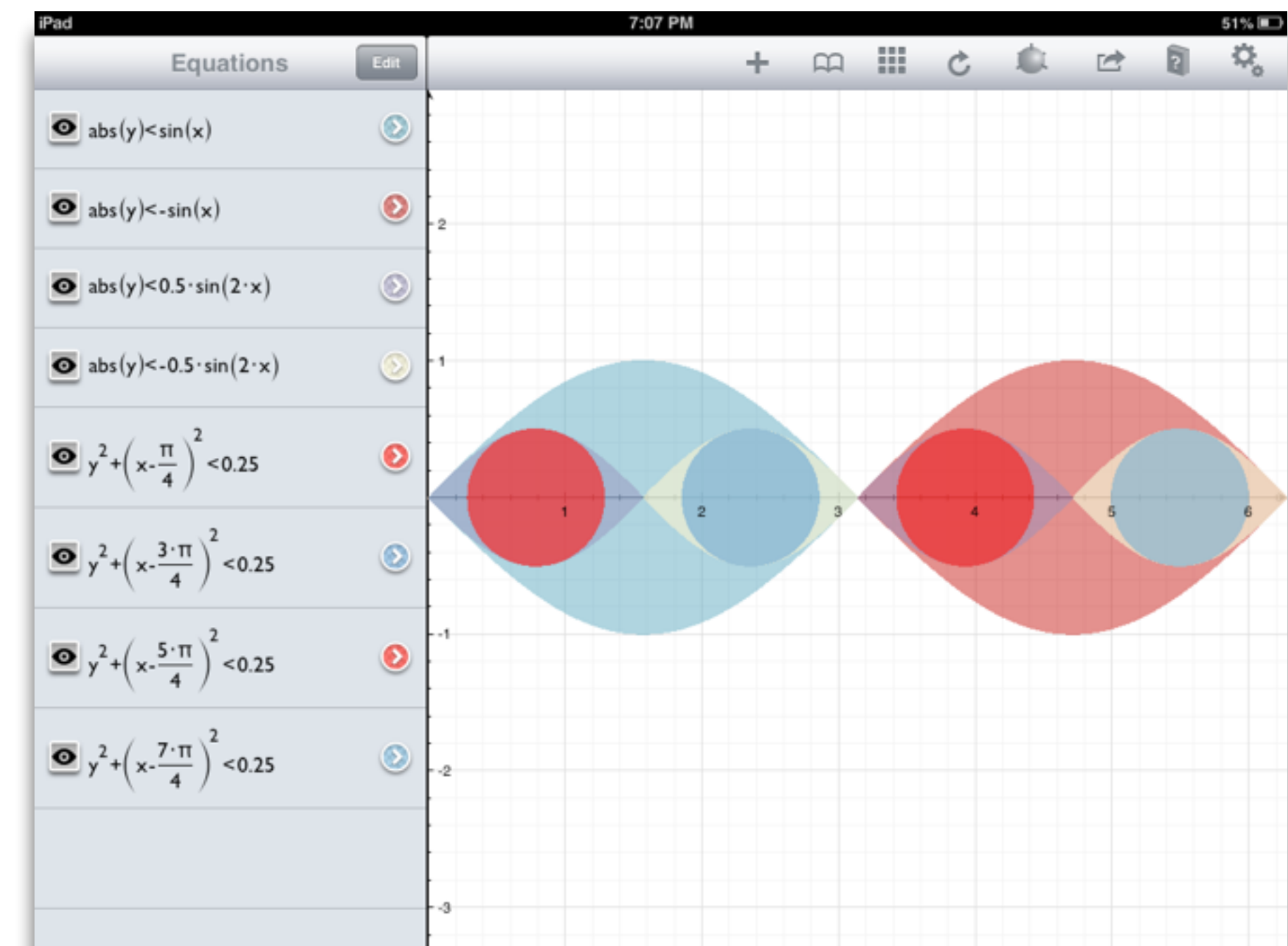
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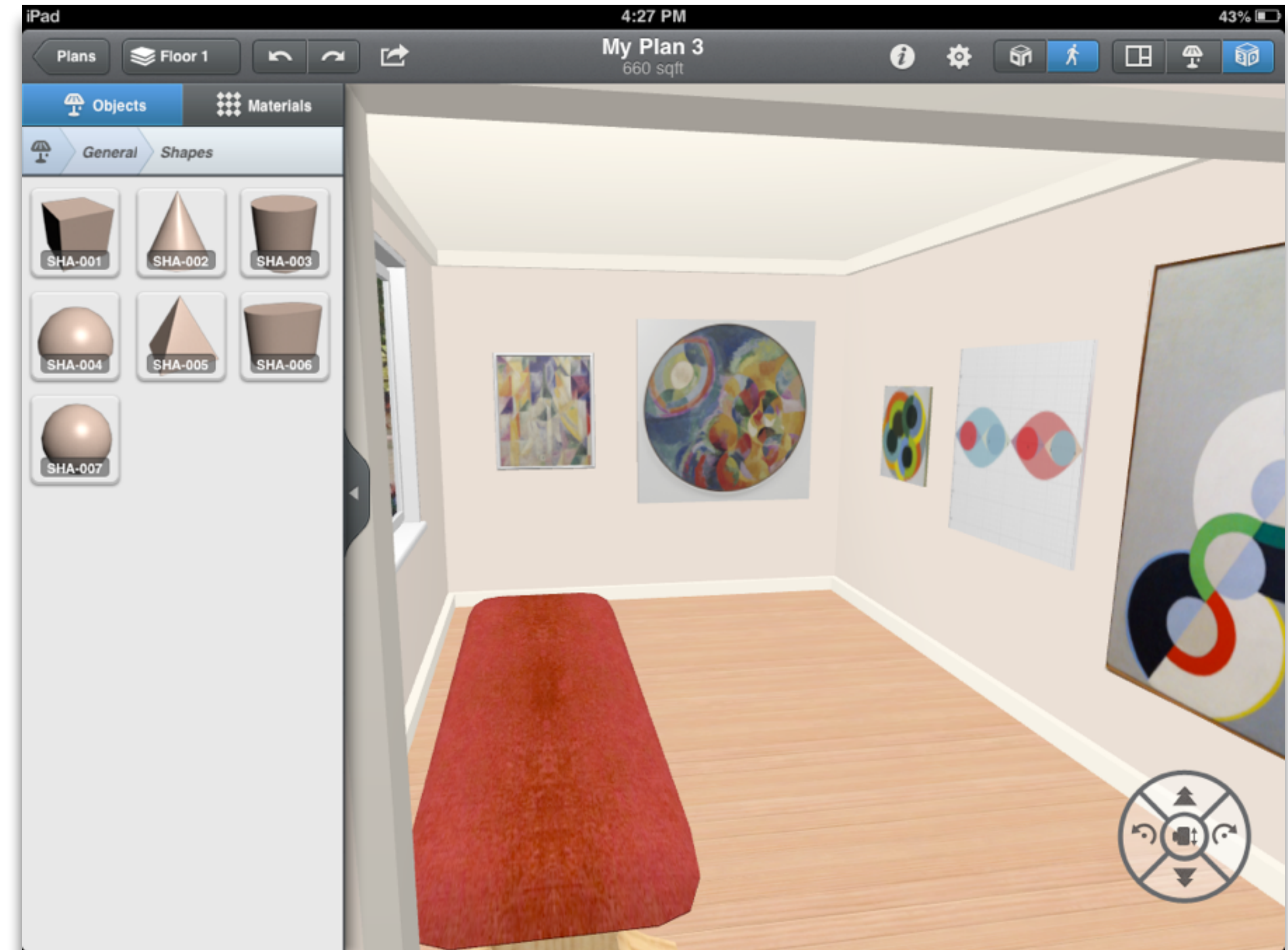
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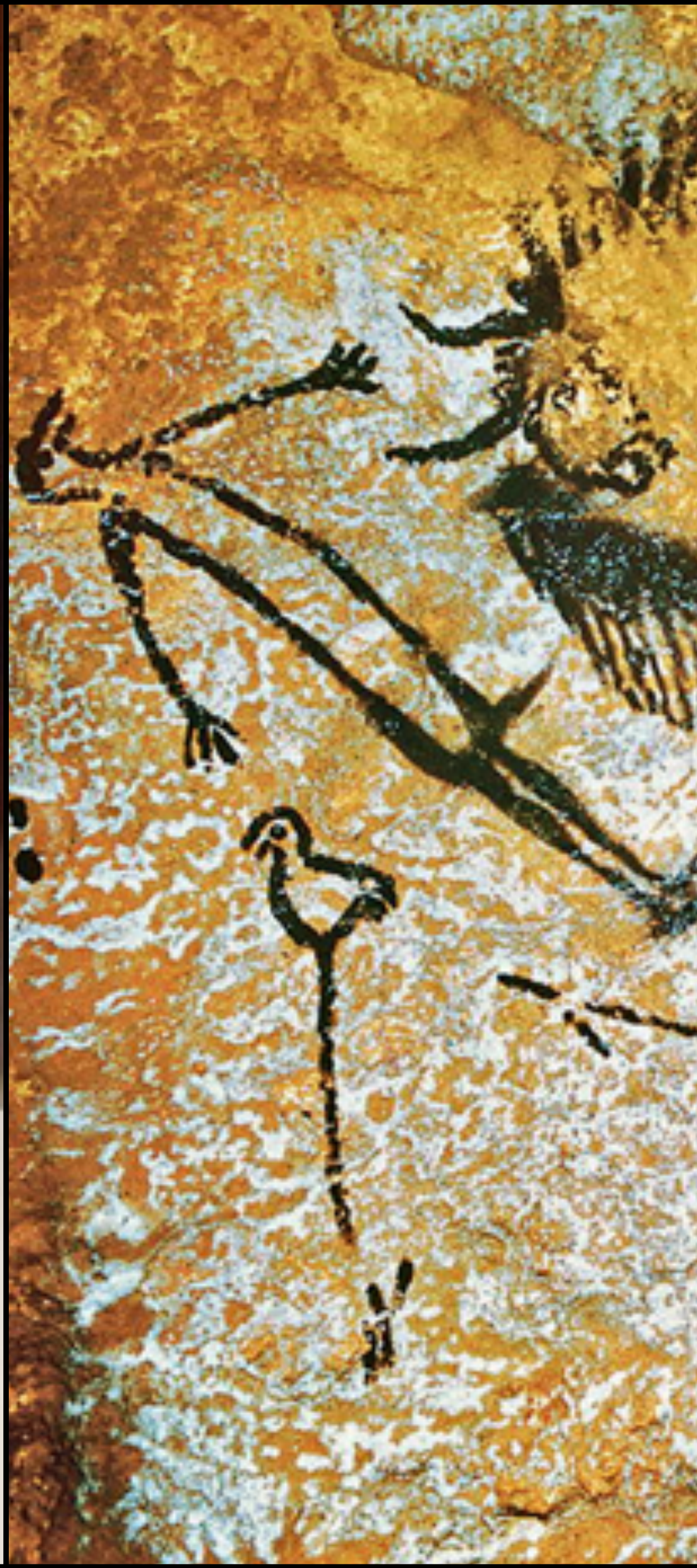

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Location

Position in space

Condition

*Mix of natural & artificial
features that give
meaning to a location*

Links

*Connections between
places*

Formal Region

*Group of places with
similar conditions*

Functional Region

*Group of places linked
together by a flow*

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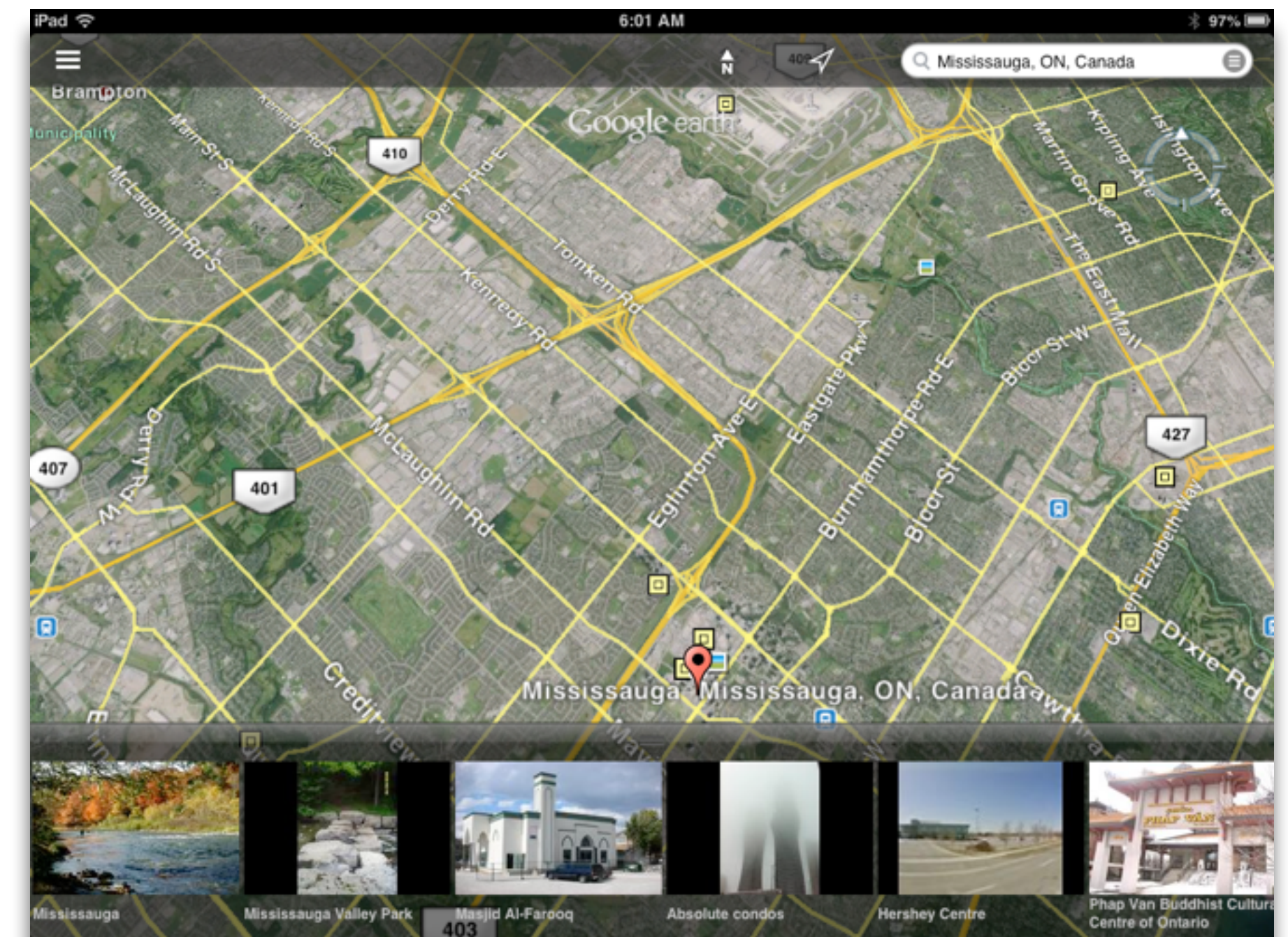
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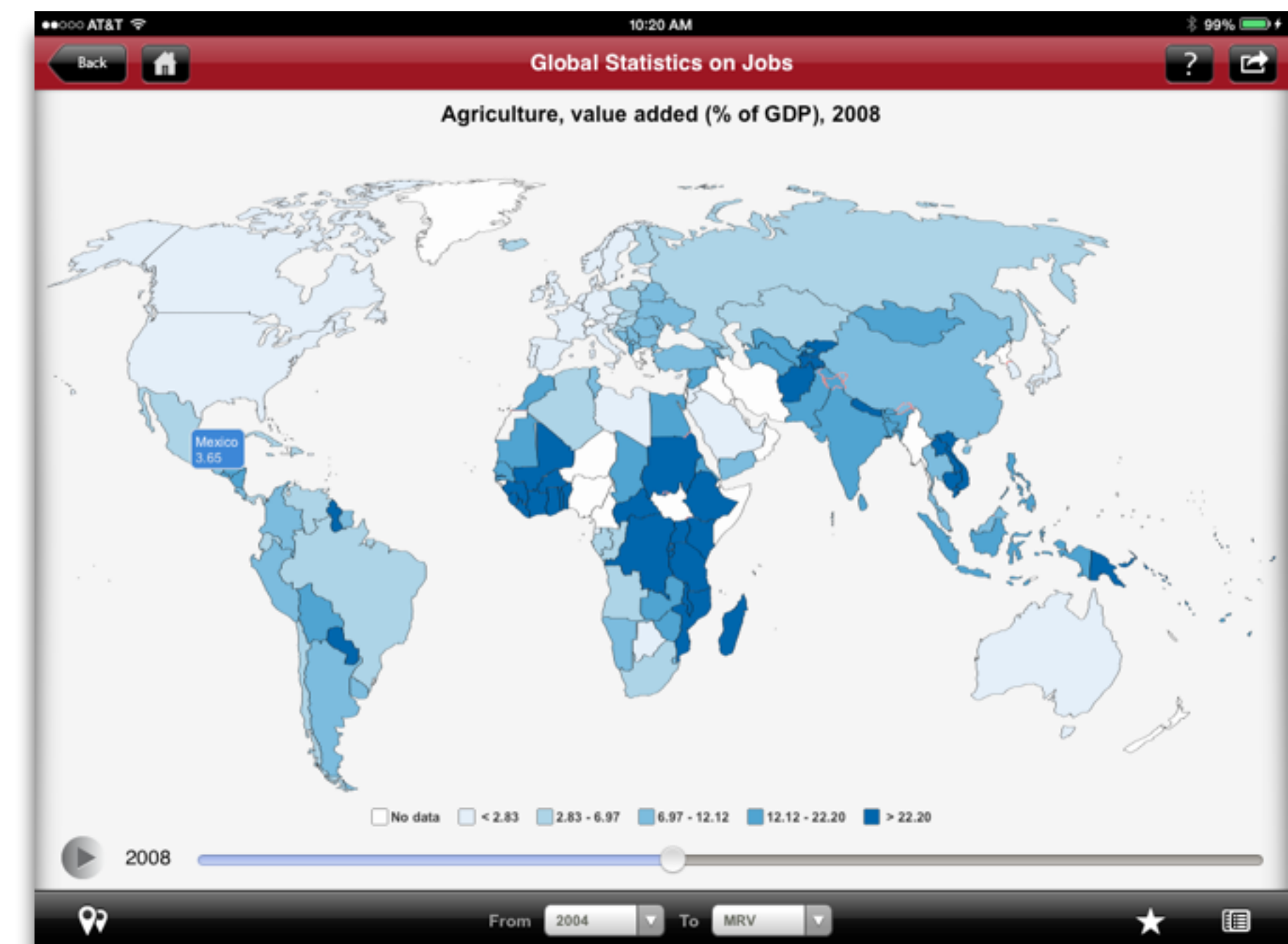
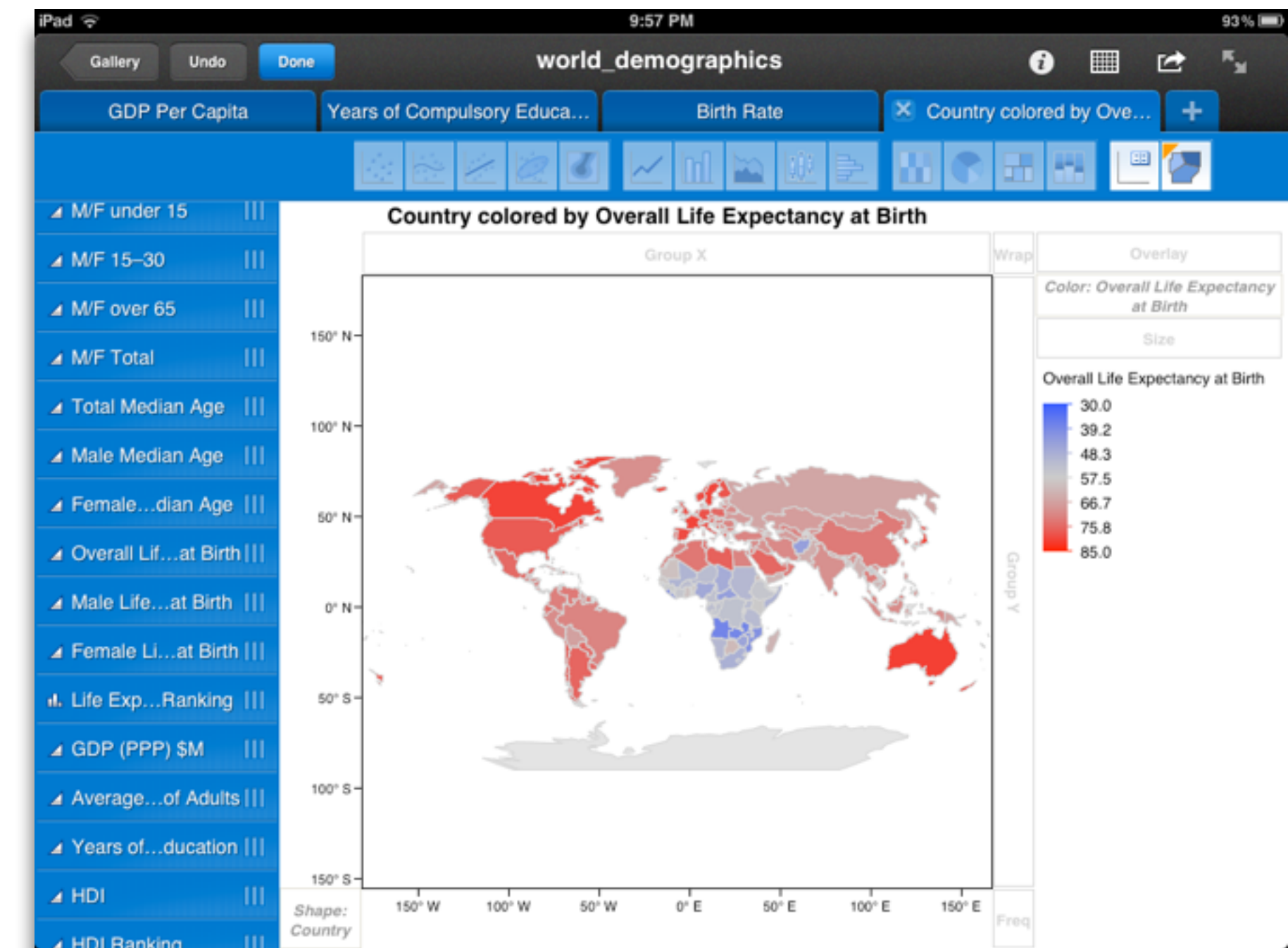
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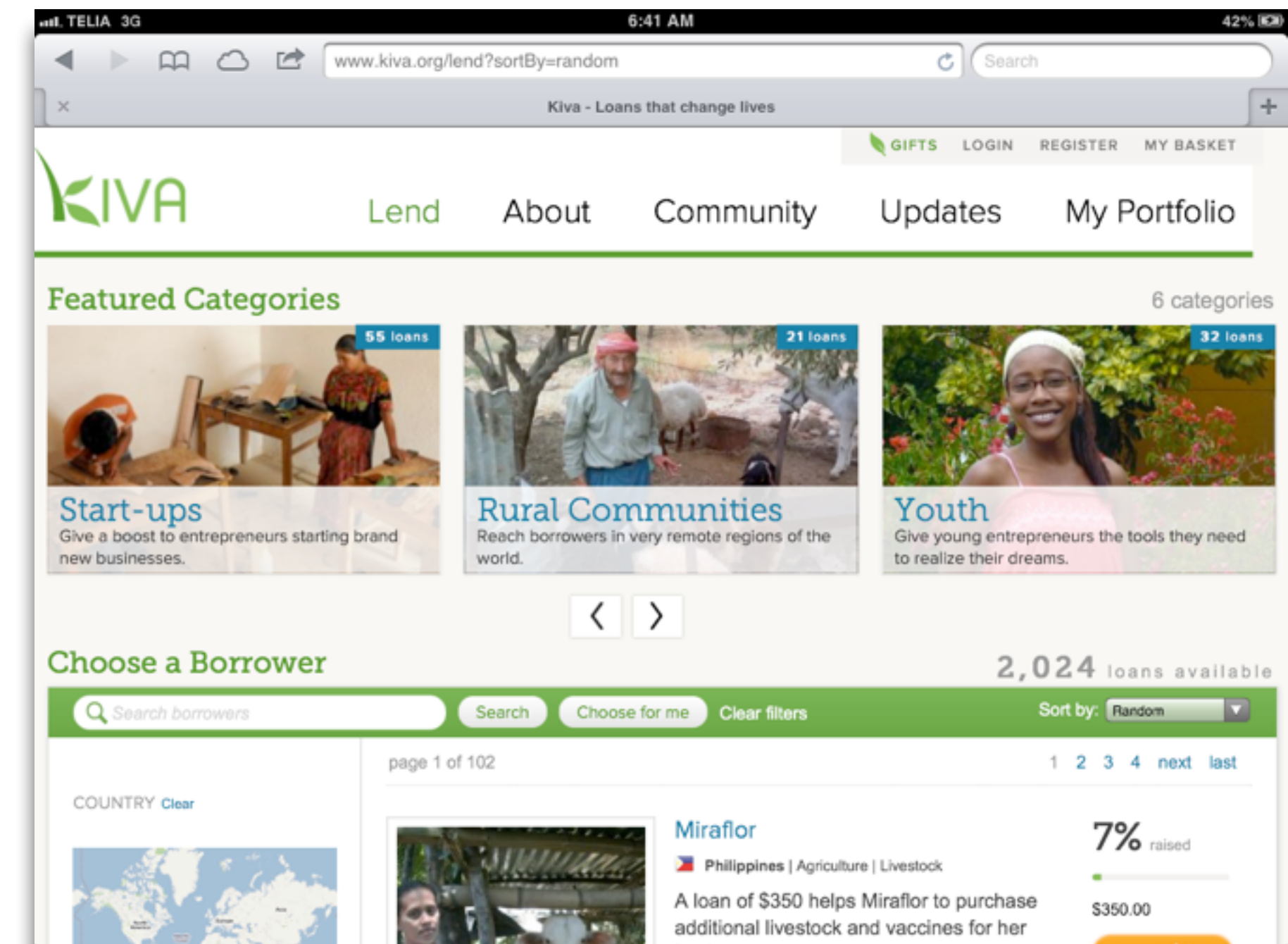
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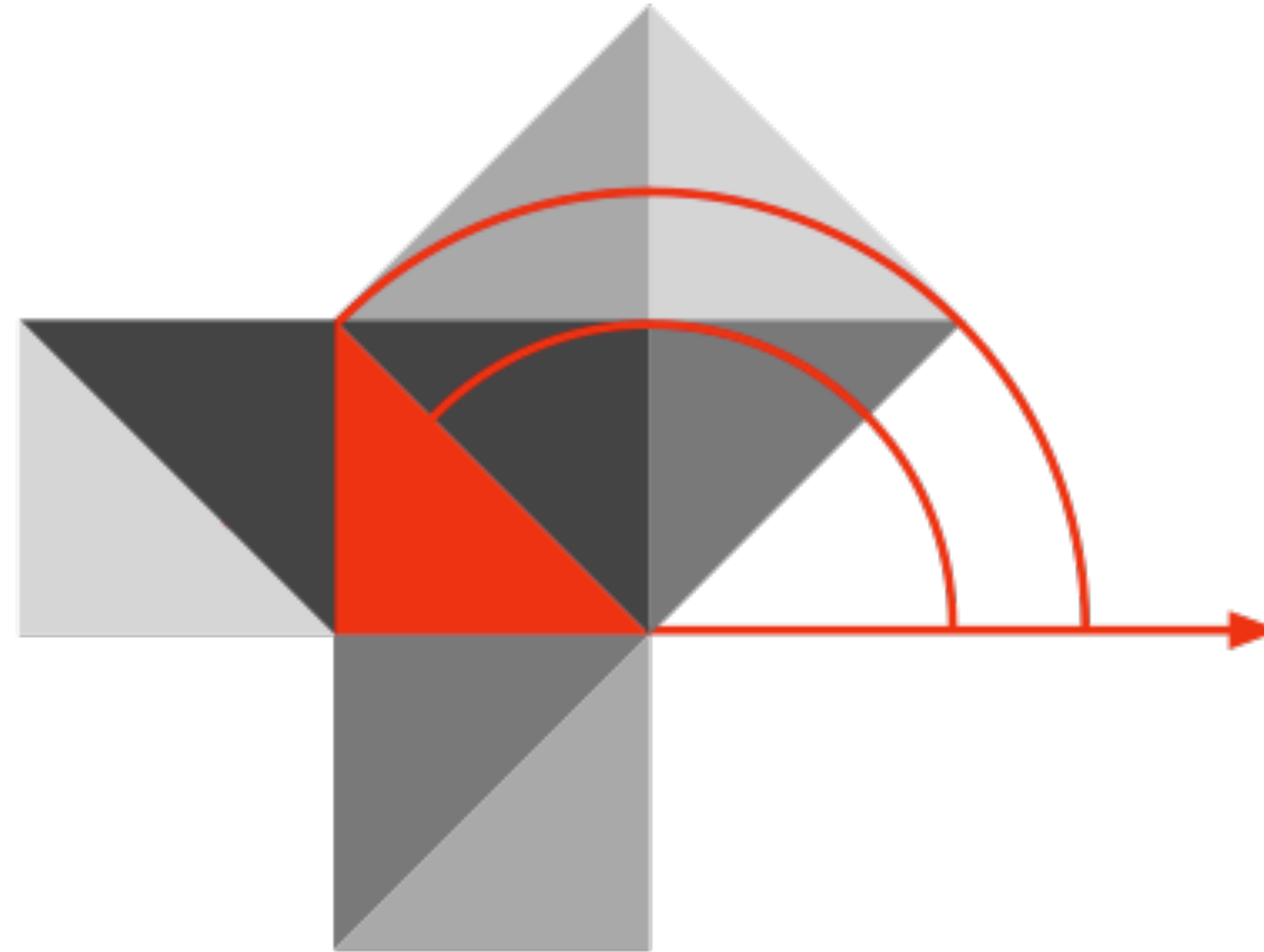
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Hippasus



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