# Technology in Education: Frameworks for Design and Practice

Ruben R. Puentedura, Ph.D.



Tech acts as a direct tool substitute, with functional improvement

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

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

Modification Tech allows for significant task redesign Transformation

## Augmentation

Ruben R. Puentedura, As We May Teach: Educational Technology, From Theory Into Practice. (2009)

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iPad ᅙ

Library

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William Rosen

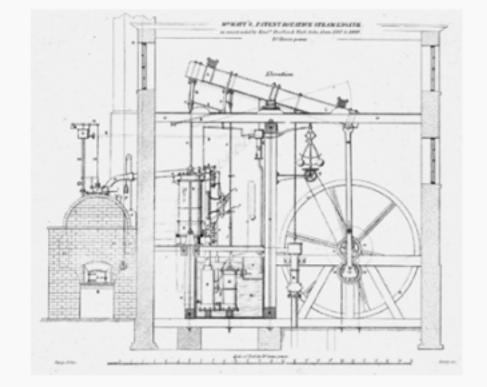


Fig. 5: The caption for this technical drawing reads "Mr. Watt's Patent Rotative Steam Engine as constructed by Messrs. Boulton & Watt, Soho, from 1787 to 1800. 10 Horse power." By 1787, the engine had evolved considerably from the earlier versions, using the sun-and-planet gear to drive the large wheel; the Watt linkage to connect the beam with the cylinder, on the left; and even Watt's feedbackdriven flyball governor—the two balls hanging

above and to the left of the large wheel—to control

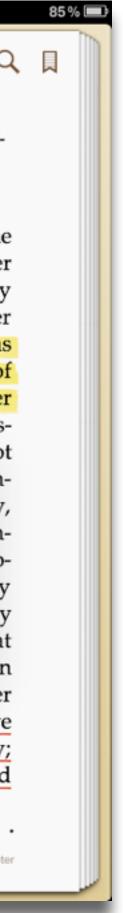
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The Most Powerful Idea in the World  ${}_{\mathrm{A}}\mathrm{A}$  Q 🔲

the wheel's speed. Science Museum / Science & Society Picture Library

THE SUN-AND-PLANET (or, for that matter, the crank plus connecting rod, which was, after all, Watt's first choice for producing rotary motion, and would be everybody's after the Wasbrough patent expired in 1794) was a huge step toward the introduction of steam power into mills and factories, rather than pumps. But it was only a step. The les-Get data & graph this; how does this immei ory, pro but compare with later trends in patents unissued per year? con protect by 178 ary that pac ĥad ohn Locke in the centur, preceding. Consider that from 1700 to 1740, fewer than five patents were issued in Britain annually; from 1740 to 1780, the annual number had

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 10 pages left in this chapter



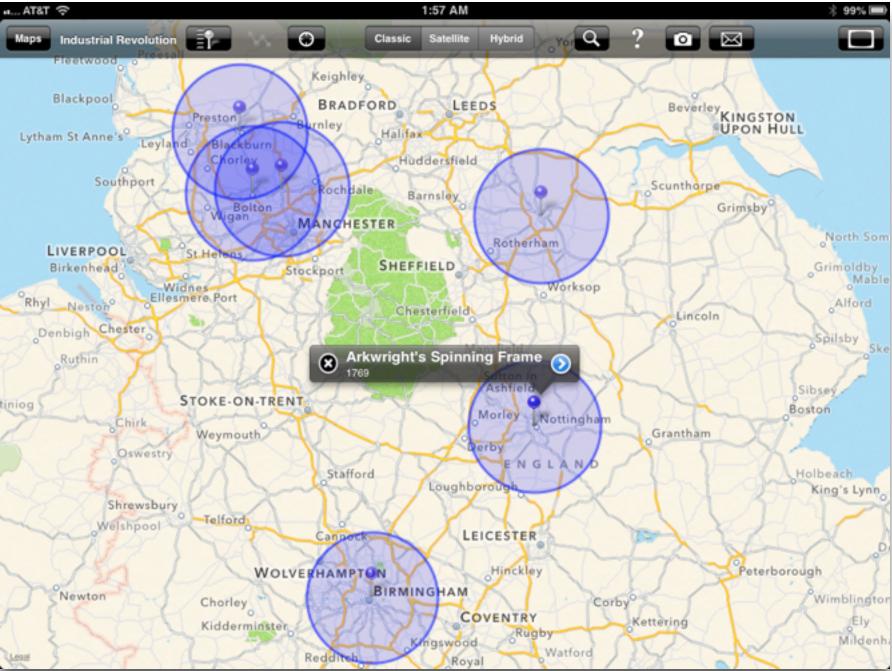
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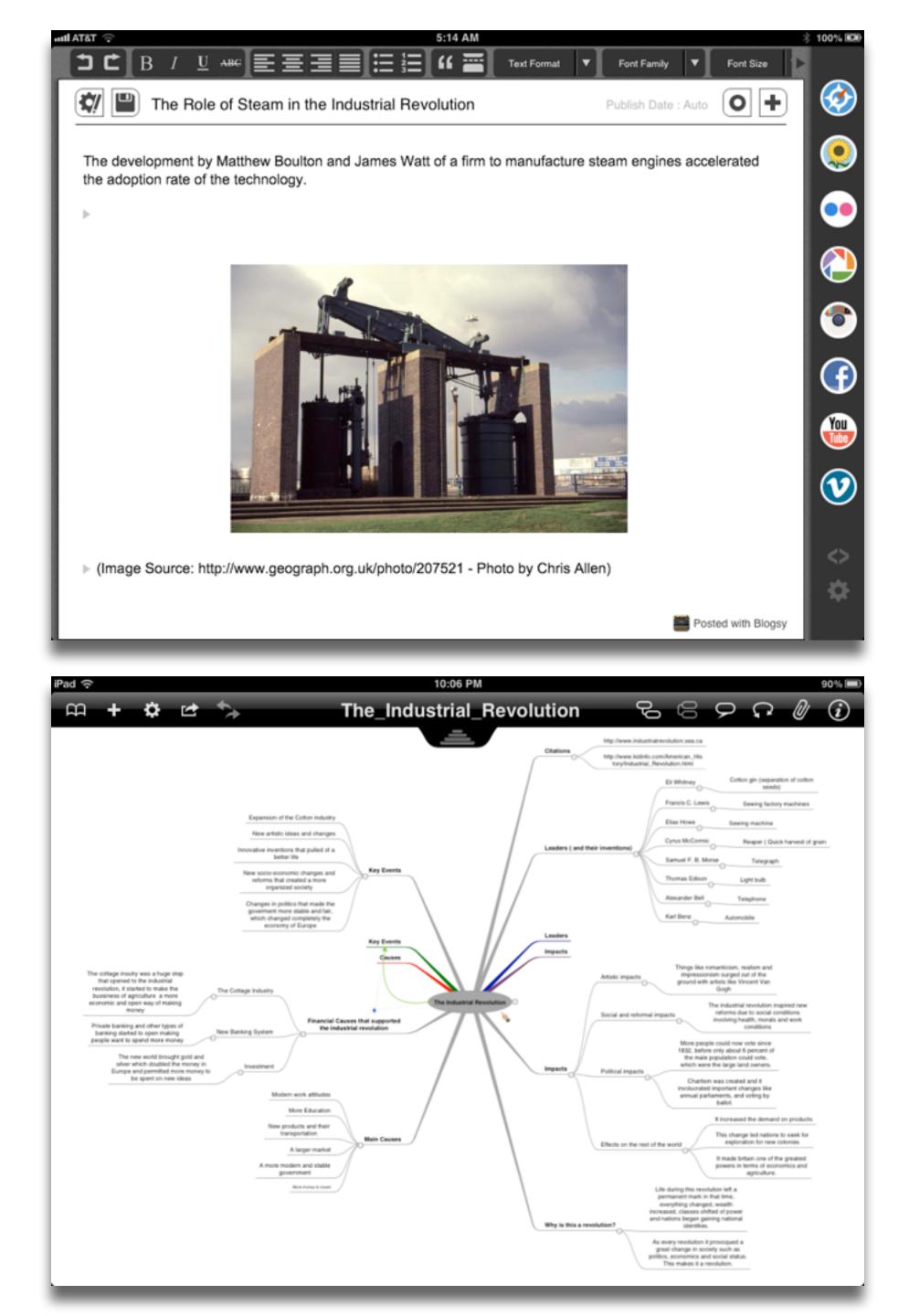
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### Redefinition

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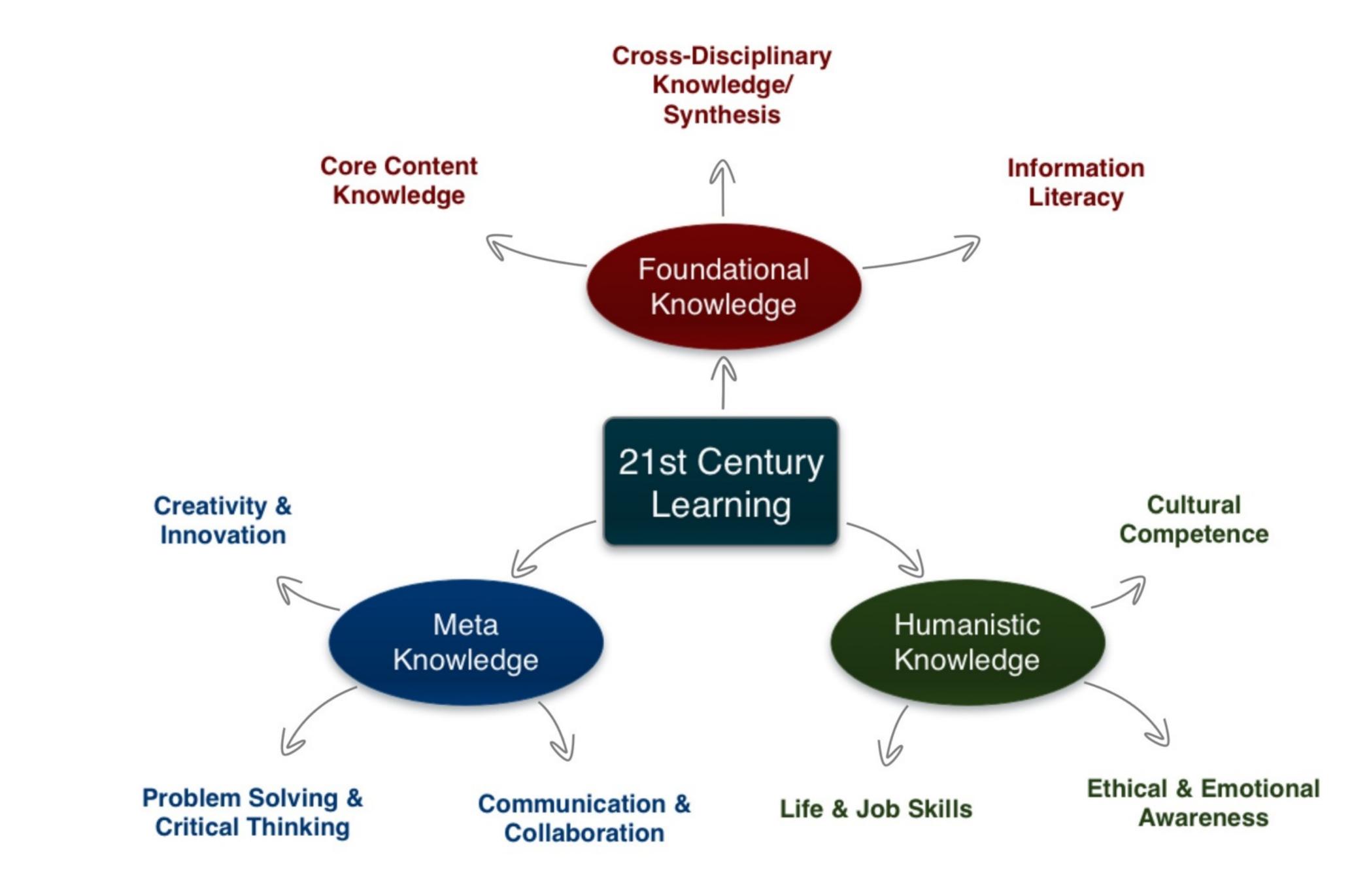
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Social	Mobility	Visualization	Storytelling	Gaming
200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
<image/>				
	Ruben R. Puentedura, "Technology In Educati	on: The First 200,000 Years" The NMC Perspective Series: Ideas	that Matter. NMC Summer Conference, 2012.	





searching, browsing, accessing, collecting

## Discovering

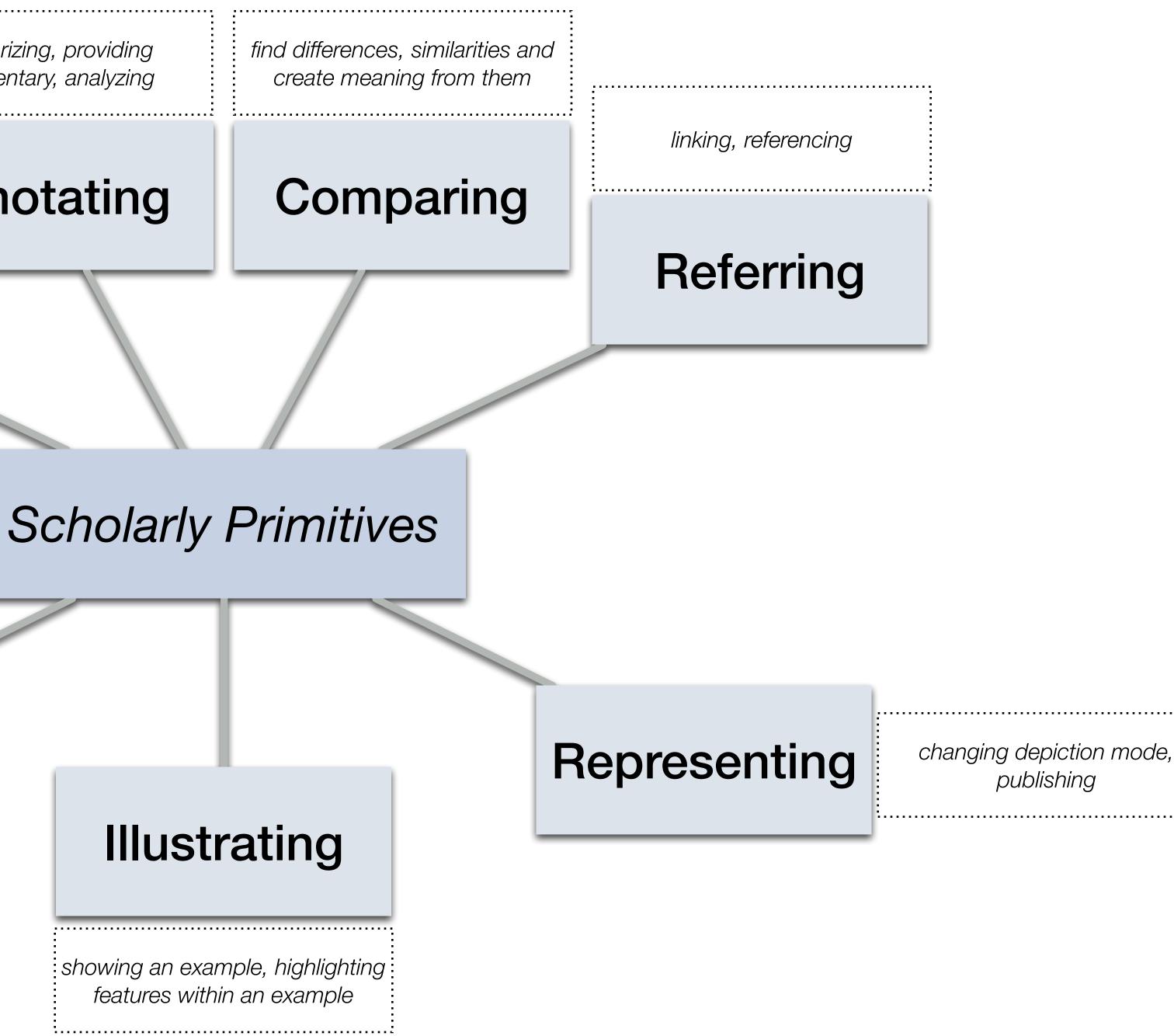
categorizing, providing commentary, analyzing

# Annotating

selecting according to a criterion, showing relationships of items selected to the original set

Sampling

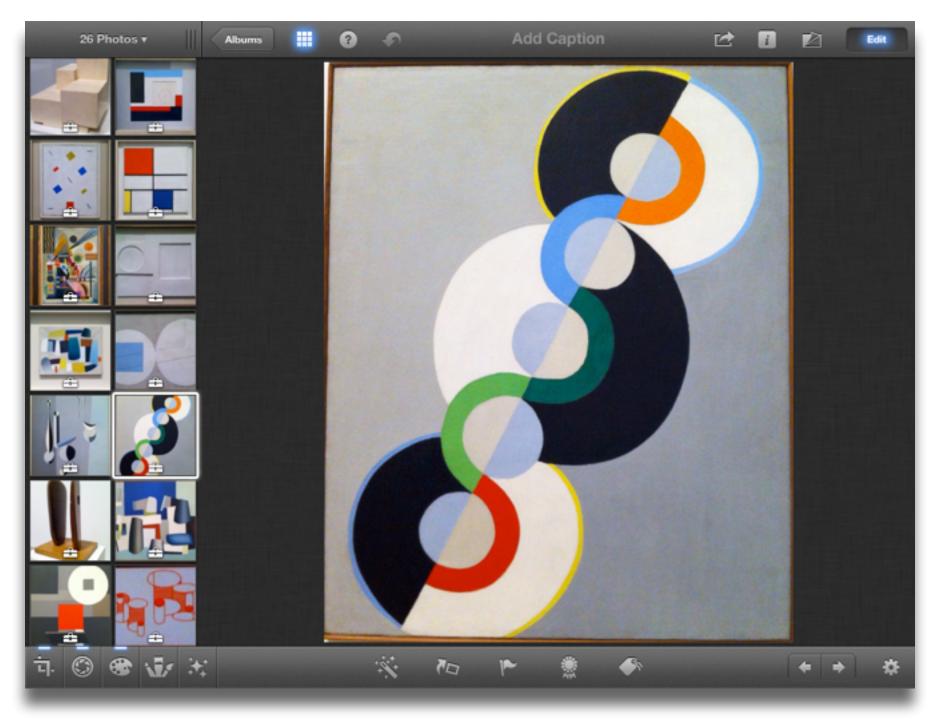
John Unsworth. Scholarly Primitives: What Methods Do Humanities Researchers Have in Common and How Might Our Tools Reflect This? Humanities Computing, Formal Methods, Experimental Practice Symposium, Kings College, London. (May 2000)



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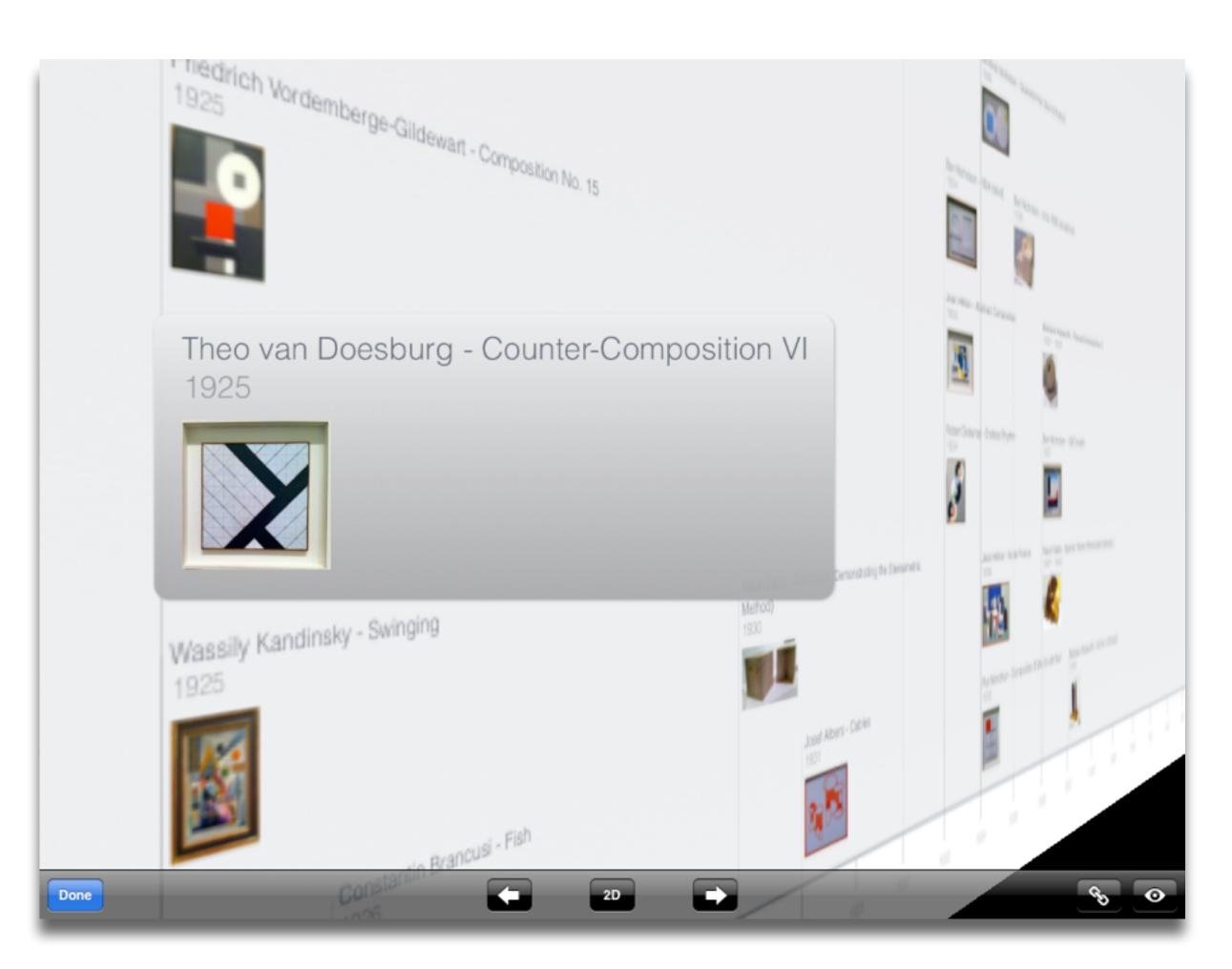
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MOVEMENT BROWSE BY MUSEUM NEW YORK VENICE BILBAO	Share to Groups >		
BROWSE BY MAJOR ACQUISITION Solomon R. Guggenheim Founding Collection	Robert Delaunay, Window on Robert Delaunay, Simultaneous Robert	Delaunay, Windows	

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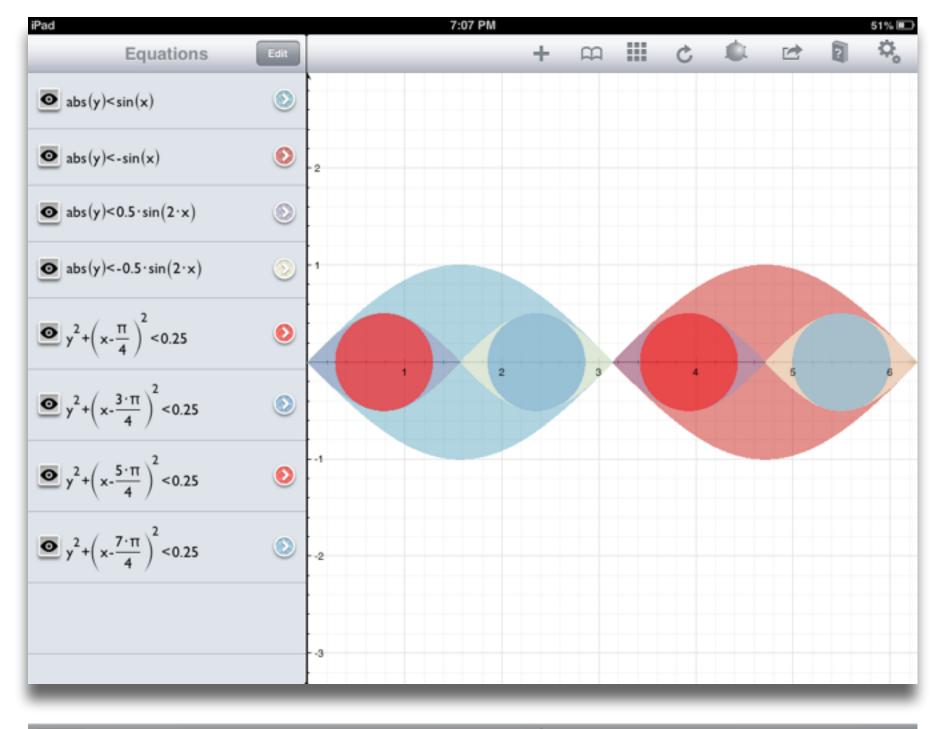
### Modification

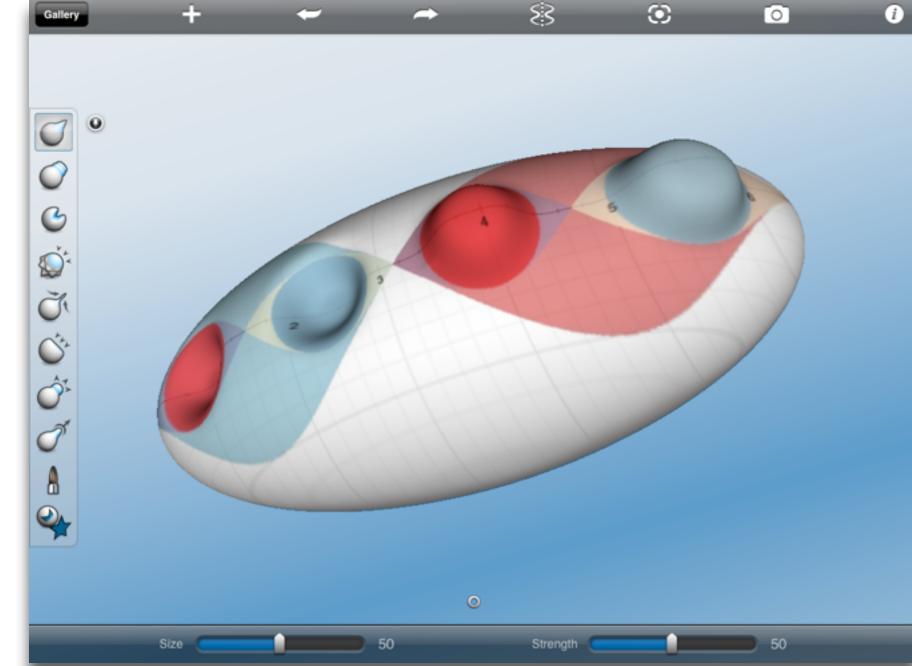
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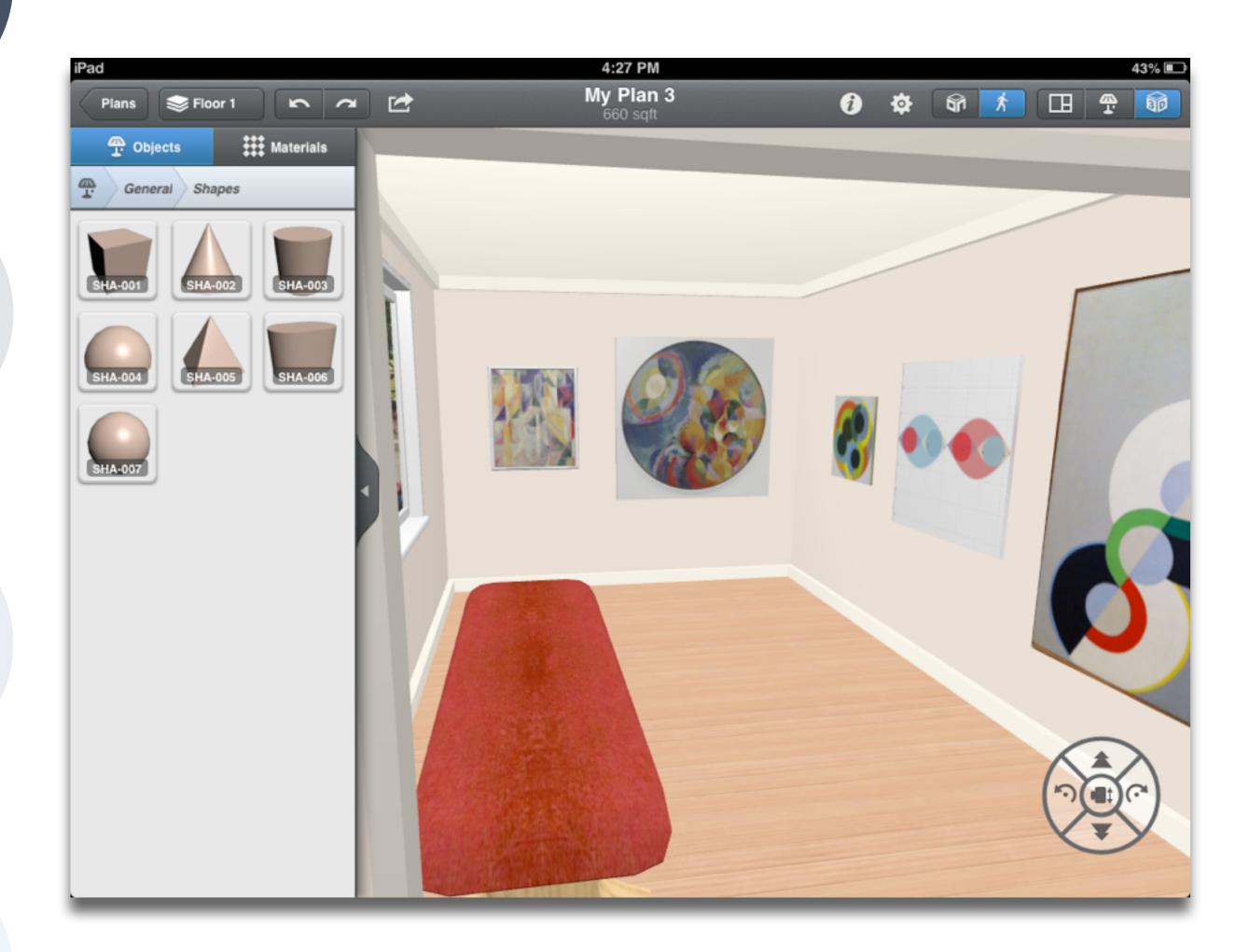
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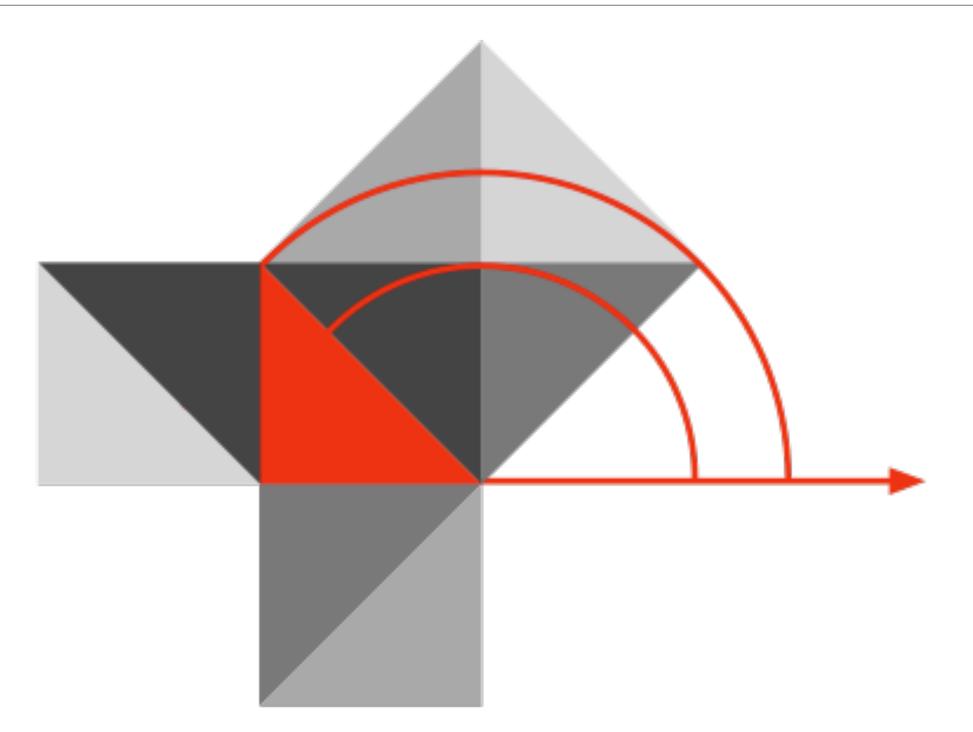
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# Hippasus



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