



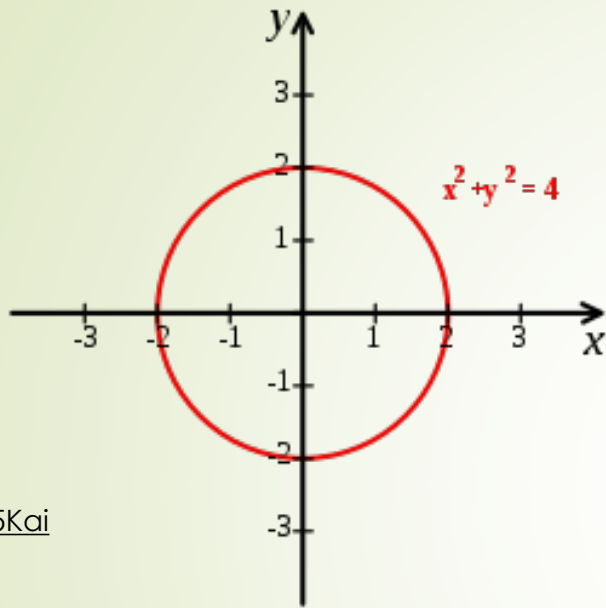
Problem solving, mathematics and other things



Robyn Gandell



Circles



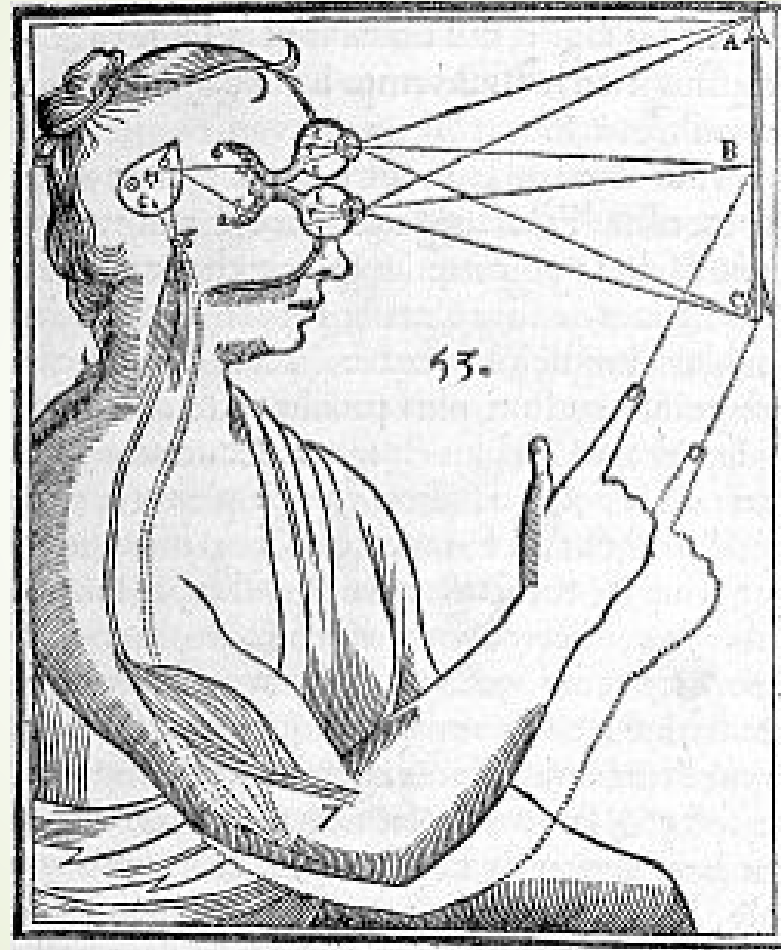
345Kai



<https://christchurchartgallery.org.nz/exhibitions/max-gimblett>

How do we know what a circle is?
Is it in our minds? Or in our bodies and movements?

Mind and Body



Descartes 1596 - 1650

My research

Problem solving strategies

Polya:

- Understand
- Plan
- Carry out
- Look back

Carlson and Bloom (2005)

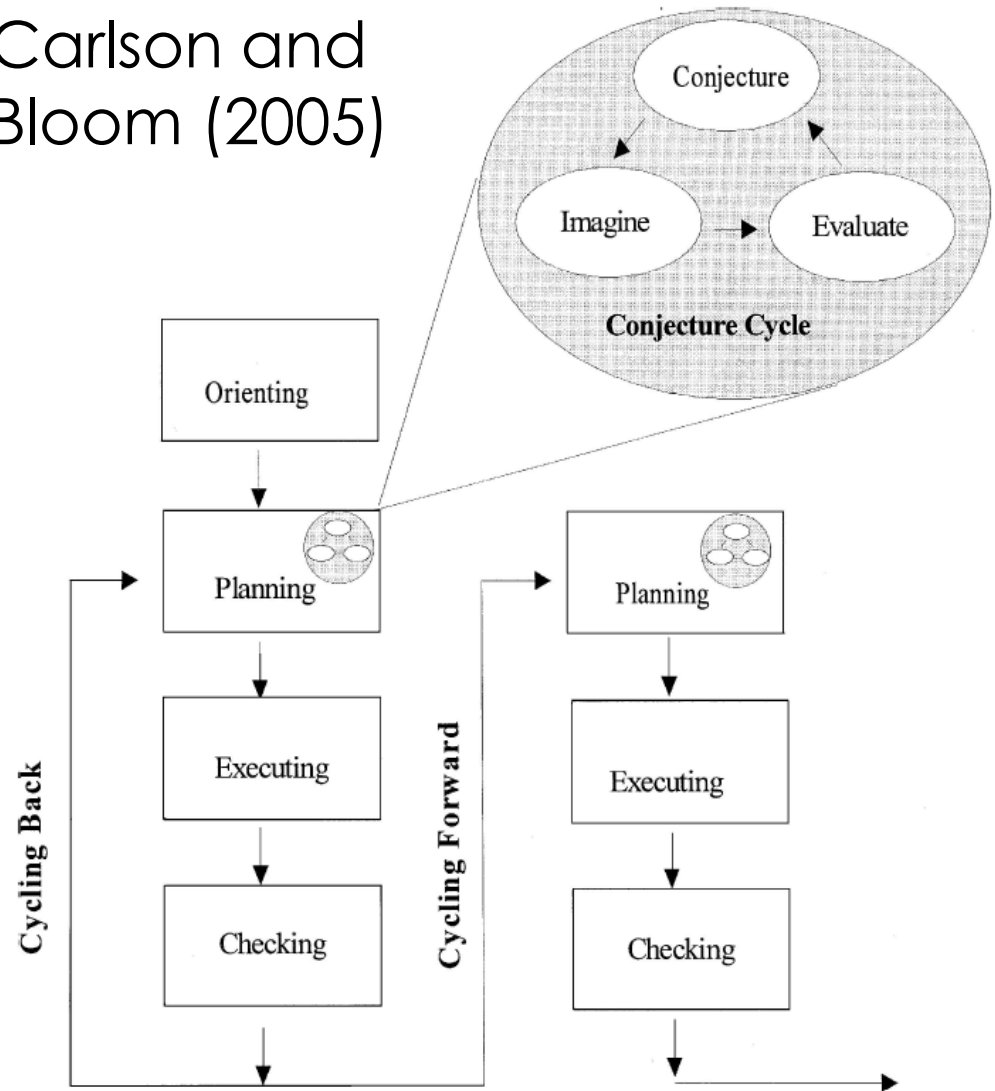


Figure 1. The Problem-Solving Cycle.

My Research – version 2

How do a group of students solve a mathematical problem?



Problematizing - continuous posing and solving smaller problems (Proulx and Maheux, 2017)

Enactivist – actions are thinking
Ingold's (2009) making new things

Emerging pathways and enmeshed knots



Discrete pointing

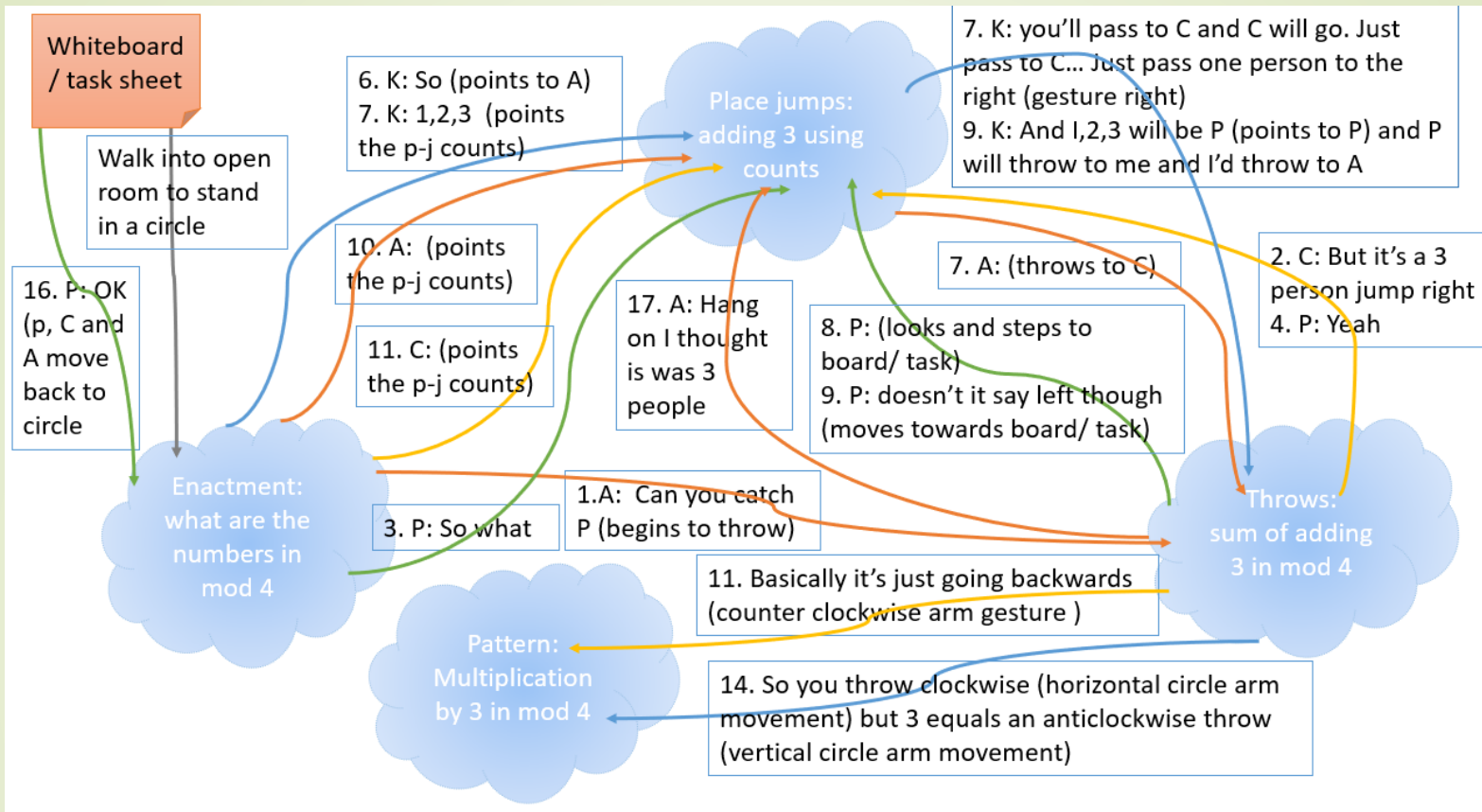


Continuous circle



Different continuous gestures for different variables





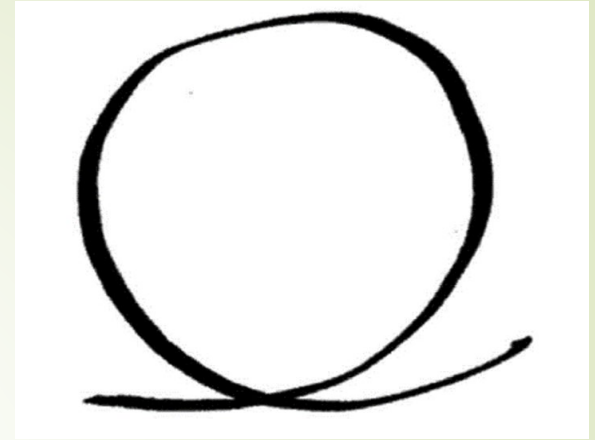
Mathematical problematising

- Dynamic
- Emergent
- Wandering pathways
- Knots



Learning & Teaching?

- Dynamic, uncertain, emerging, changing, intertwined
- Know in mind and body
- Ask smaller questions



Problem solving is a
wandering journey
with an ever changing
horizon

References

Gandell, R., & Maheux, J-F. (2019). Problematizing: The lived journey of a group of students doing mathematics. *Constructivist Foundations*, 15(1).

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Proulx, J., & Maheux, J. F. (2017). From problem solving to problem posing, and from strategies to laying down a path in solving: taking Varela's ideas to Mathematics Education Research. *Constructivist Foundations*, 13(1), 161-167.

Sheets-Johnstone, M. (1999). *The primacy of movement*. John Benjamins Pub.