

Mei:CogSci Vienna
Master thesis Seminar

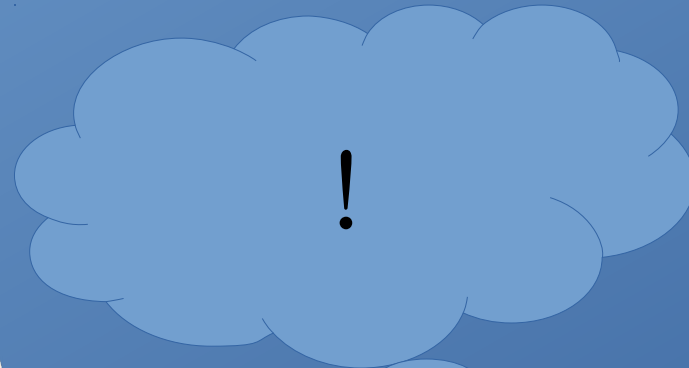
Problem Solving Perspectives

Long Master thesis presentation

6th April 2017

Nejc Grenc

Ideas



Ideas



Problems with multiple perspectives

Perspective
1

Perspective
2

Solutions differ
(side features)
but are all valid



Optimization
 \neq
Perspective
change

Fibonacci example

$$F_n = F_{n-1} + F_{n-2}$$

- Simple

$$F_0 = 0$$

- Intuitive / understandable

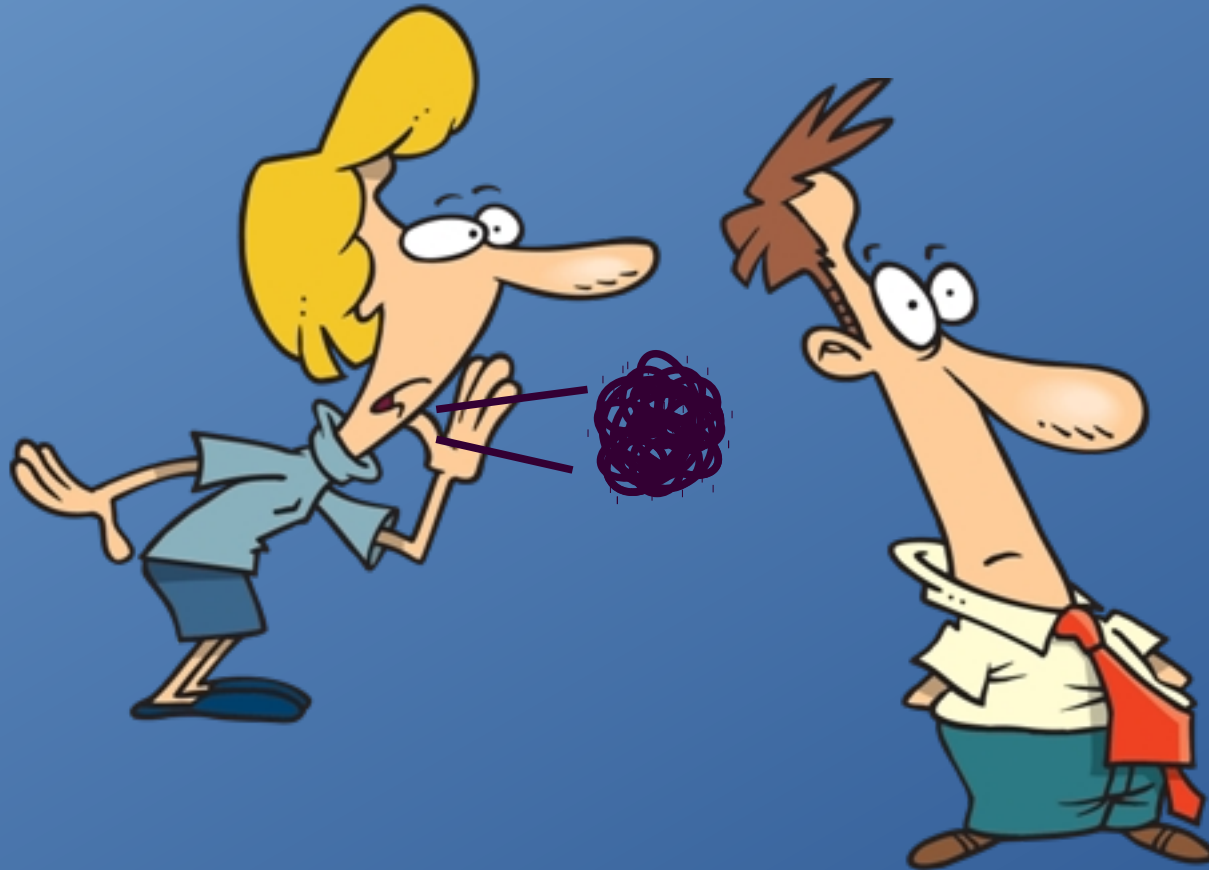
$$F_1 = 1$$

- Slow

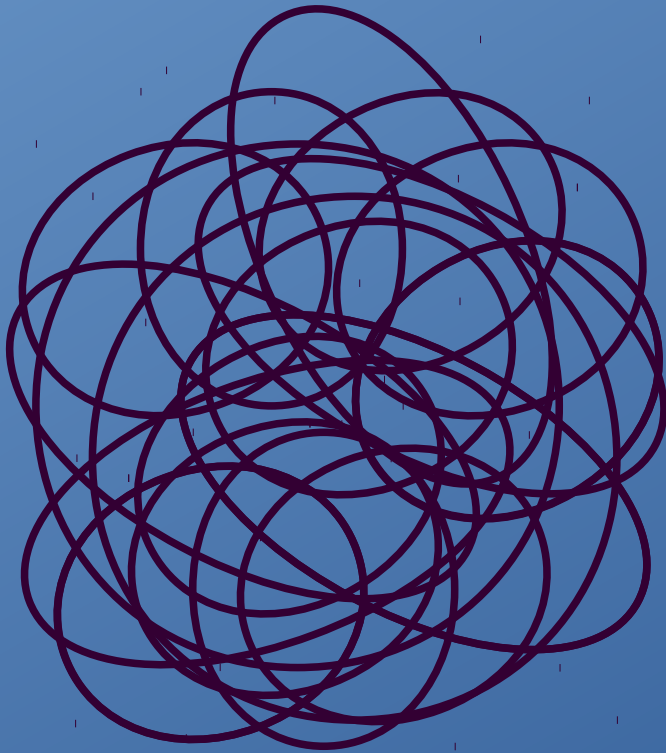
$$F_n = ((1 + \sqrt{5})^n - (1 - \sqrt{5})^n) / (2^n \sqrt{5})$$

- Fast
- Nobody knows what is going on

Archetypes



Archetypes



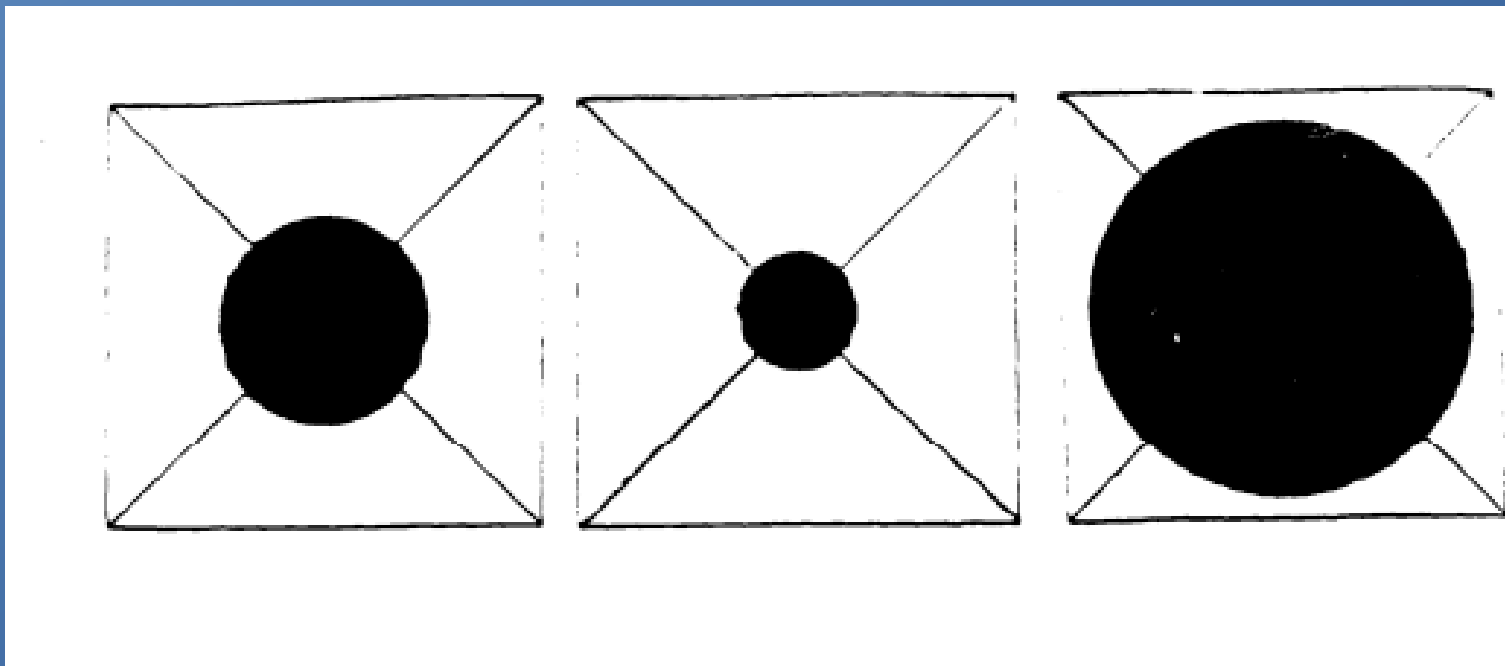
Concept that embodies the concept of idea.

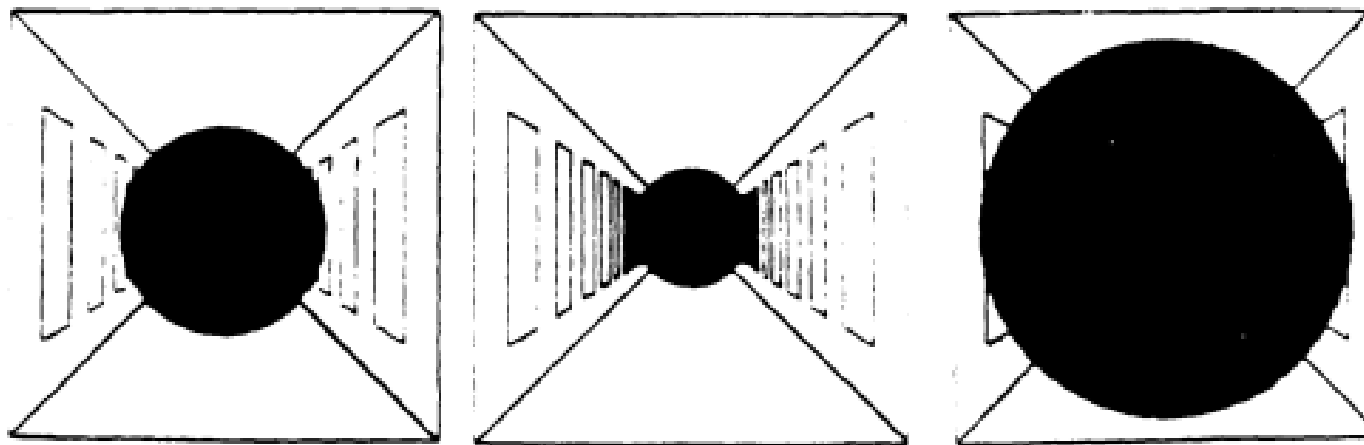
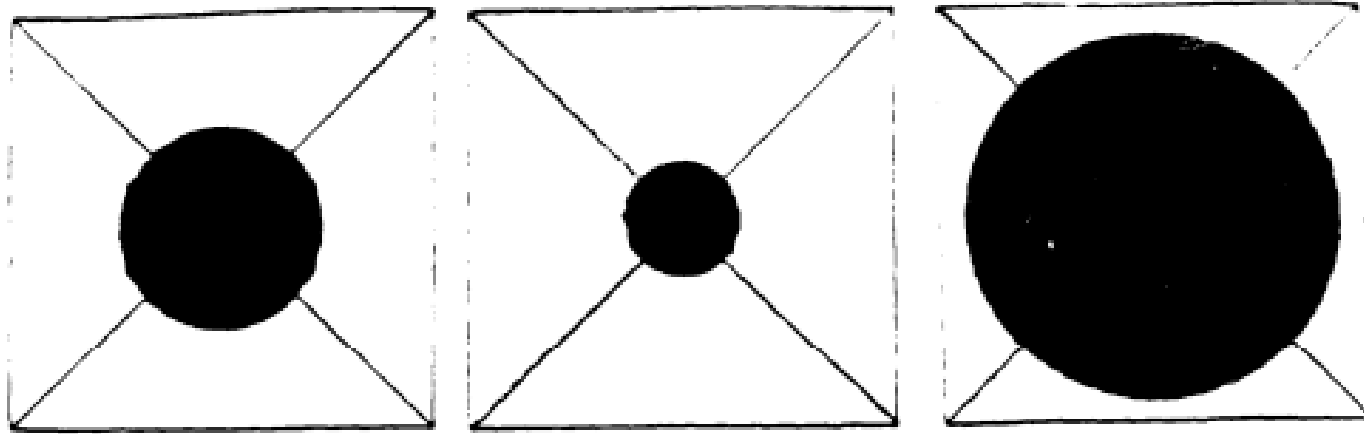
- Influences problem-solving process
- Transferable
- A set of archetypes (one or more) defines a perspective

Size / Distance example

Herbert A. Simon (side discovery)

- Kotovsky, Fallside (1988) Representation and Transfer in Problem Solving.





Master thesis Project

Research problem solving perspectives and preferably expand Archetype model.

- Research question:
What defines a problem perspective and how can we influence perspective recognition?

Archetype model is
just means to an end



Induce recognition
of perspectives in
new problems

Methodology

- 1) Gather and analyze problems with known at least 2 perspectives.
- 2) Analyze those problems and select some.
- 3) Test human problem solvers on those problems with Talk aloud method.
- 4) Analyze results and upgrade / create new model.
- 5) Discover new perspectives with the model.

Before all that: Consult mentor.

Mentor



Dr. Matúš Grežo

- Slovak Academy of Sciences
- Interest in Problem Solving

Slovenian mentor: ?

Interdisciplinarity

Psychology

Problem solving

Future:
Computer Science

Modeling archetypes

Philosophy

Open issues

- Slovenian mentor
- Will this produce even remotely useful data?