DESIGN CREATIVITY: REFINING THE MODEL

DAVID C BROWN
& ELIJAH FORBES-SUMMERS
Computer Science Department
WPI, Worcester, MA 01609, USA
<dcb@cs.wpi.edu>

Introduction

- Boden’s model of creativity
- Exploratory + Transformational
- Refined by Wiggins

Rule Sets

- $\mathcal{R}$ - constrains possible conceptual spaces
  - i.e., of design concepts (partial & complete)
- $\mathcal{I}$ - allows traversal of space

- Changes support creativity
- e.g., $\mathcal{I}$ to $\mathcal{I}'$

Proposal

- Current models are very abstract.
- Also not related to design.

- Consider the rules in $\mathcal{I}$ as primitive ingredients of design activity (actions).
- Build models at different abstraction levels.

- Can study design creativity at many levels.

Example: Analogical Reasoning

- Given a partial concept deliver a known concept that is related in some way, so that aspects of it can be transferred to help complete what is given.

- A high level design action.
- Could study/model at this level.

A Level Below

- Find suitable sources (reminding);
- Match source candidates to the target;
- Transfer aspects of ‘best’ match to target.

- Lower level design actions.
- Could study impact on creativity of these.

A Level Below That

- Consider just “find suitable sources”
  1. Abstraction of ‘given concept’ to existing or new concepts.
  2. Use these more general concepts to find suitable sources, or abstractions of suitable sources, by a) using similarity/difference links, or b) by searching.

- Could study creativity at this level

Down to a Single Action/Decision

- How can a single low-level action affect evaluation of creativity?

- e.g., select lemon for material of cup

Conclusion

- Every level of action has potential to impact the evaluation of creativity.
- We don’t yet know what impact.
  - i.e., we have little understanding.
- We *must* study/model design creativity at different levels.