Addressing the American Problem by Modeling Cognitive Development

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The American Problem

When it comes to development...

...isn’t faster better?

..isn’t higher level functioning always preferable?

Answers (to foreshadow): no, not necessarily.
First: an introduction to the cognitive developmental approach

Second: two sets of relevant considerations, e.g. models and micro-development

Third: some general reflections addressing the American Problem
Hierarchical organization of cognitive architecture: philosophical epistemology

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Hierarchical organization of cognitive architecture: developmental psychology

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Dynamic Skill Theory
(Fischer 1980; 2006)

- dynamic construction of hierarchies of skills
- universal skill scale of hierarchal complexity
- developmental web
- developmental range
Model Building
(Fischer 2006; van Geert 1994)

- dynamic systems models
- skills as “growers”
- connections between growers within and between levels
Model Building
(Fischer 2006; van Geert 1994)

Two Growers in Connection at Same Level:
Simple Types of Nonhierarchtical Feedback

Grower A

Grower B

Competition –
or Support +

Self-
Feedback

Self-
Feedback

Competition –
or Support +
Model Building
(Fischer 2006; van Geert 1994)

Connections in Hierarchical Growth

Key Connections between Levels:
1. Prerequisite
2. Competition
3. Support

Prerequisite Coordination

Competition – or Support +

Skill Hierarchy:
Higher Level Skill Supports & Competes with Lower Level Skill.
Model Building
(Fischer 2006; van Geert 1994)

Hierarchical Growth through 3 Levels

Grower A Grower B Level I
Coordination
Grower C Grower D Level II
Coordination
Grower E Grower F Level III
Hierarchical Growth through 3 Levels
Model Building
(Fischer 2006; van Geert 1994)

Development of Self-in-Relationships in Seoul, Korea

Model for Korean Self-Understanding

Mean for 5 variables in H55 model: levels 2-3, Rate 0.1 Optimal, 0.03 Functional
The Piaget Effect

Attractor Effect:
Growers Approach Optimal Level.

Note Spread instead of Attraction.
The Piaget Effect

- a surprise!
- early boost results in disruption between skills and lower level attainments
- empirical data supports: e.g. pathology as adaptive development along distinct pathways (Fischer et al 1997)
Micro-developmental data

Full Session: Working with Gadget

Nira Granott
Micro-developmental data

Full Session: Working with Gadget
Start
Redo Gadget
Summary
Redo

SKILL LEVEL

actions
representations

INTERCHANGE

Nira Granott
Micro-developmental data

- individuals do not usually function at the highest level of which they are capable
- novel problems require honing skills at multiple levels, typically starting simple and building up
- developmental range and multi-level flexibility
Micro-developmental data

- multi-level flexibility has important adaptive advantages
  - but it requires that emergent levels don’t fix the nature of skills that have been superseded / subsumed
  - we (humans) are not inflexible in this way, but rather can move down and act to refashion lower-level skills for higher-level purposes
The American Problem

When it comes to development...

...isn’t faster better?

..isn’t higher level functioning always preferable?
Addressing The American Problem

When it comes to development...

...slow and steady wins

...multi-level flexibility is key
Addressing The American Problem

When it comes to development...

...it appears that delaying transition of control to higher levels and functioning in a development range have adaptive advantages...
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When it comes to development...

...delays avoid generalizations from insufficient sampling
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When it comes to development...

...multi-level flexibility means having control over a range of capabilities, which separates sampling from generalization, allowing skills to be crafted at multiple levels to fit unique tasks