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.

The agenda

- First: an introduction to the cognitive developmental approach
- Second: two sets of relevant considerations, e.g. models and microdevelopment
- Third: some general reflections addressing the American Problem

Hierarchical organization of cognitive architecture: philosophical epistemology

Kant	Peirce	Sellars
Sense-ability	Index	Reliable differential responsiveness
Understanding	Icon	Cognitive imagining
	Symbol	Symbol tied to environment
		Symbol-norm
	Symbol - science	Symbol-norm science
Reason	Symbol- philosophical	Symbol-norm philosophical

Hierarchical organization of cognitive architecture: developmental psychology

Baldwin

Pre-logical

Quasi-logical

Logical

Extra-logical

Piaget

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Sensori-motor

Pre-operational

Concrete operational

Formal operational

Post-formal operational

Fischer

Reflexes

Actions

Representations

Abstractions

Principles

Dynamic Skill Theory

(Fischer 1980; 2006)

 dynamic construction of hierarchies of skills

 universal skill scale of hierarchal complexity

developmental web

developmental range

(Fischer 2006; van Geert 1994)

dynamic systems models
skills as "growers"
connections between growers within and between levels

(Fischer 2006; van Geert 1994)

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



(Fischer 2006; van Geert 1994)

Connections in Hierarchical Growth



(Fischer 2006; van Geert 1994)

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Hierarchical Growth through 3 Levels



Model Building (Fischer 2006; van Geert 1994)



Functional Optimal

Model for Korean Self-Understanding



150

200

250

300

100

50

0

The Piaget Effect





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)





 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

- 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?

When it comes to development... ...slow and steady wins ...multi-level flexibility is key

When it comes to development...

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

When it comes to development...

...delays avoid generalizations from insufficient sampling

When it comes to development...

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