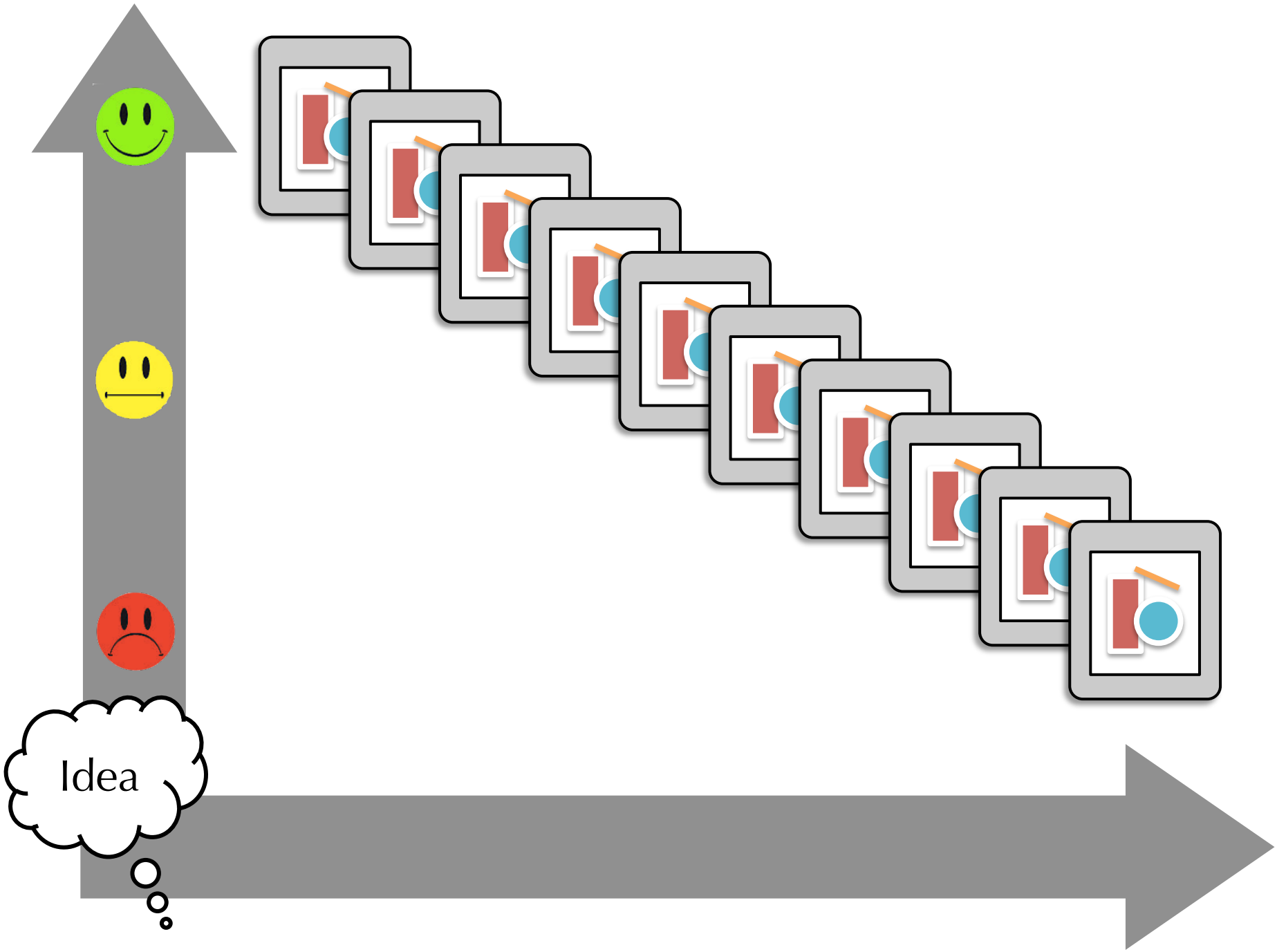
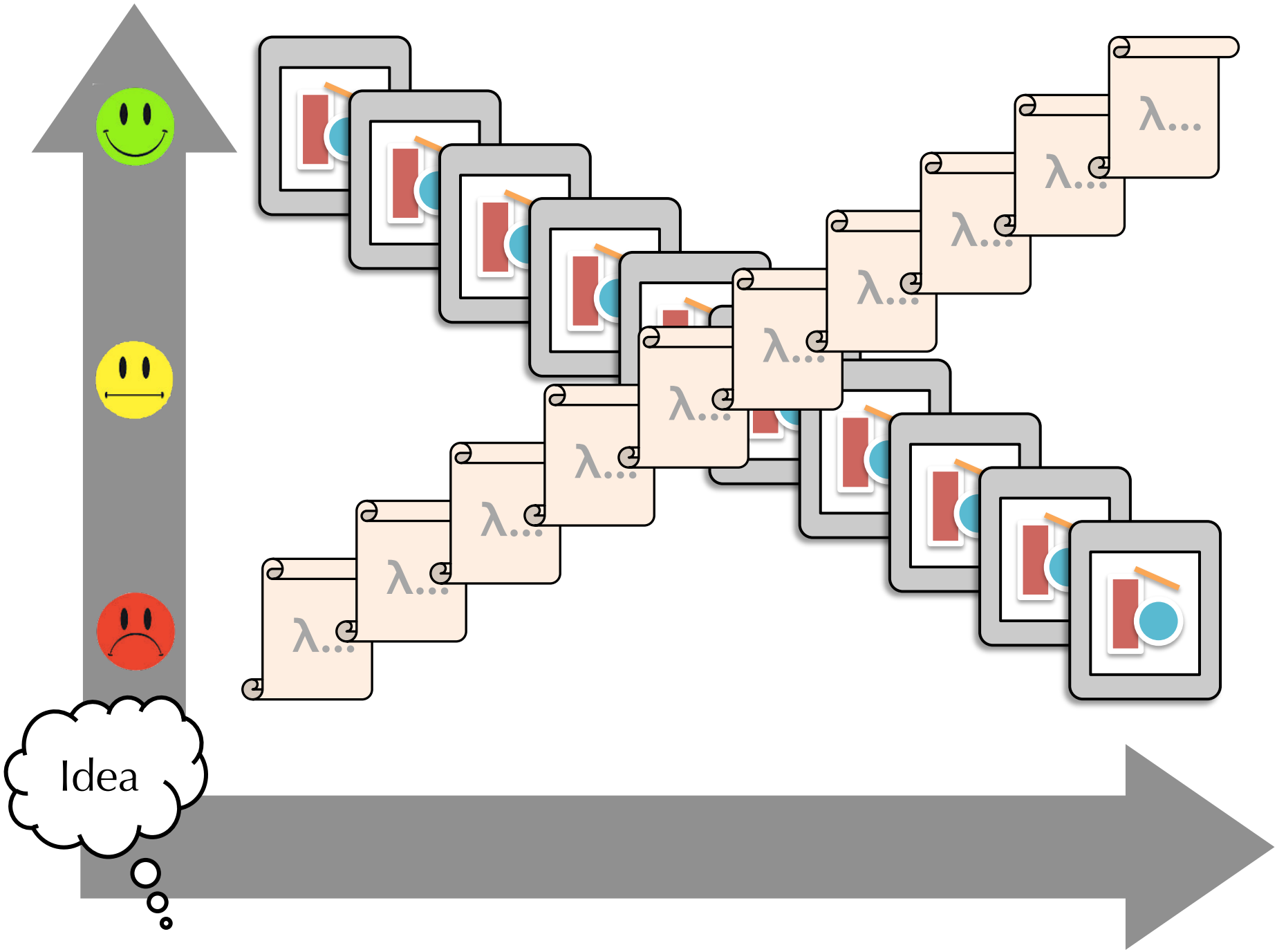
Topics in PL:
Direct Manipulation Programming

March 27, 2018


Idea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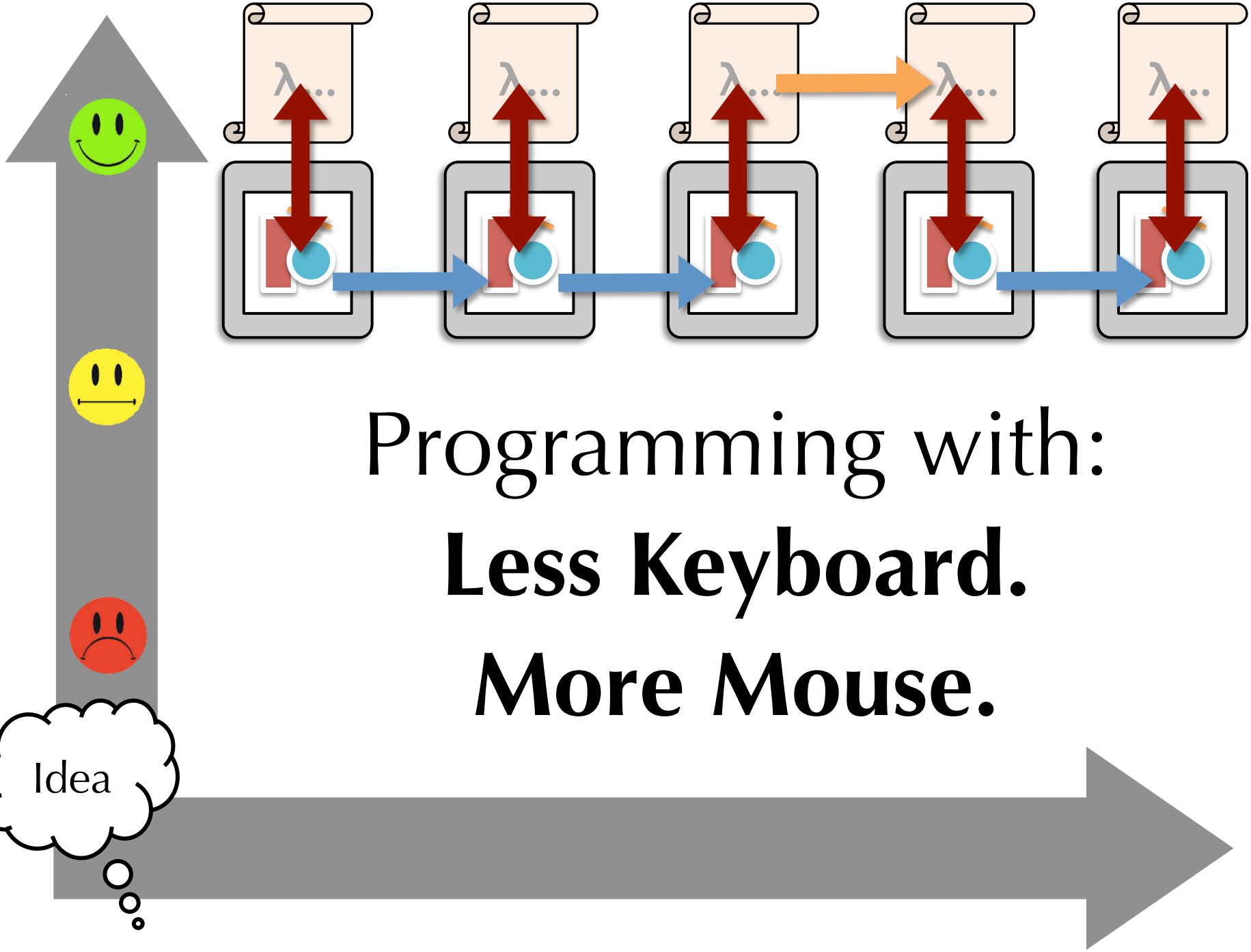
Idea



Programming with:

Less Keyboard.

More Mouse.

	Programming Language	Direct Manipulation
2D Graphics		 
Presentations		 
Documents		 
Spreadsheets		 
Web Apps		 

General-Purpose Languages

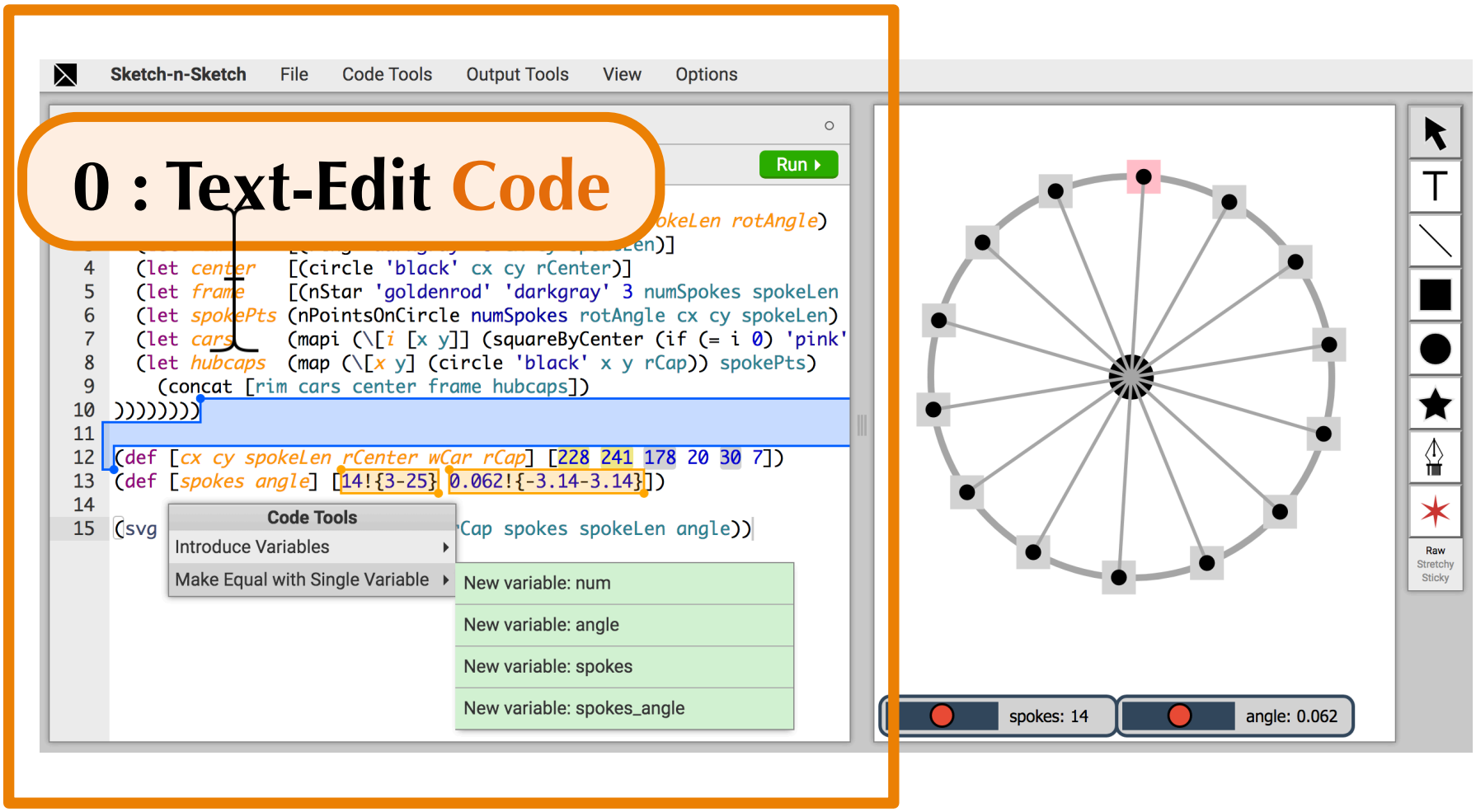
Domain-Specific Languages or Libraries

Domain-Specific GUI Tools

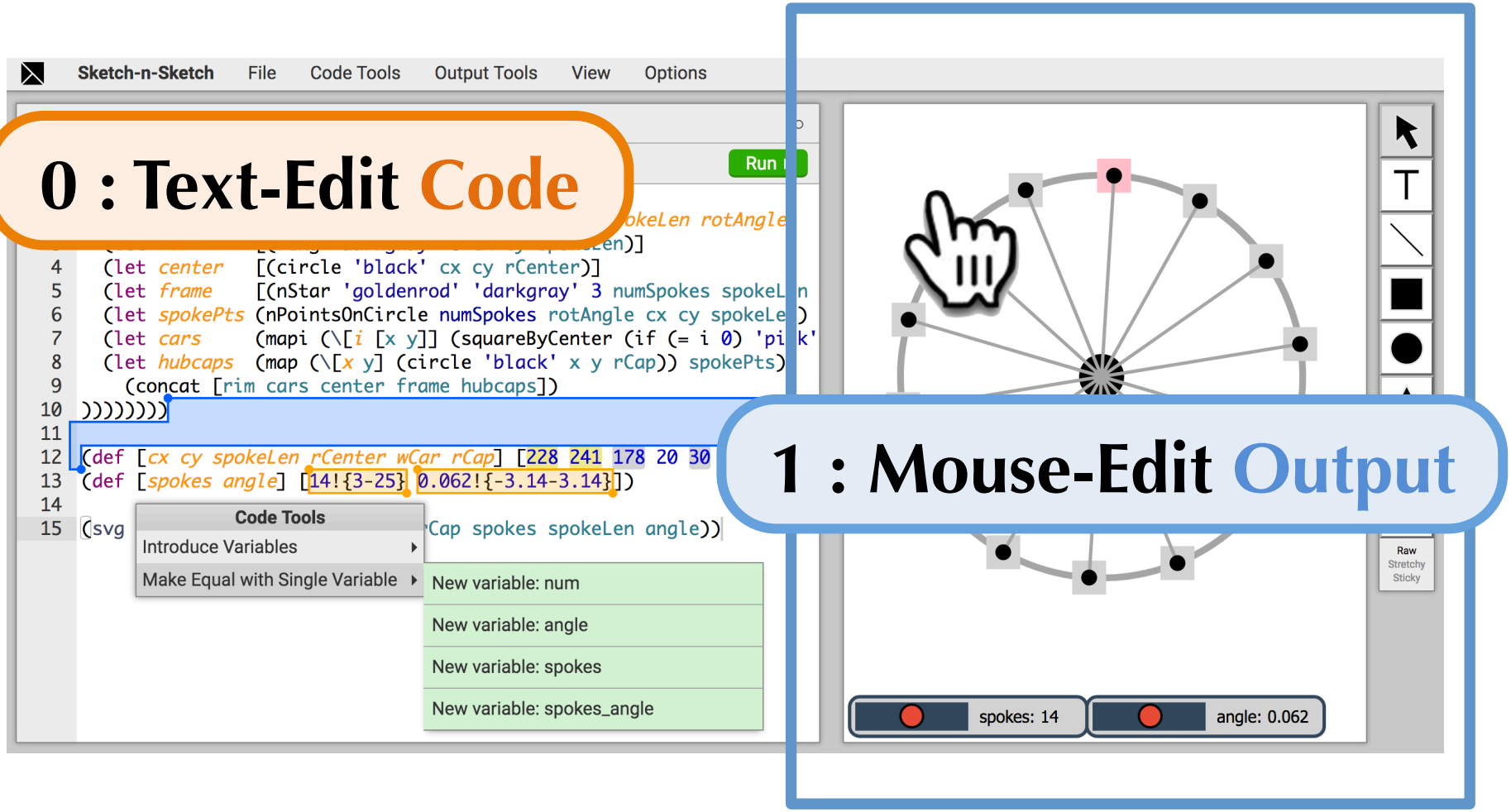
	Language	Manip
2D Graphics	JS	  
Presentations	JS	  
Documents	JS	  
Spreadsheets	JS	  
Web Apps	JS	  

	Programming Language	Direct Manipulation	**Direct Manipulation Programming**
2D Graphics	JS, Processing	Ai, GIMP	**Sketch -n- Sketch**
Presentations	JS, LaTeX Beamer	PowerPoint, Keynote	
Documents	JS, LaTeX, Scholarly Markdown	Word, Pages	
Spreadsheets	JS, SQL	Excel, Numbers	
Web Apps	JS, Markdown, Sass	Dreamweaver, Google Web Designer	

λ-Calculus + Direct Manipulation



λ-Calculus + Direct Manipulation of Output



Sketch-n-Sketch: Direct Manipulation Programming

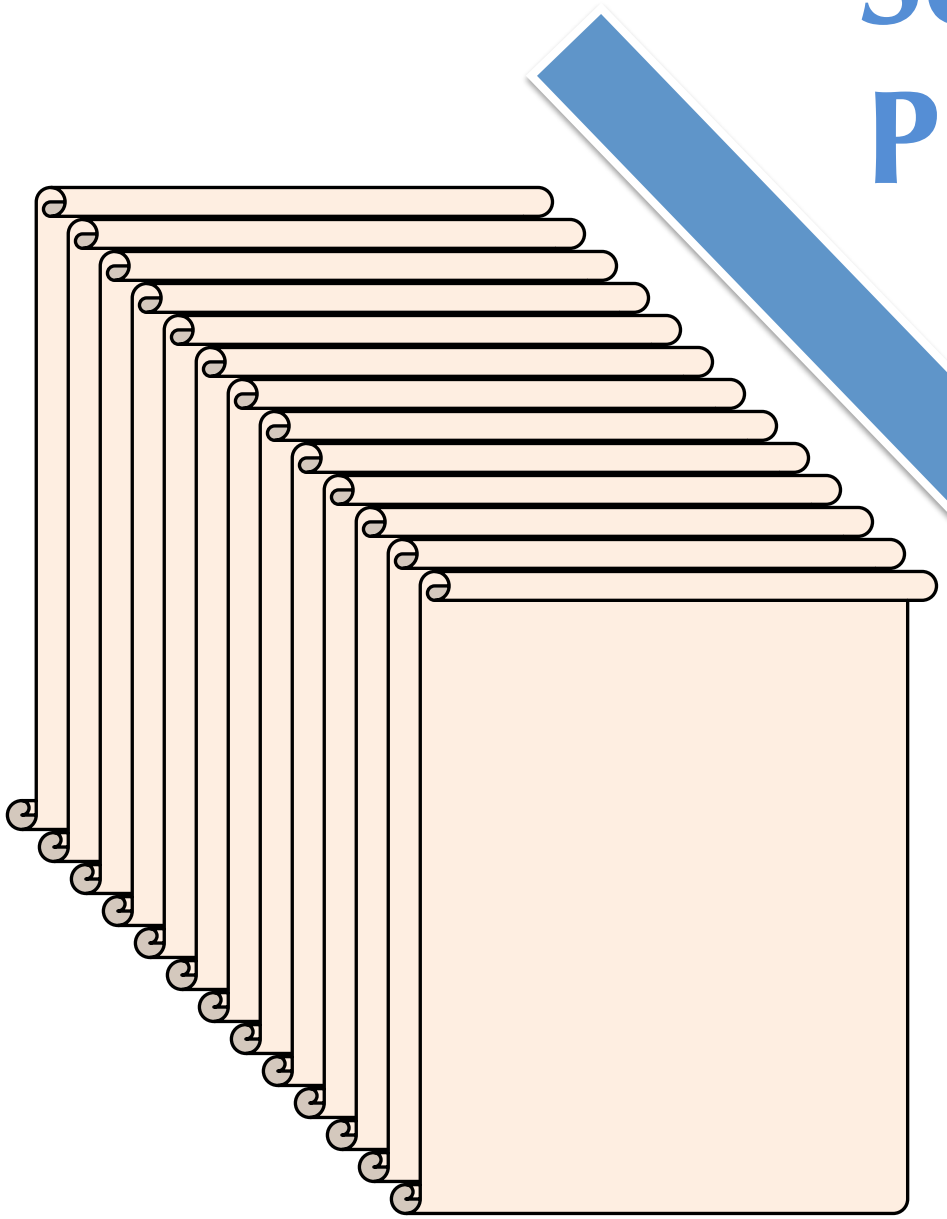
Ravi Chugh

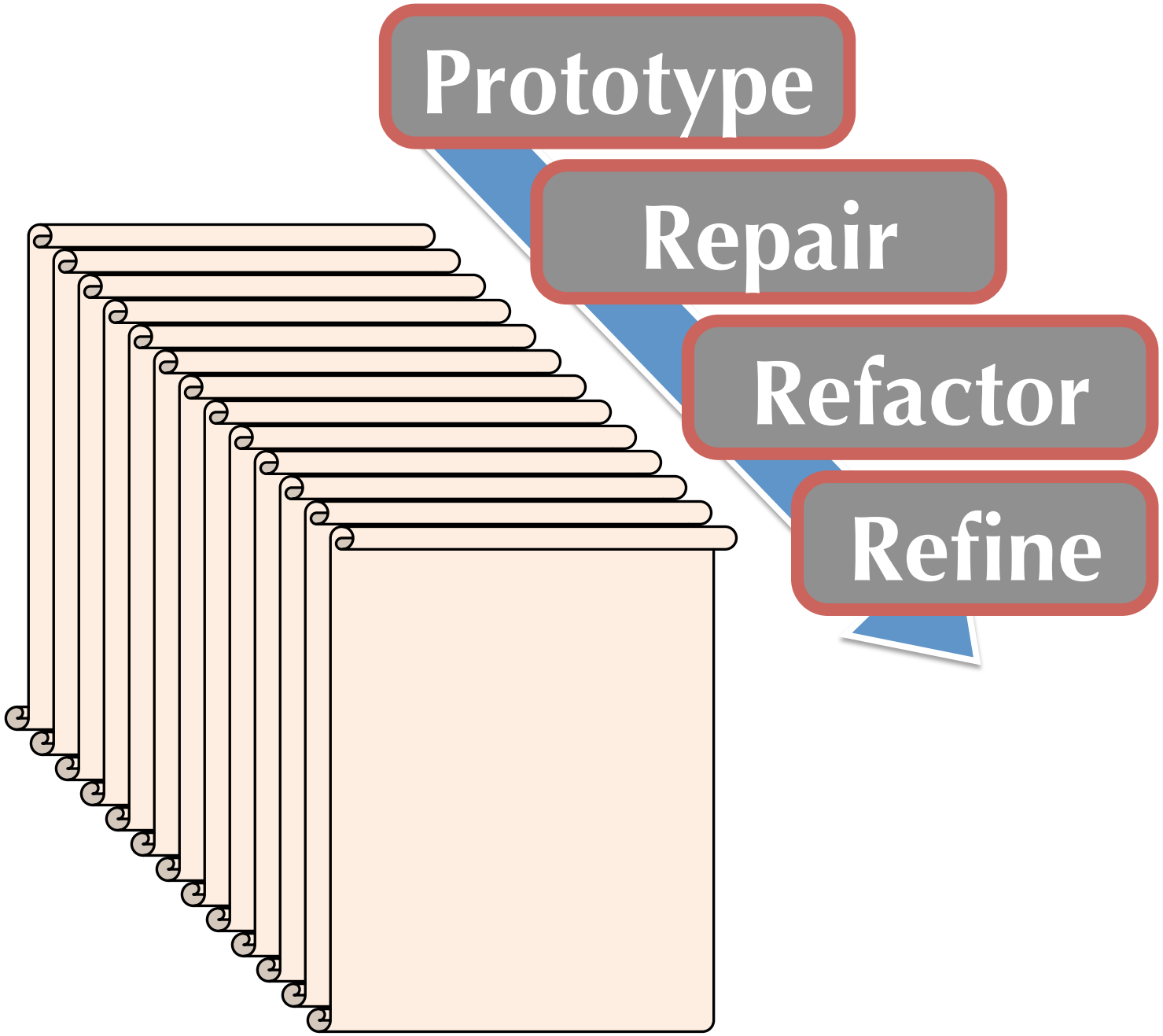
Brian Hempel

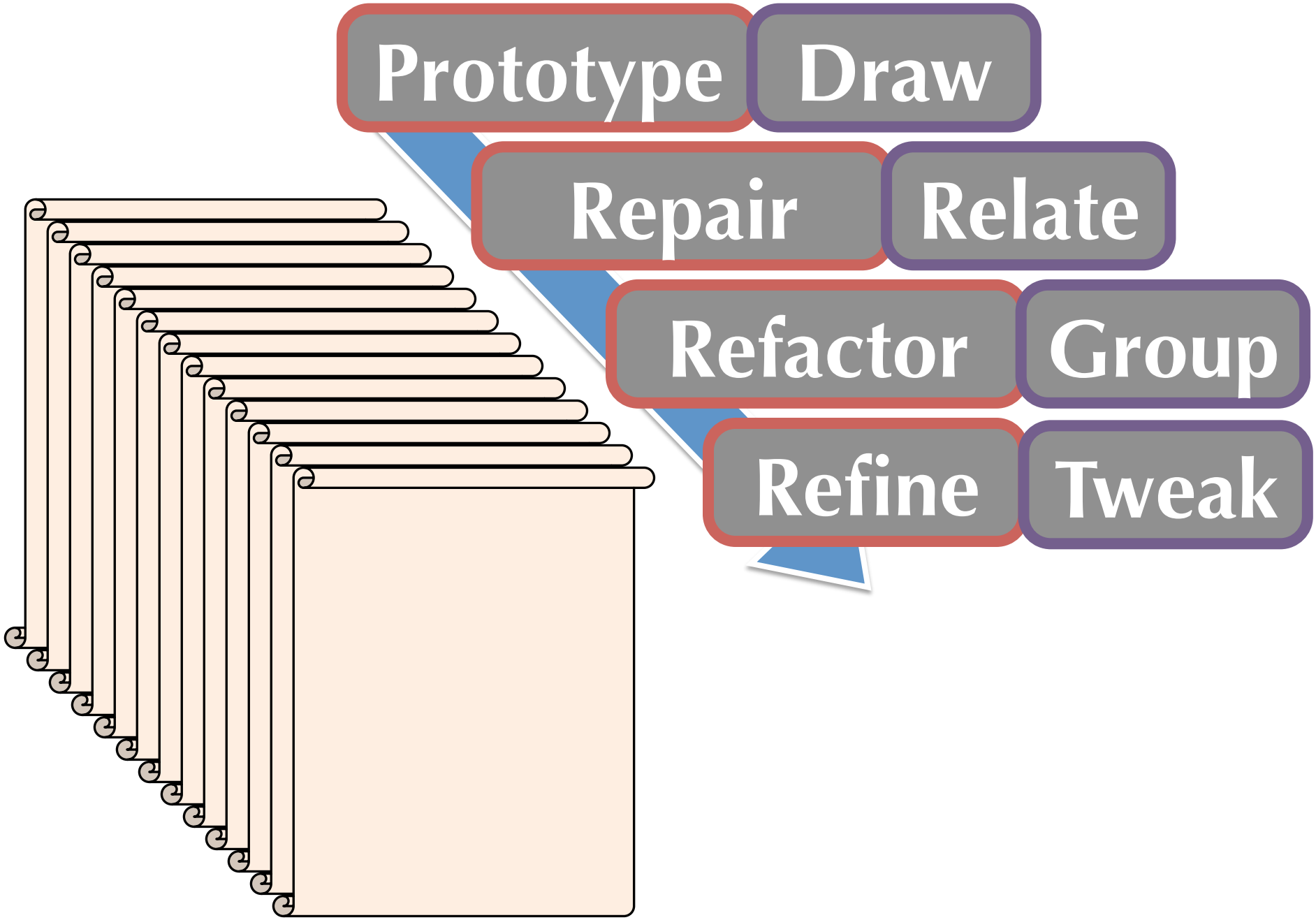
Justin Lubin

Mikaël Mayer

Semi-Automated Programming by Manipulating Output




Prototype
Repair
Refactor
Refine


Prototype
Draw
Repair
Relate
Refactor
Group
Refine
Tweak

This Seminar:

Brainstorming for Direct Manipulation Programming

MAKE

things with
Programming Languages
and/or
Direct Manipulation Editors

General-Purpose Languages

Domain-Specific Languages or Libraries

Domain-Specific GUI Tools

This Seminar:

Brainstorming for Direct Manipulation Programming

MAKE

things with
Programming Languages
and/or
Direct Manipulation Editors

READ

papers about
Programming Languages
and/or
Direct Manipulation Editor


Idea
Prototype; Repair; Refactor; Repeat