

CS-477

Reinventing Interactive Systems

Instrumental Interaction and Co-Adaptive Systems

Course 5: Collaborative Interaction

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Course Outline		
	Topic	Exercises
1 April	Instrumental interaction and co-adaptive systems	Deconstructing interaction
8 April	Designing instruments	Idea generation
15 April	Learning	Design ideas & scenarios
22 April	User innovation	Design scenarios
29 April	Collaborative interaction	Video prototypes
6 May	Instrument architectures	Generative walkthroughs
13 May	Ubiquitous computing	Function-interaction tables
20 May	Tangible interaction	Alternative video prototypes
27 May	Shifting the design paradigm	Final video prototypes
3 June	Final presentations	

For today

Readings:

Tsandilas, T., Letondal, C. and Mackay, W. (2009)

MusInk: Composing Music Through Augmented Drawing.

In *CHI'09, Proc. ACM Human Factors in Computing Systems*, pp. 819-828.

Nardi, B. and Miller, J. (1991)

Twinkling lights and nested loops: Distributed problem solving and spreadsheet development

*International Journal of Man-Machine Studies* 34: 161–184.

Activity:

Develop a *branching* storyboard and begin *video prototyping*

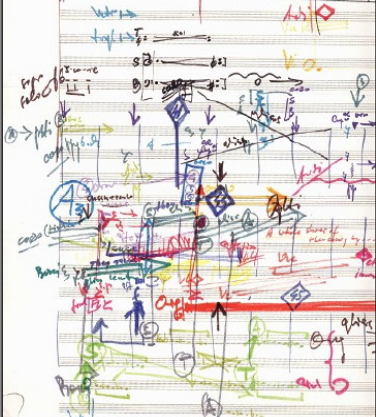
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10 min	Co-Adaptation
10 min	User innovation (Musink)
10 min	Collaborative appropriation (Twinkling Lights)
20 min	Creating a co-adaptive color picker
30 min	Create a branching design scenario
	Identify 'interaction points'
	Choose three design alternatives at each point
25 min	Begin shooting the video prototype
5 min	Conclusion and homework for next week

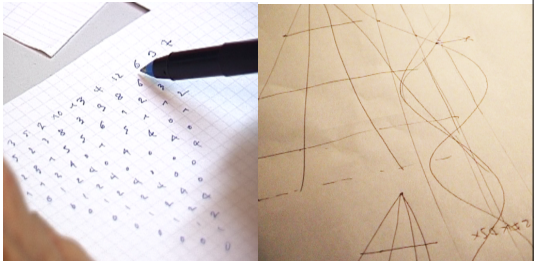
	Co-adaptive systems
	<p>Users <i>adapt</i> to a new system they <b>learn</b> to use it</p> <p>Users <i>adapt</i> the new system to their own needs they <b>appropriate</b> it and change it</p>

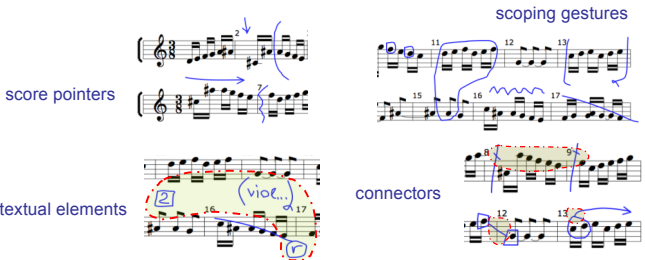
	Co-adaptive phenomenon
	<p>Similar to the concept of biological <b>co-evolution</b> ... but without the DNA</p> <p>Anaerobic bacteria change the atmosphere making it possible for aerobic bacteria to emerge</p> <p>Users change spreadsheets from an addition tool to a tool for exploring 'what if' scenarios</p>

	We can <b>design</b> co-adaptive systems
	<p>That help users to <b>learn</b> new technology ... by adding dynamic feedback ... by adding in-context feedforward</p> <p>That help users to <b>appropriate</b> new technology ... by providing hooks for customization ... by providing flexibility in the face of change</p>

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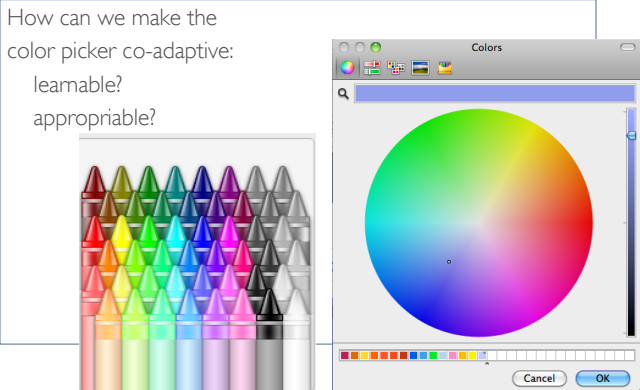
Musink	
<p>Musicians create their own musical languages on paper ... and go back and forth between paper and computer</p> 	

Musink: Delayed interpretation	
<p>Let users create their own musical symbols and decide when and how the computer should interpret them</p> <p>Recognition over time:</p> <p>Semi-structured delayed interpretation</p> 	

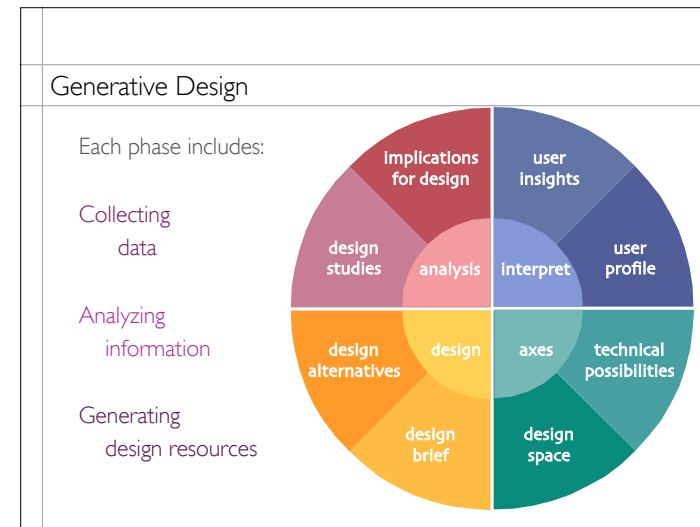
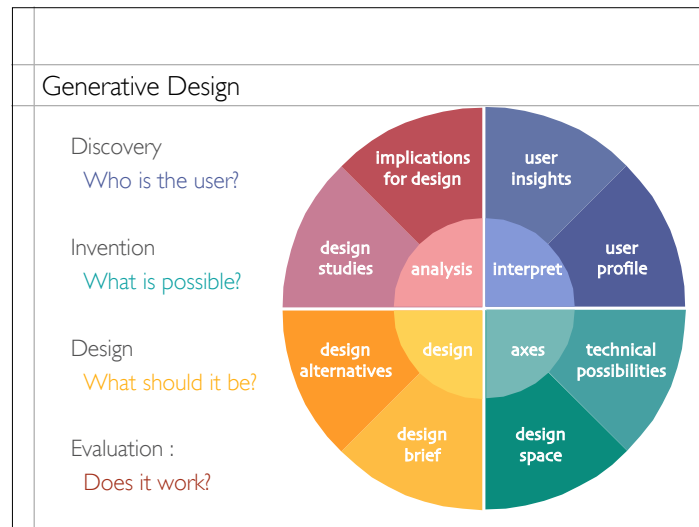
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	Twinkling Lights
	<p>Study of spreadsheet users</p> <ul style="list-style-type: none"> <li>What is unusual about spreadsheets?</li> <li>How do users appropriate them?</li> <li>How do users collaborate?</li> </ul> <p>Nardi, B. and Miller, J. (1991)  Twinkling lights and nested loops:  Distributed problem solving and spreadsheet development  <i>International Journal of Man-Machine Studies</i> 34: 161–184.</p>

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	Co-adaptive systems: appropriation
	<p>How can we make the color picker co-adaptive:  learnable?  appropriable?</p> 

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Video Prototype 3 co-adaptive instruments	
Sample instruments to explore:	
1. Creativity:	Help designers generate alternative designs
2. Procedures:	Help emergency staff follow checklists
3. Decision making:	Help people negotiate a choice

Creating scenarios	
<p>Create a realistic account, ideally grounded in real-world observation of users, of a series of activities that illustrate and challenge the use of a new tool</p> <p><b>Goal:</b> to help you think through interaction issues NOT to 'sell' the prototype</p> <p><b>Techniques:</b> Extreme users Theme and variations Breakdowns</p>	



