



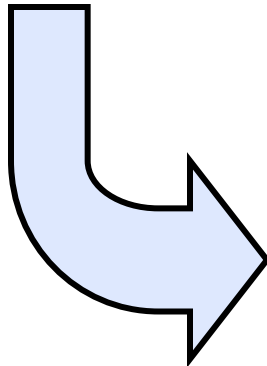
Requirements Engineering (Summer 2019)

Prof. Nan Niu (nan.niu@uc.edu)

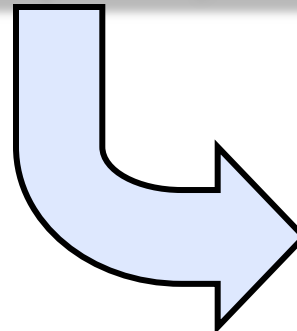
<http://homepages.uc.edu/~niunn/courses>

Today's Menu

Last Seminar:
Goal Modeling
Assignment 1

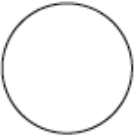
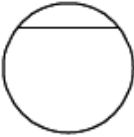









This Seminar:
Visual Modeling
Notations (class
participation)



Next Seminar:
NFRs
Release Assignment 2

The i^* Notations [Yu-RE'97]

								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task

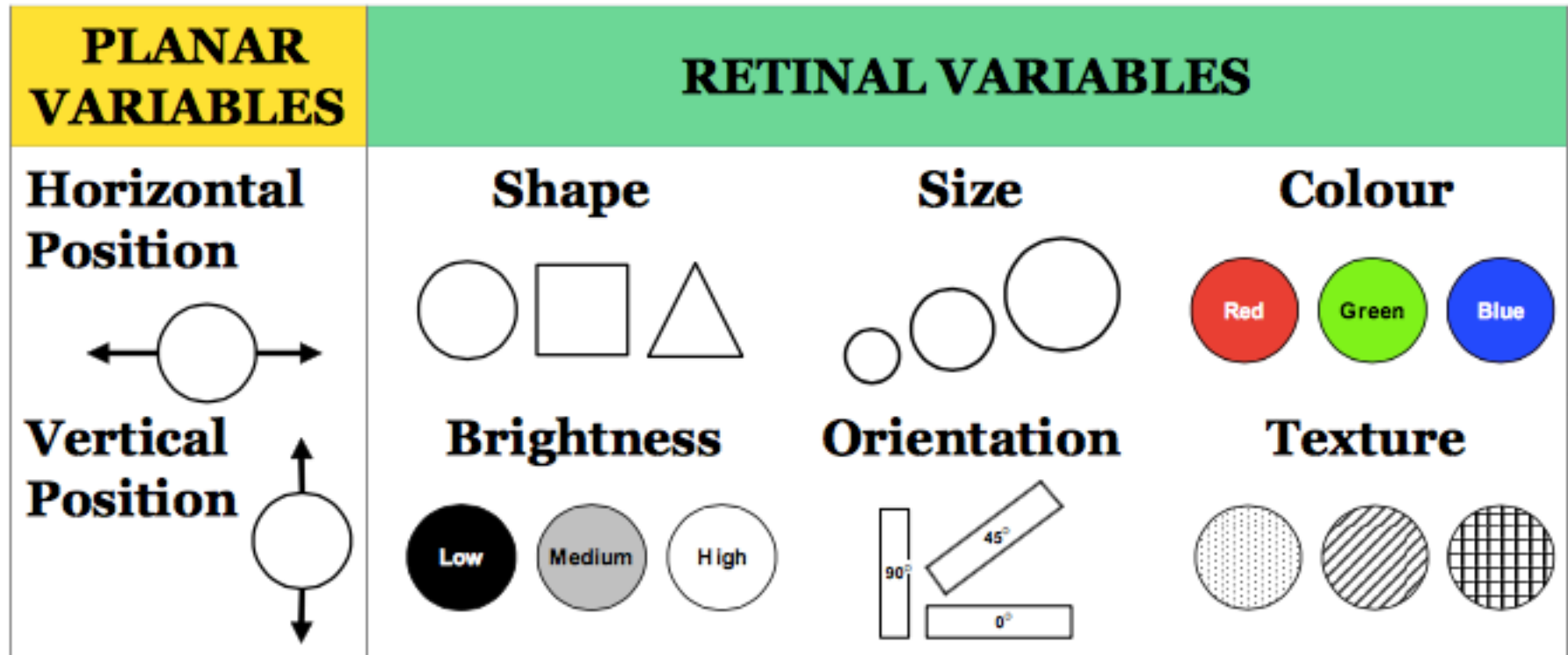
→ What do you think about these visual notations?

→ Would you use the same/similar/different ones?

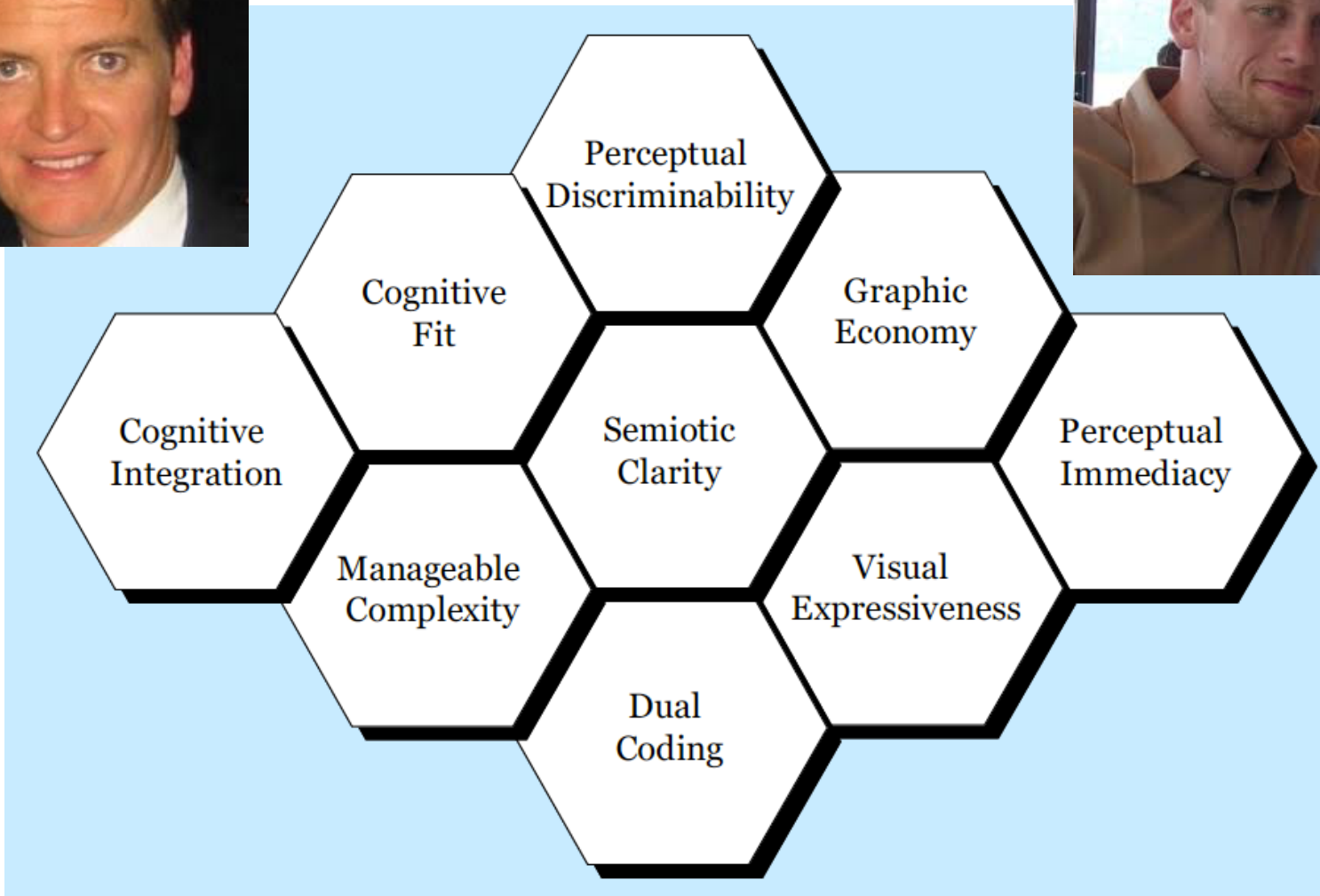
→ How would you choose them in the first place?



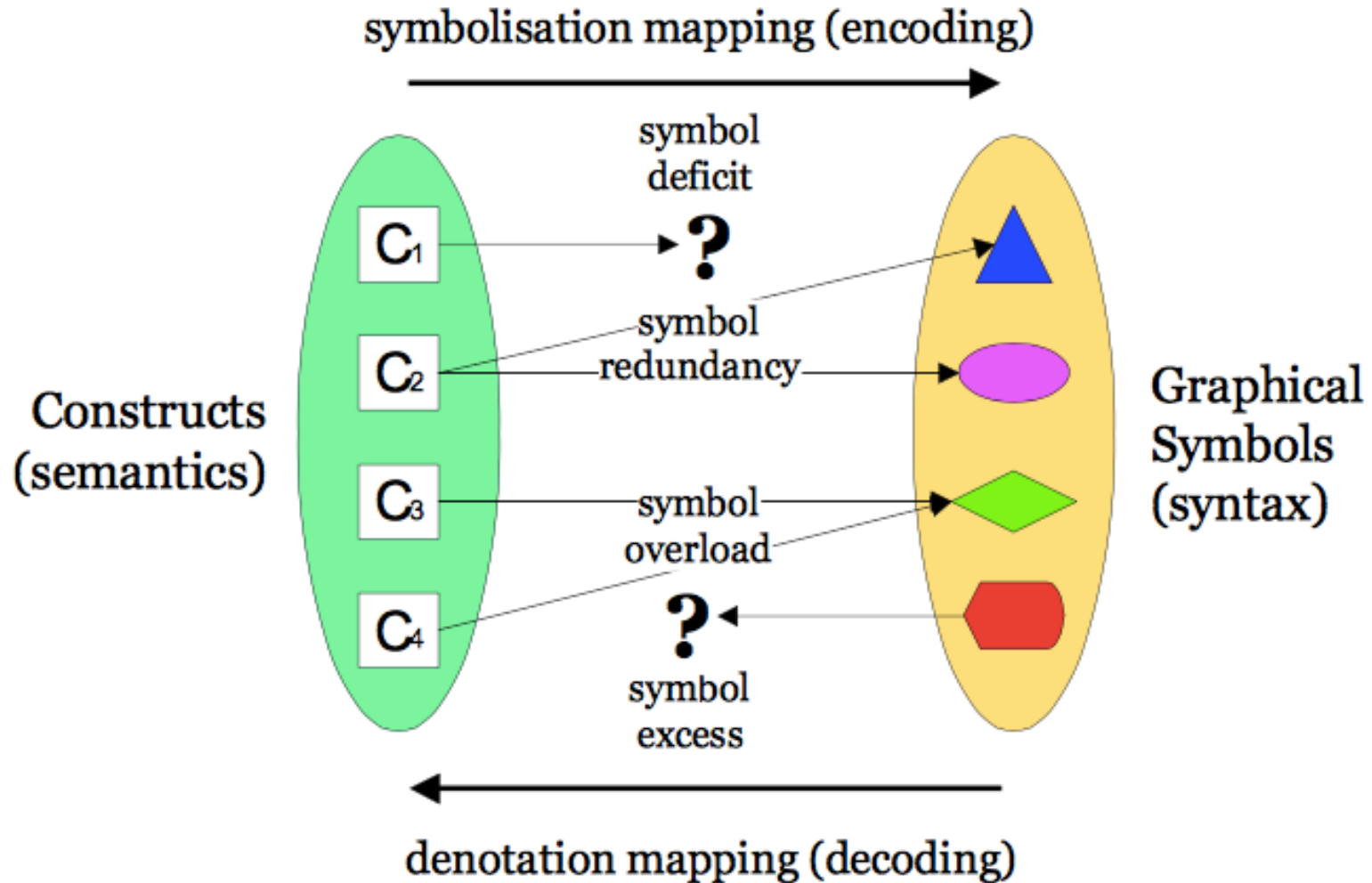
The Visual Alphabet



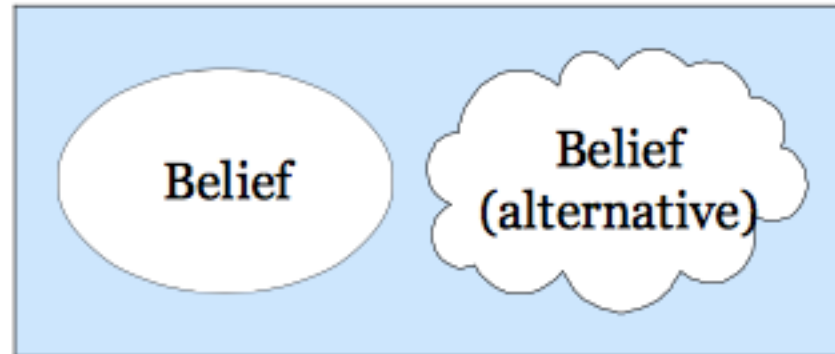
Physics of Notations



Semiotic Clarity



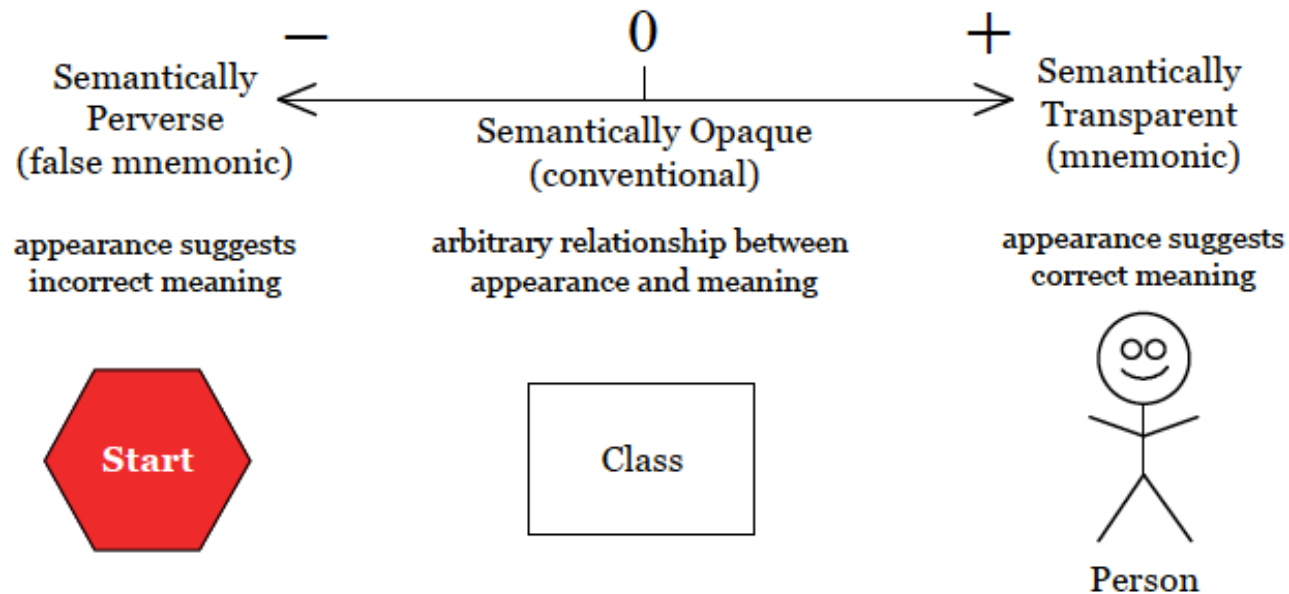
Symbol Redundancy



Symbol Overload

Graphic link	Semantic relationship	Overload
	Actor association (6 types) Contribution (9 types)	14
	Correlation (9 types)	8

Let's design "semantically transparent" visual notations





Let's design "semantically transparent" visual notations





Select the roles

Thanks to *Taiming & Shuke*
for being our judges!

Thanks to *Xin & Shuxin*
for helping out tallying!

Thanks to *Yujie & Shaojun* for
contributing to our discussions!



The *rest* of us will do "Prototype"

- For each of the five i^* constructs (actor, resource, goal, softgoal, task), I'll show you 5 candidate visual notations, please circle one and only one that you think is the most semantically transparent
- Make sure to write down your name & make 5 and only 5 selections
- Submit for tallying

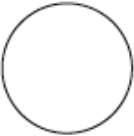
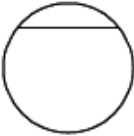









Invite the judges back to do "Stereotype"




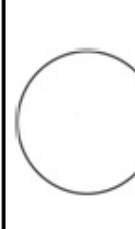





→ For each of the five i^* constructs (actor, resource, goal, softgoal, task), I'll show you 5 candidate visual notations, please decide between yourselves (that is, between the judges) reach the consensus of a "semantically transparent" notation

Test 4 sets of i^* Notations

→ Standard i^* [Yu-RE'97]

								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task

→ PoN (Physics of Notation) i^* [Moody-REJ'10]

								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task

Both are designed by expert researcher(s) in RE, though the latter has embodied a set of principles (design rationales).

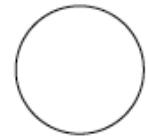
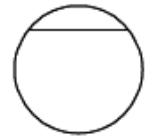

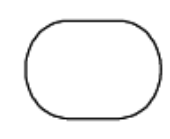

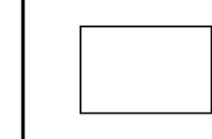
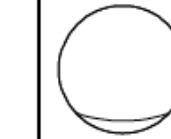

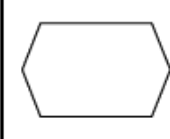



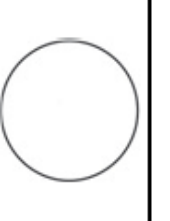
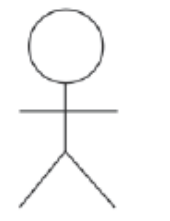

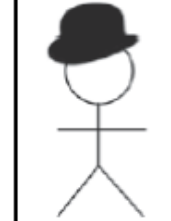






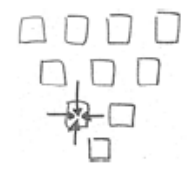

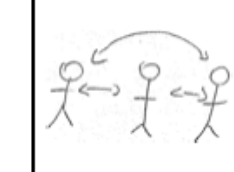






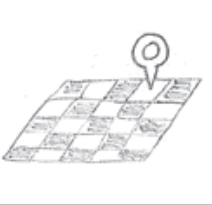
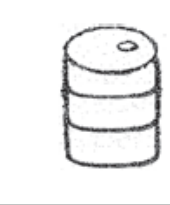





Test 4 sets of i^* Notations (Cont'd)




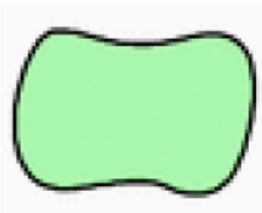




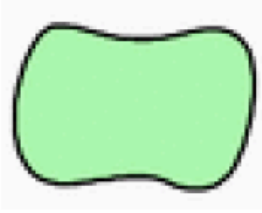

- Prototype i^*
- Stereotype i^*
- PoN (physics of notation) i^*
- Standard i^*

- What's your hypothesis?

- What do you think the actual results are?

								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task
								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task
								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task
								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task

Our Results

Actor	Resource	Goal	Softgoal	Task
Prototype (tallying the votes)				
				
				
Stereotype (agreed by experts)				



Results of the RE'13 study

→ 83 participants to experiment "recognition"

↳ Measure hit ratio & semantic transparency coefficient

→ How effective these are?

↳ Standard i^*

↳ PoN i^*

↳ Stereotype i^*

↳ Prototype i^*

→ Hypothesis

Prototype > Stereotype > PoN > Standard

→ Result

Stereotype > Prototype = PoN > Standard



Modeling in RE

→ Modeling with a purpose

- ↪ Facilitate communication
- ↪ Organize information
- ↪ Uncover missing information
- ↪ Uncover inconsistencies

→ Yu's paper - not purely on i^* per se, but more on "Early RE"

- ↪ Uncover hidden assumptions ("who" & "why")
- ↪ Explore alternatives
- ↪ Relate to business and organizational objectives

"People can use pencil to draw on the back of an envelope." (E. Yu)



Summary

→ Visual notation design

↳ Principles

- "Community Acceptance" must also be one of them

↳ Ways

- Expert-based vs. end-user-based (stereotype & prototype)

↳ Modeling with a purpose

- Oftentimes, the purpose is NOT "appearance suggests correct meaning", just like lots of words are NOT "onomatopoeia"
- Commenting "//increment i" for i++; is useless

→ Next

↳ NFRs

↳ Release ASN2