

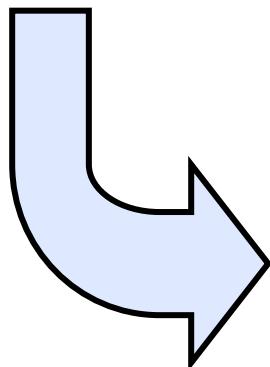
CS5127/6027: Requirements Engineering (Fall 2024)

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

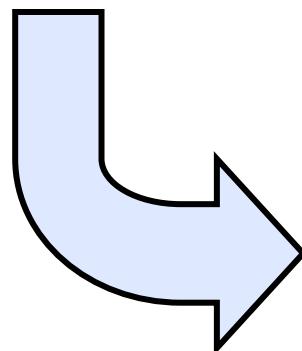
Office Hours: 10am-11am, Mondays, Rhodes 832

Today's Menu

Last Lecture (Monday 9/30):
NFRs [cont'd]

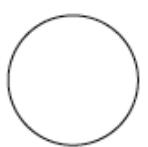
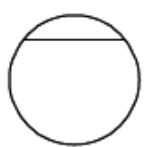
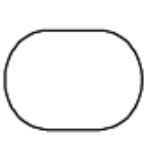
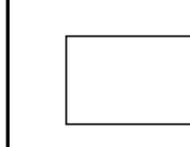
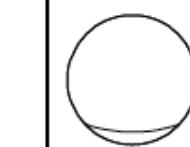
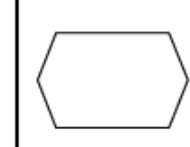


This Lecture (Friday 10/4):
Visual Modeling Notations



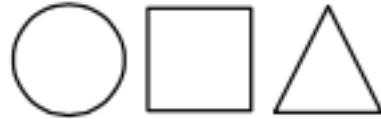
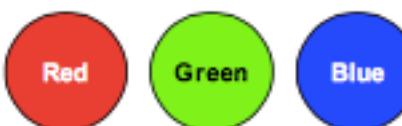
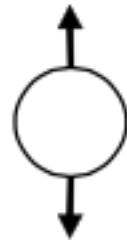
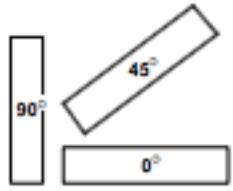
Next Lecture (Monday 10/7):
Forms of Req.s

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

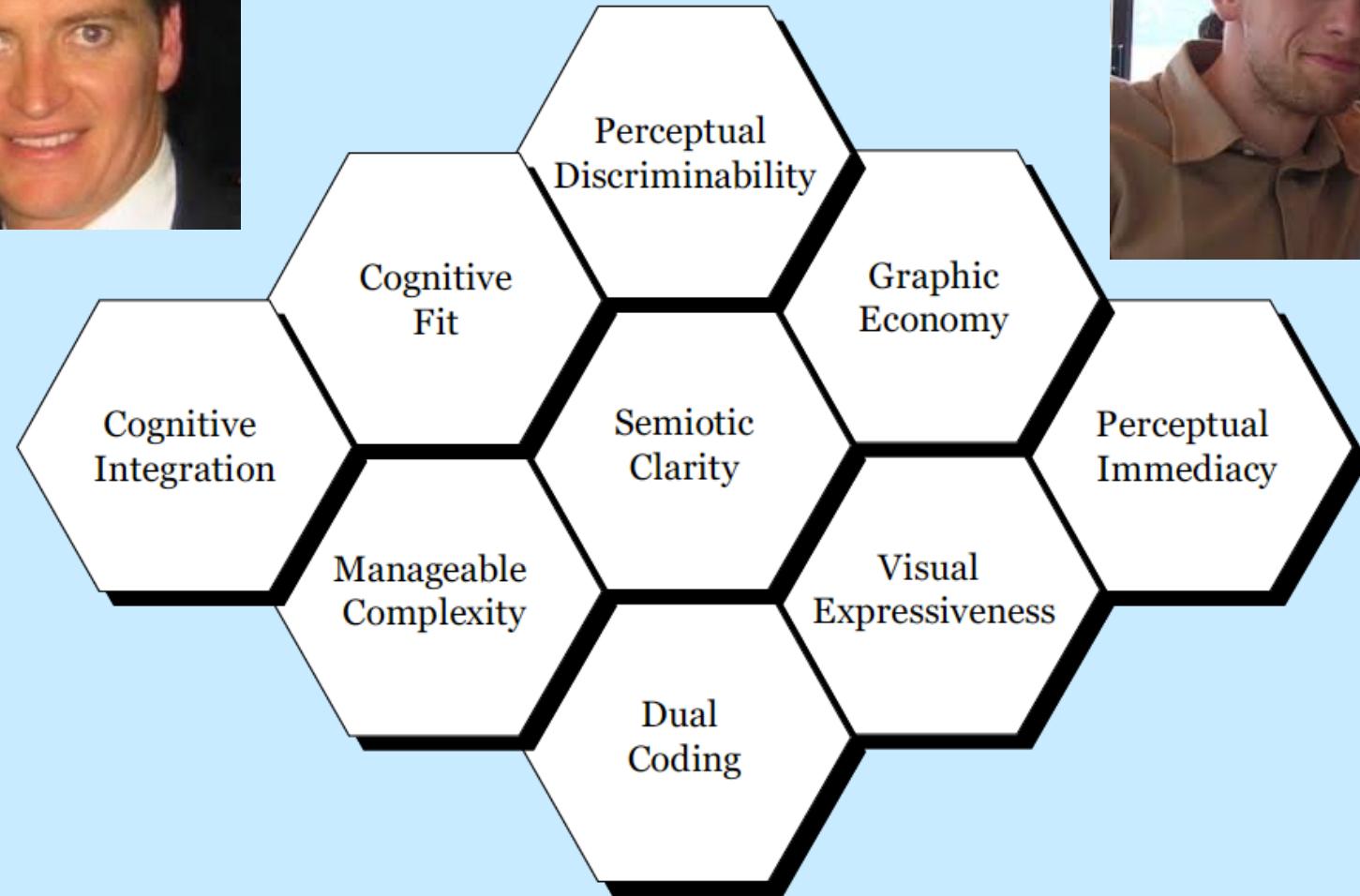
								
Actor	Agent	Belief	Goal	Position	Resource	Role	Softgoal	Task

- 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?

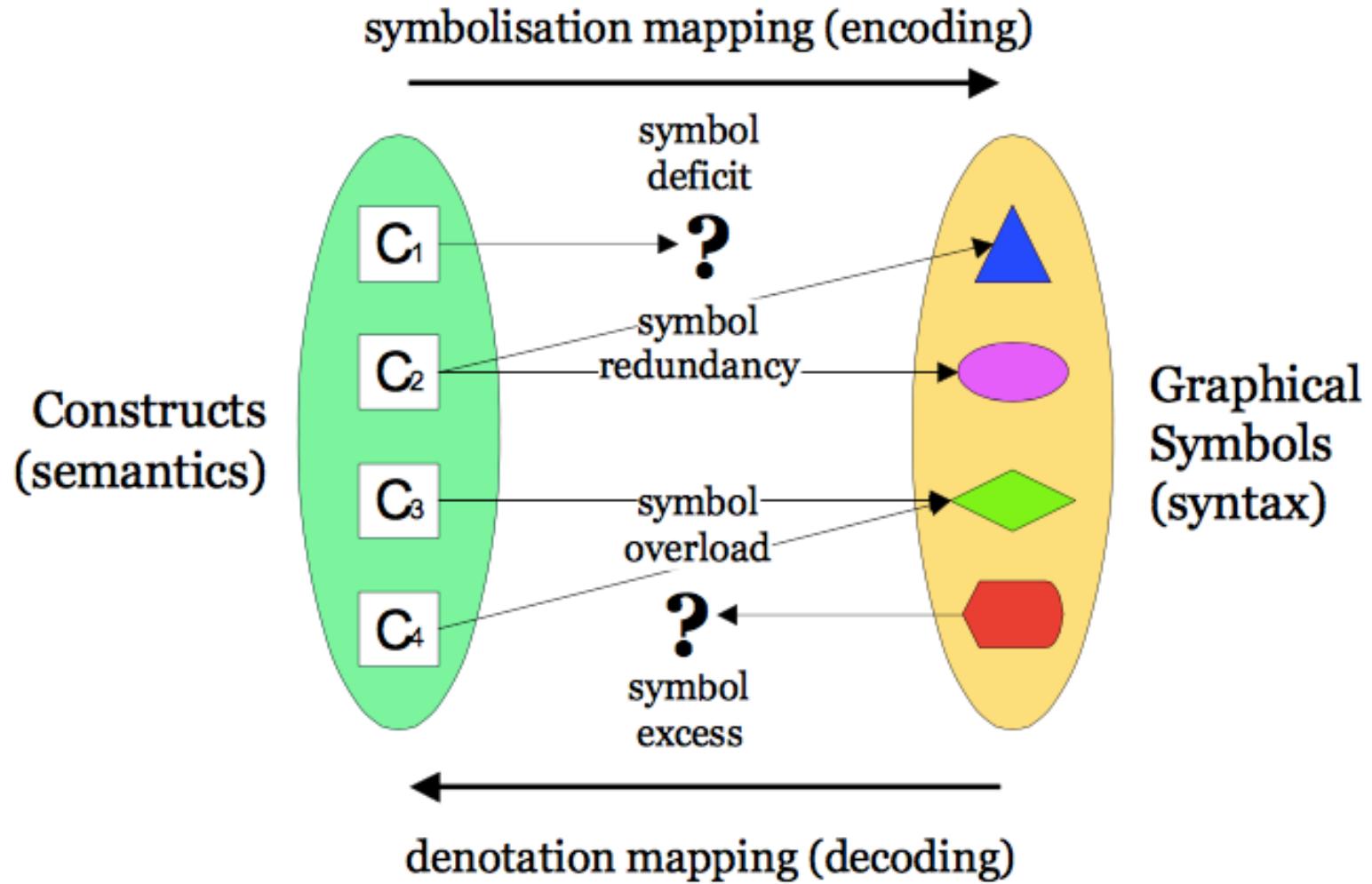
The Visual Alphabet

PLANAR VARIABLES	RETINAL VARIABLES		
Horizontal Position 	Shape 	Size 	Colour 
Vertical Position 	Brightness 	Orientation 	Texture 

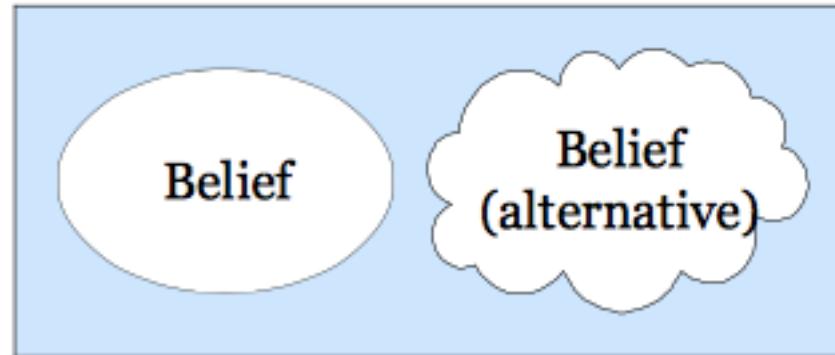
Physics of Notations



Semiotic Clarity



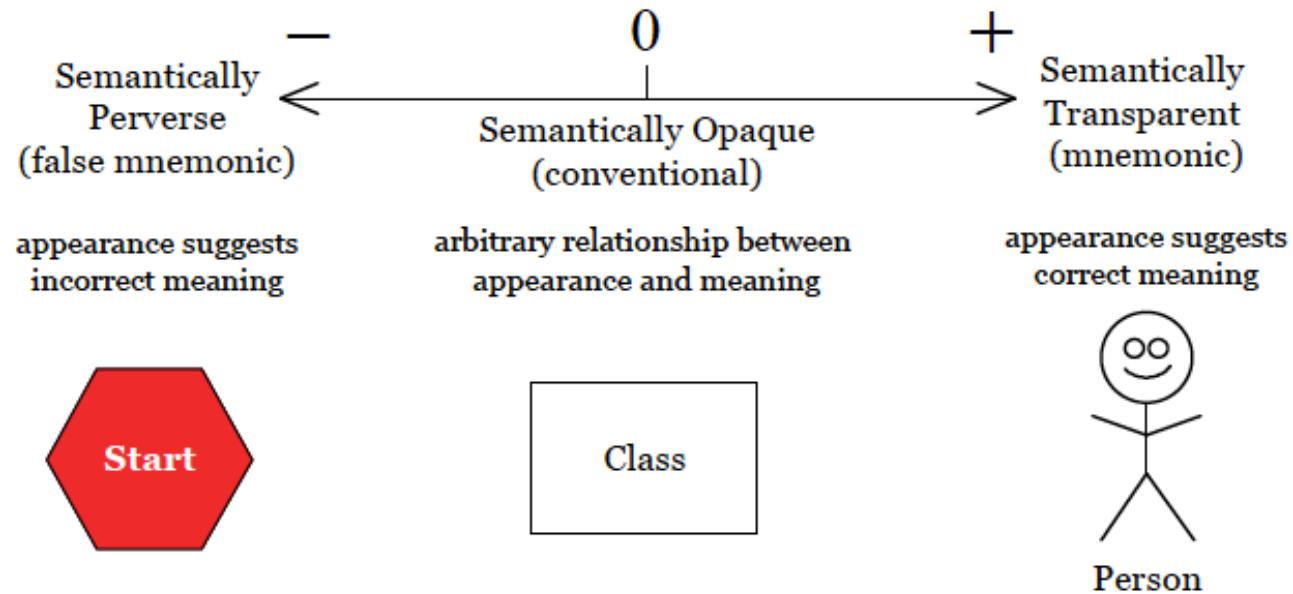
Symbol Redundancy



Symbol Overload

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

semantically transparent visual notations



semantically transparent visual notations



Special thanks to
OUR judges:

*Sravanthi Kolli,
Varshith Puligadda,
Shiva Reddy
Rajamuri, and
Jyothirmayee
Tanubuddi*



The *rest* of us did “Prototype”

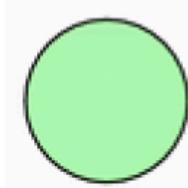
→ For each of the five i^* constructs (actor, resource, goal, softgoal, task), Quiz 6 asked you to select which visual notation that you thought was the most semantically transparent

Thanks go to our TA: Anjali Golla!

“Prototype” results: Actor & Resource



A



B



C



D



E

A	14.6%
B	48.5%
C	8.5%
D	8.5%
E	20.0%

A	27.2%
B	12.0%
C	3.2%
D	10.4%
E	47.2%



A



B



C



D



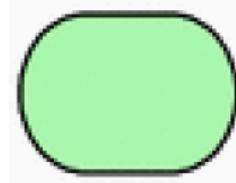
E



A



B



C



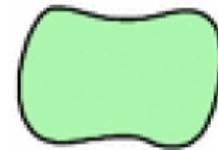
D



E

A	15.2%
B	12.0%
C	48.8%
D	0.8%
E	23.2%

A	51.2%
B	20.0%
C	11.2%
D	3.2%
E	14.4%



A



B



C



D



E

A	<0.01%
B	5.6%
C	0%
D	41.6%
E	52.0%



A



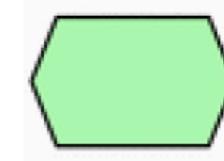
B



C



D



E

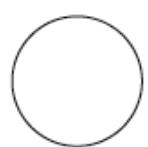
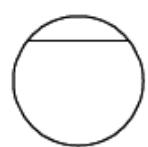
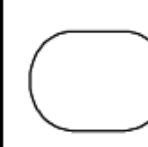
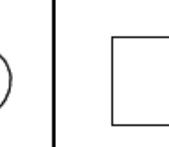
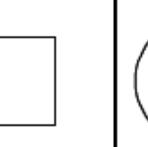
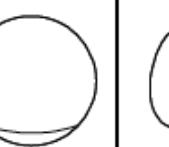
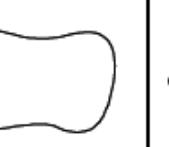
Meanwhile, the judges did “Stereotype”

→ For each of the five i^* constructs (actor, resource, goal, softgoal, task), I showed them 5 candidate visual notations, and then the judges reached the consensus of a “semantically transparent” notation

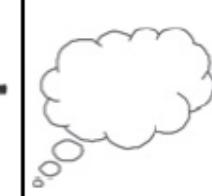
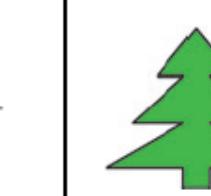
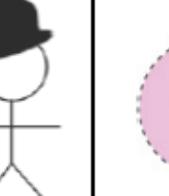
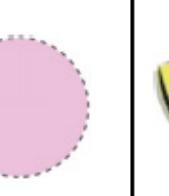
Actor	A	voice out together & then resolve disagreement
Resource	D	take turns & reach consensus (database / repo)
Goal	A	facilitator involvement (hard / binary goal)
Softgoal	C	arbitration (spinning a pen)
Task	D	voice out & unanimous

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

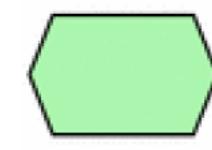
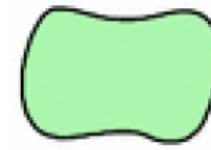
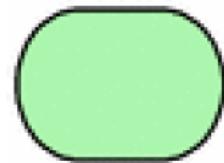
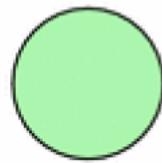
Both are designed by expert researcher(s) in RE, though the latter has embodied a set of principles (design rationales).

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?



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 (we've read it)

- ↳ 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)

Today's Take-Aways

→ 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

→ To-do

- ↳ Review today's slides
- ↳ Continue doing ASN2 (due: 10/16)
- ↳ Attend Monday's lecture on “forms of req.s” (10/7)