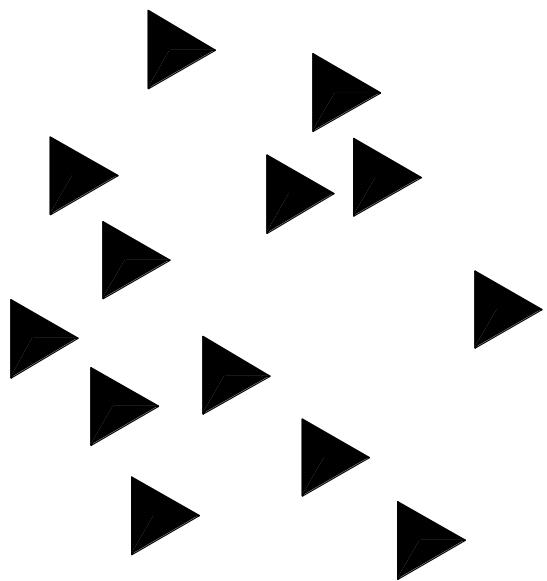


# **SITUATED CREATIVITY**

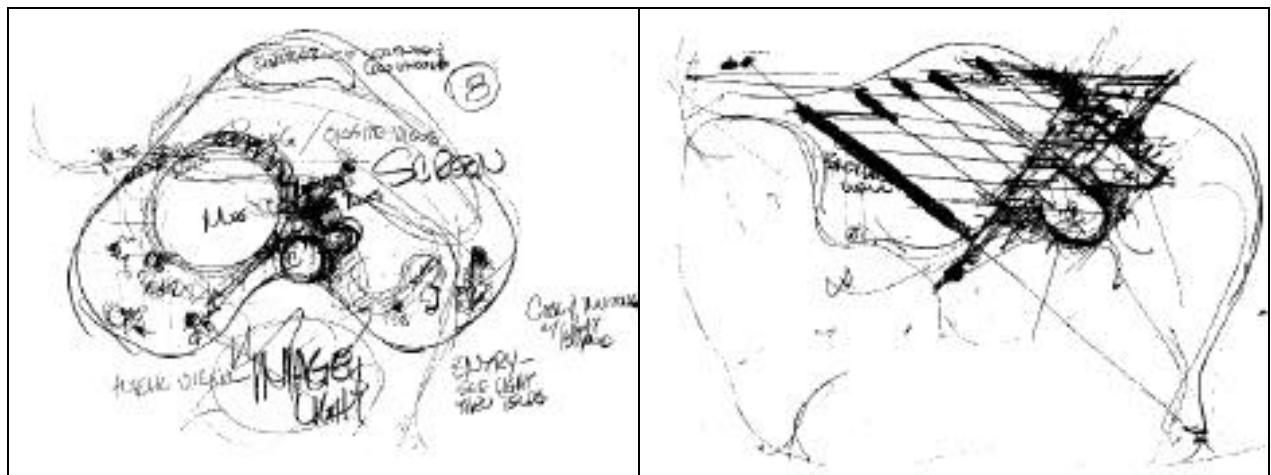
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A A  
THE CAT

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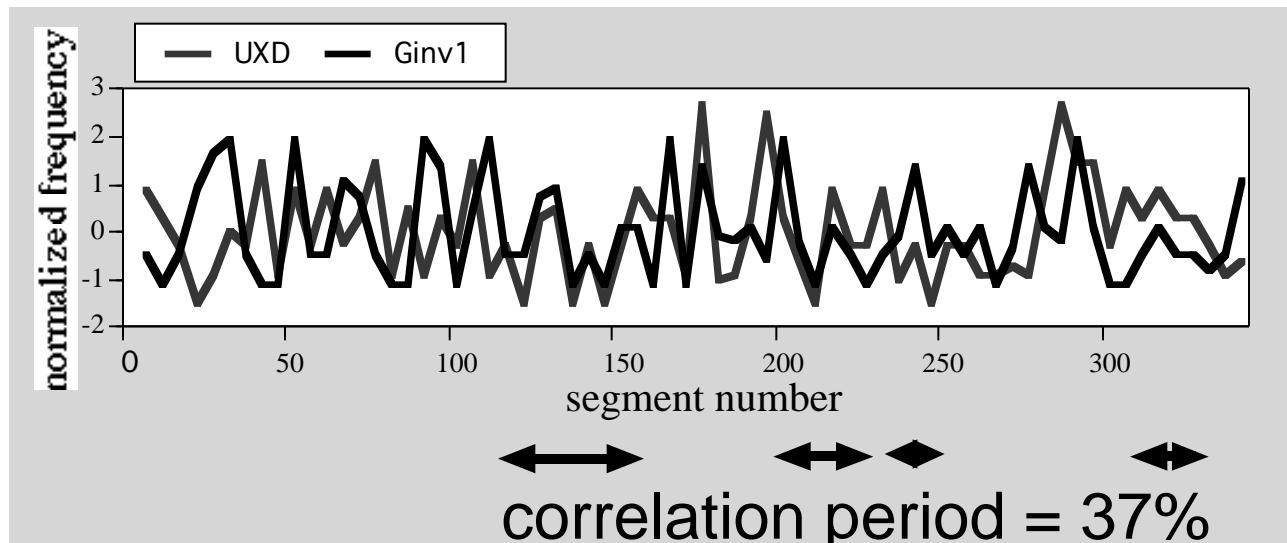


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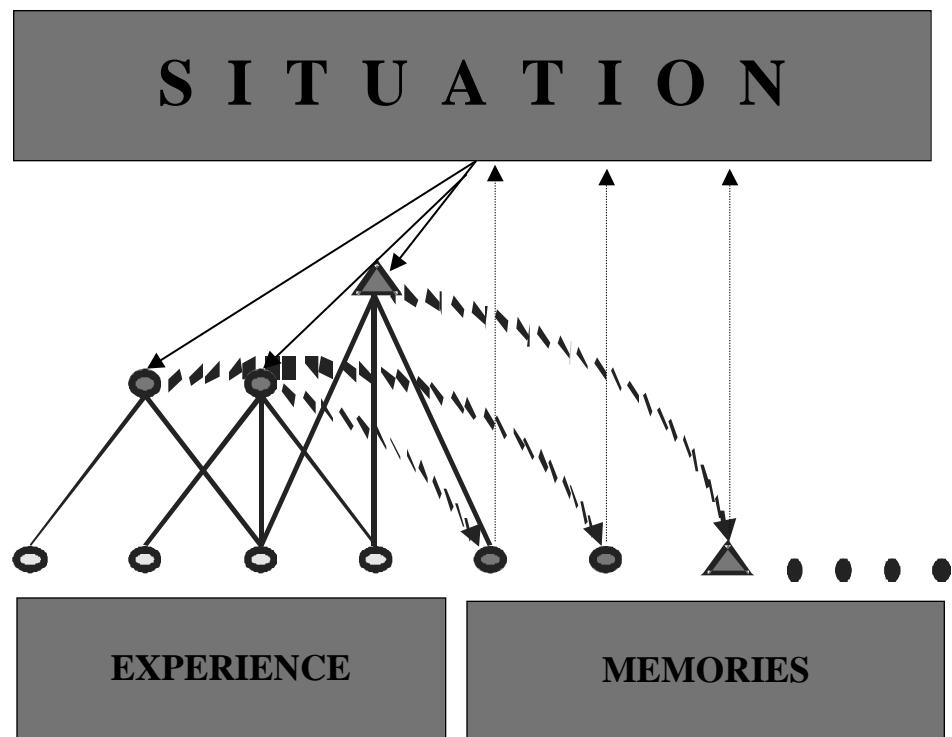
## Unexpected discoveries-UXD (emergence) and new functions as goals-Ginv1 – Empirical results



from Suwa, Gero and Purcell 1998

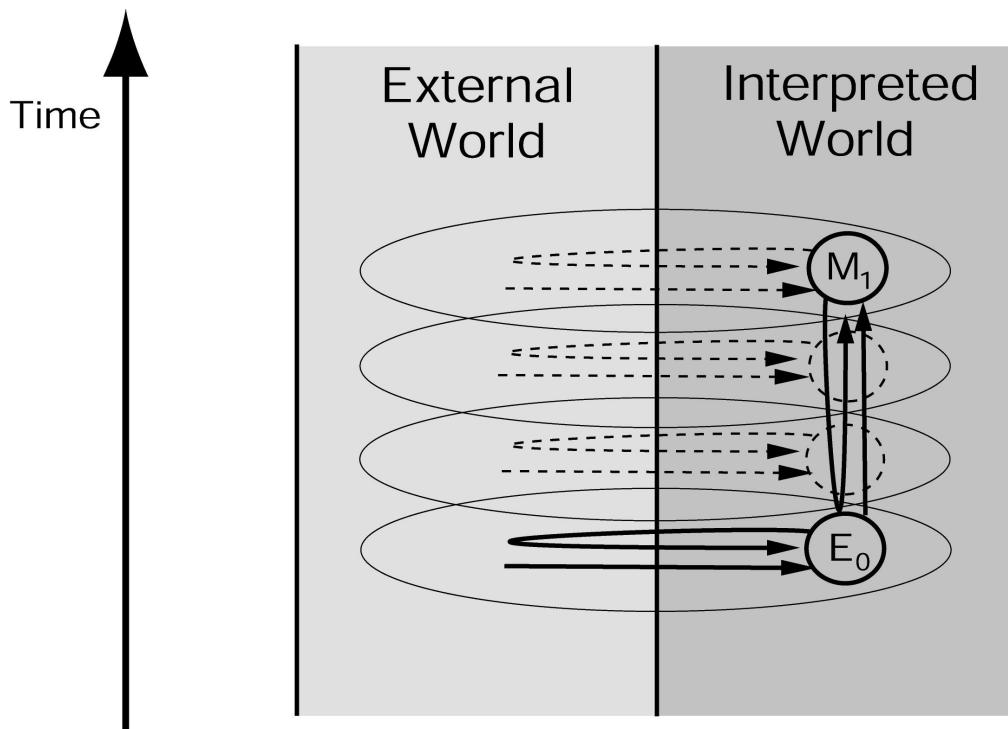
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# Constructive memory



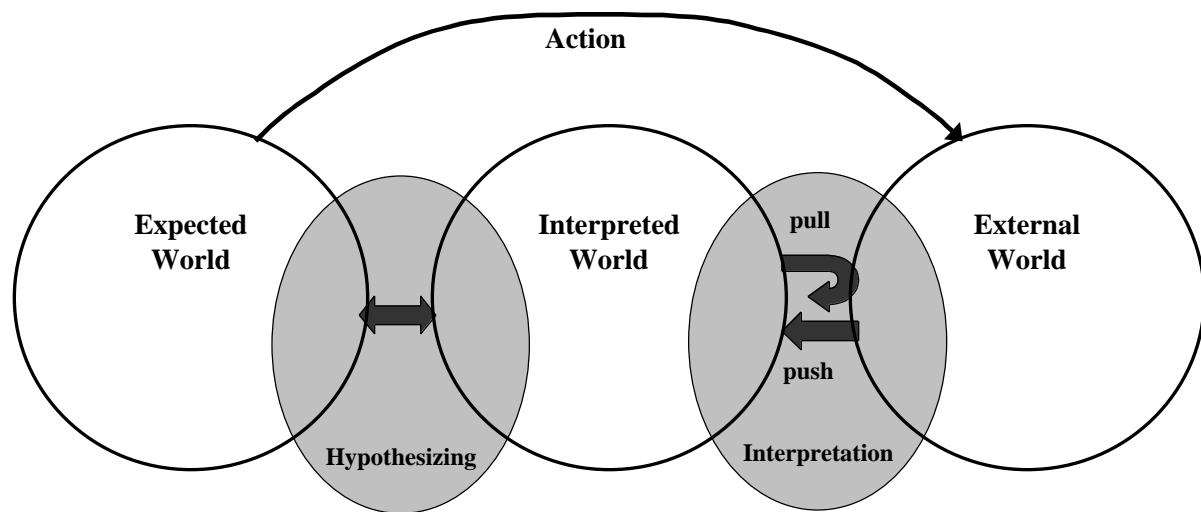
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# Constructive memory

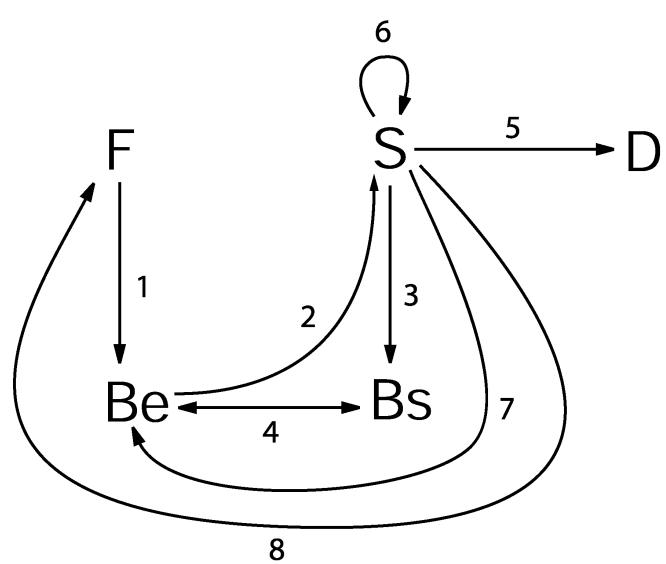


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# SITUATEDNESS: An interaction of different worlds



# Process Theory of Designing based on FBS



## PROCESS THEORY of DESIGNING

- 1 = formulation
- 2 = synthesis
- 3 = analysis
- 4 = evaluation
- 5 = documentation
- 6 = reformulation -1
- 7 = reformulation -2
- 8 = reformulation -3

**F** = function

→ = transformation

**Be** = expected behavior

↔ = comparison

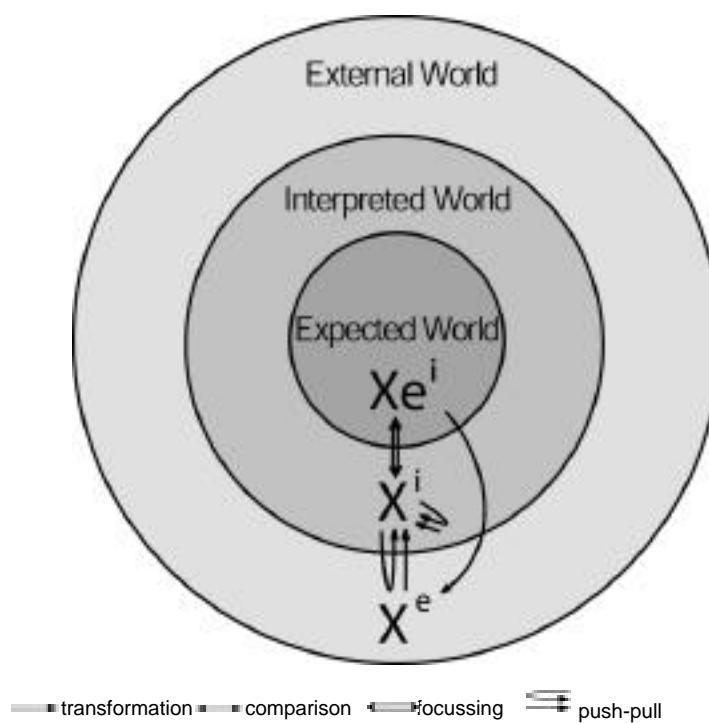
**Bs** = behavior derived from structure

**S** = structure

**D** = design description

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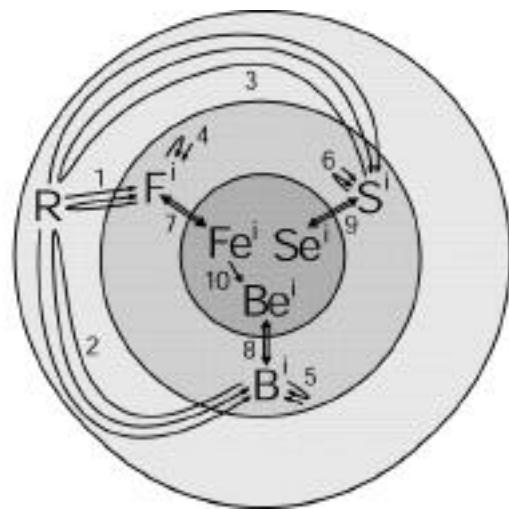
# SITUATED FBS THEORY OF DESIGNING



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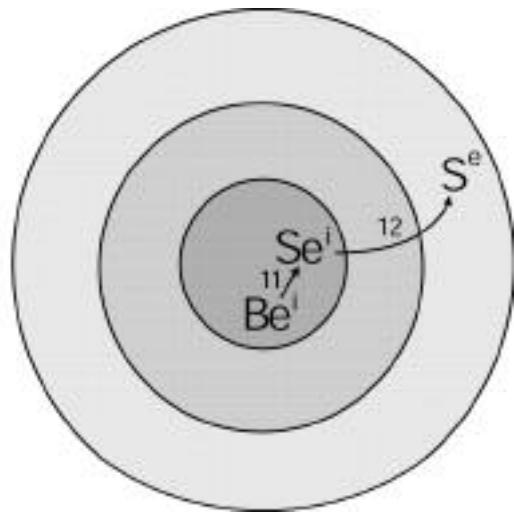
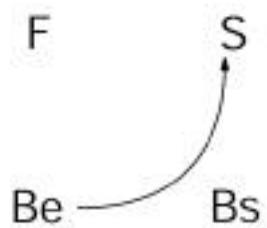
# Formulation

F  
↓  
Be      S  
Bs



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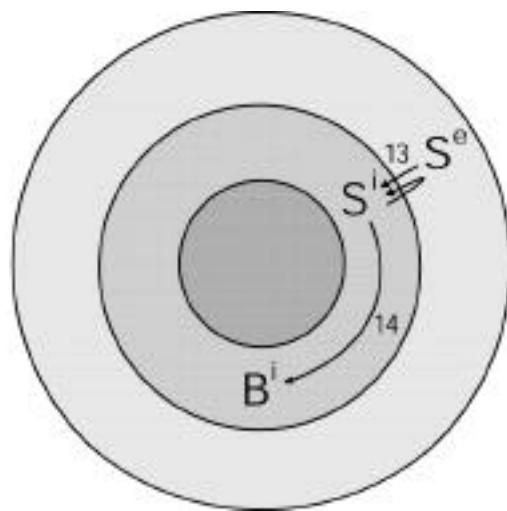
# Synthesis



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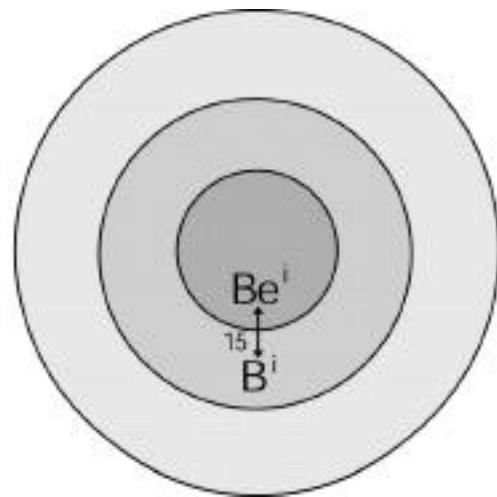
# Analysis

F  
S  
Be      ↓  
Bs



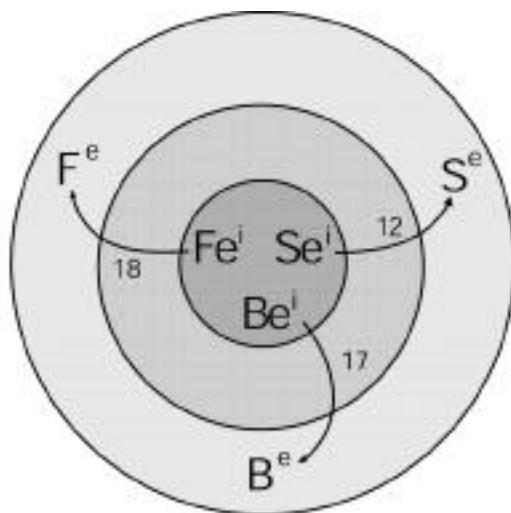
# Evaluation

F      S  
Be  $\longleftrightarrow$  Bs

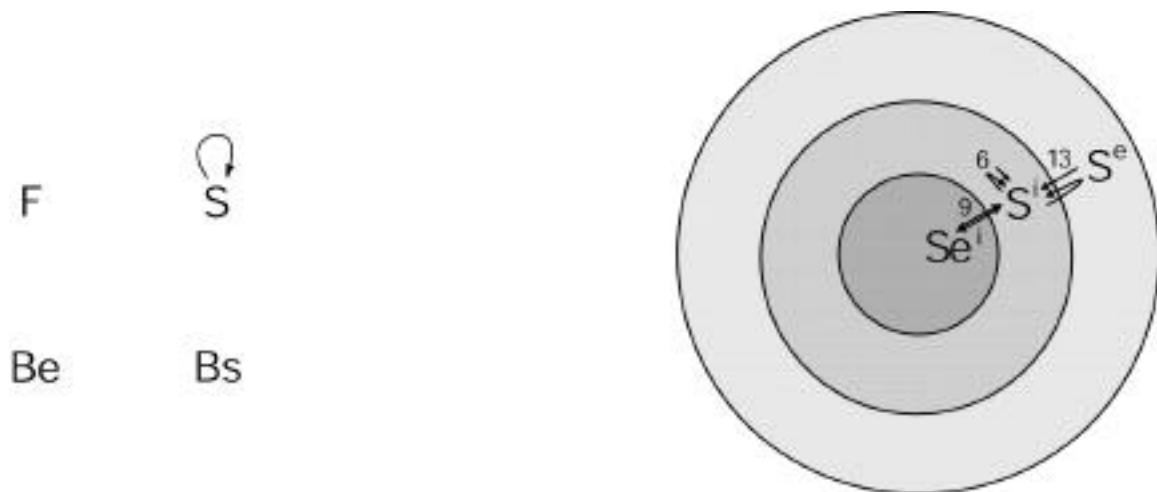


# Documentation

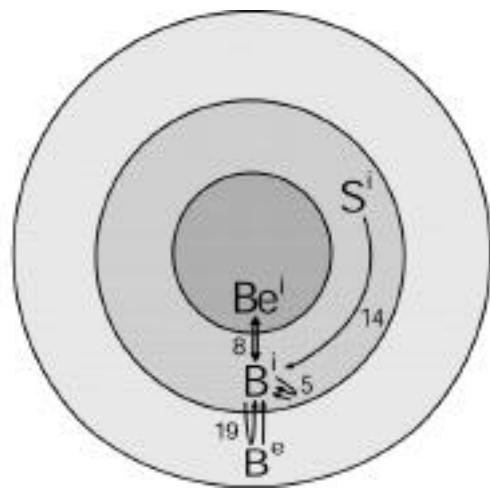
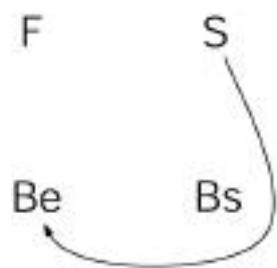
F              S → D  
Be              Bs



# Reformulation Type 1

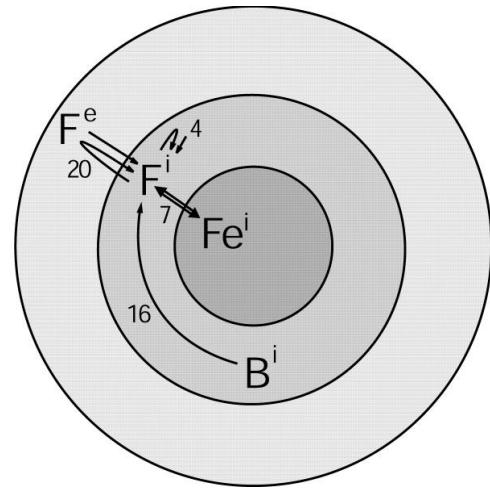
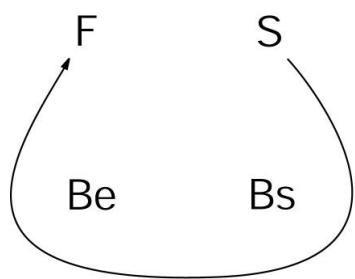


## Reformulation Type 2



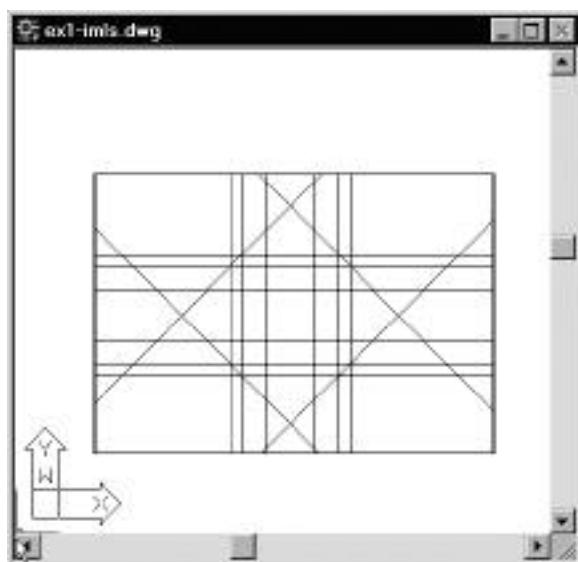
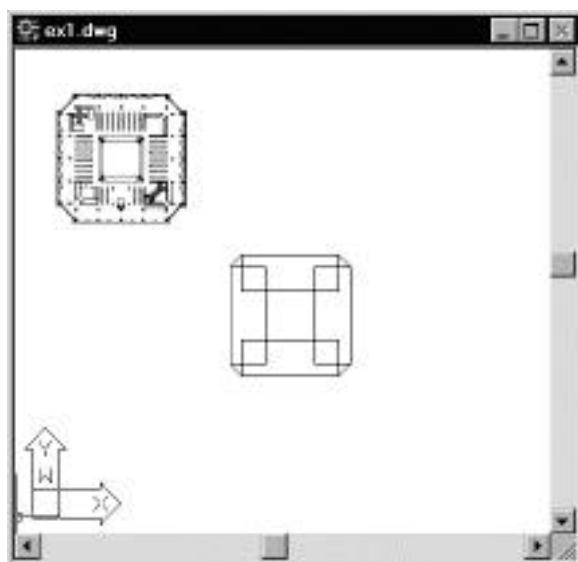
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# Reformulation Type 3

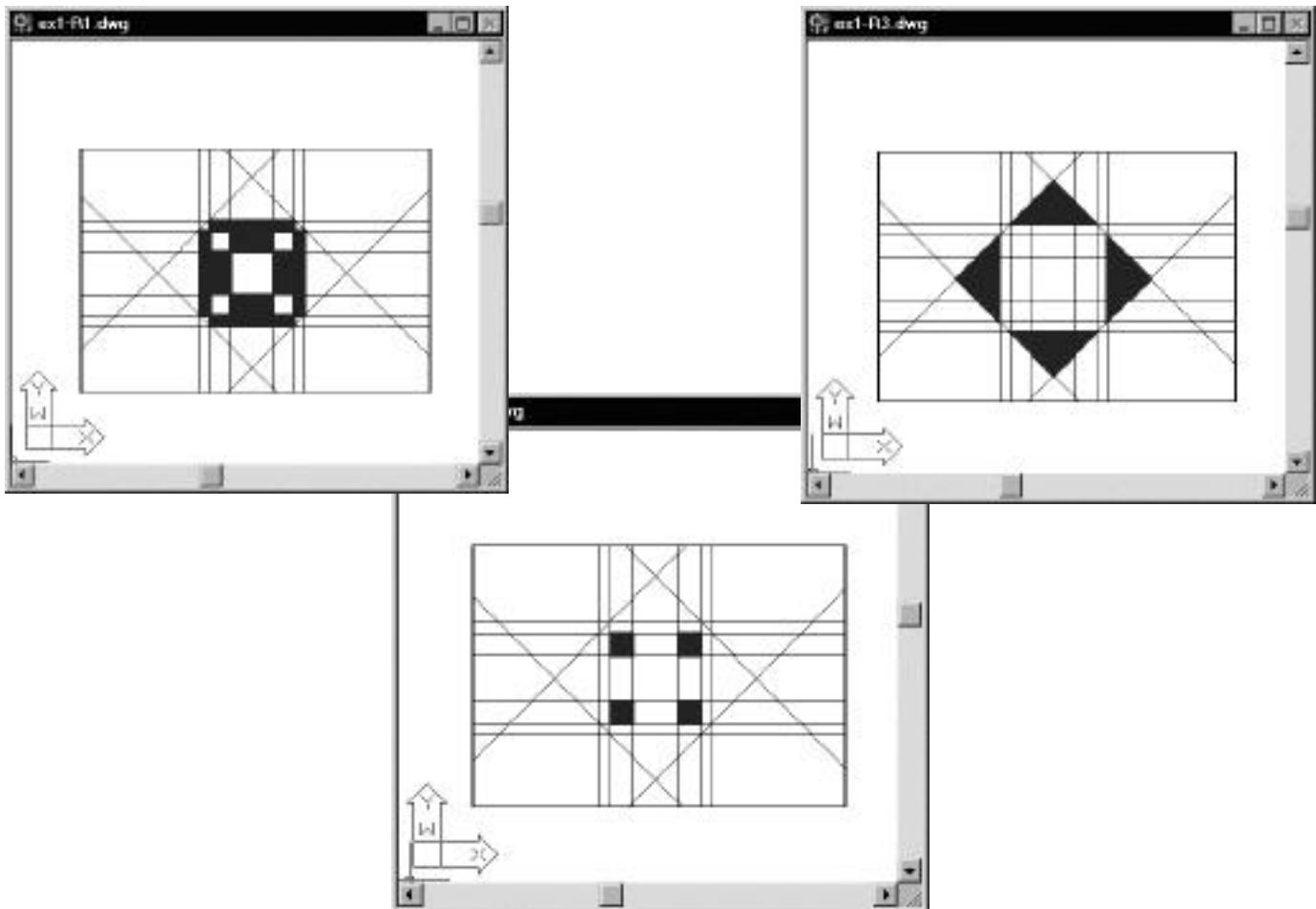


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# Initial Representation

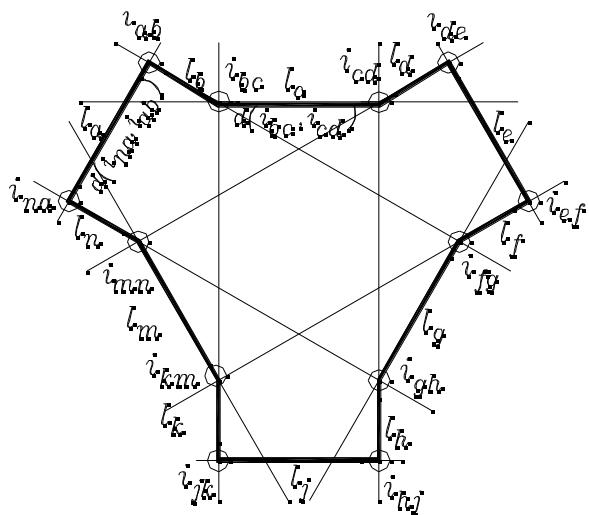
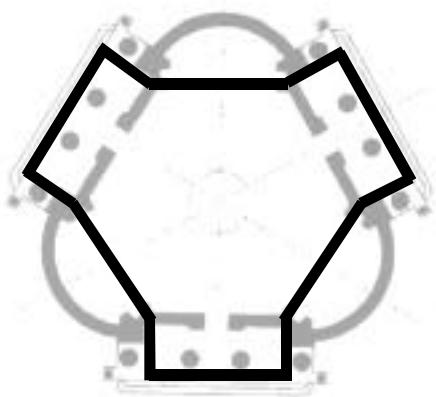


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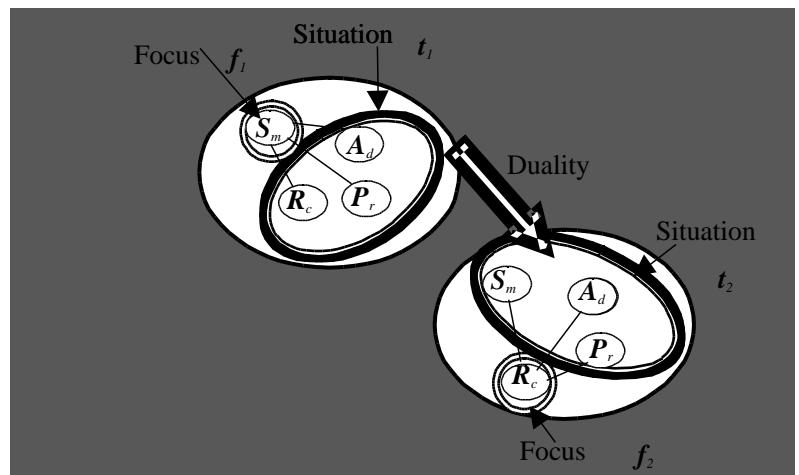
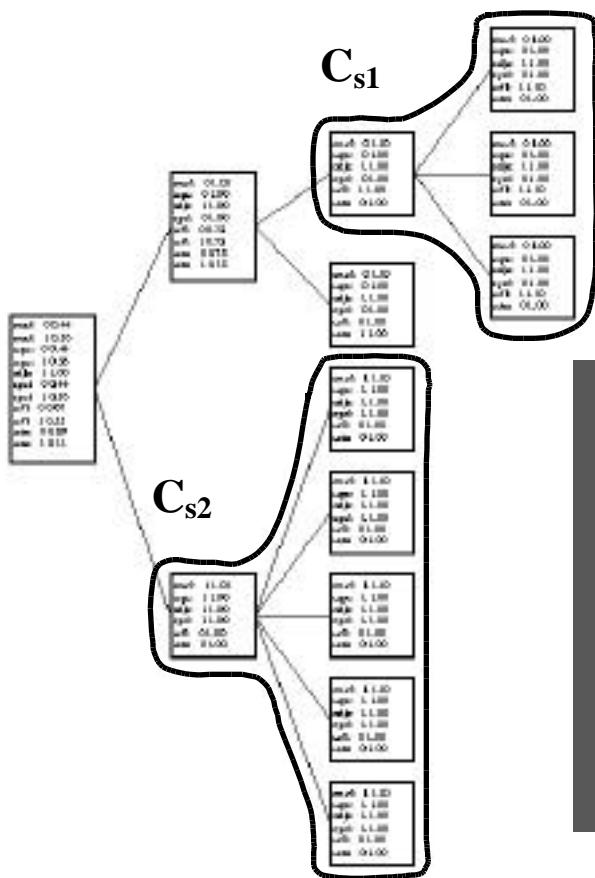
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# Example



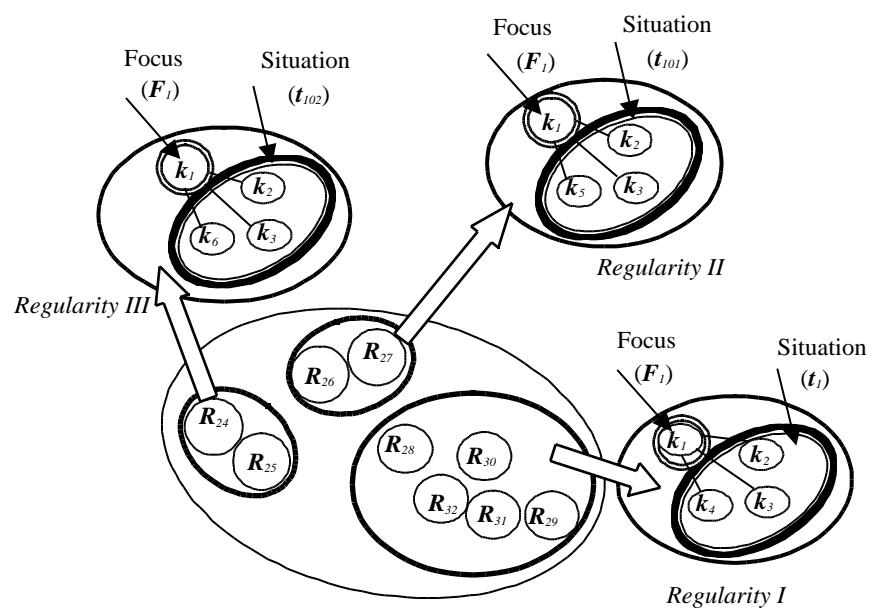
## Sepulchral Church, Sir John Soane, 1796

## Learning the situatedness

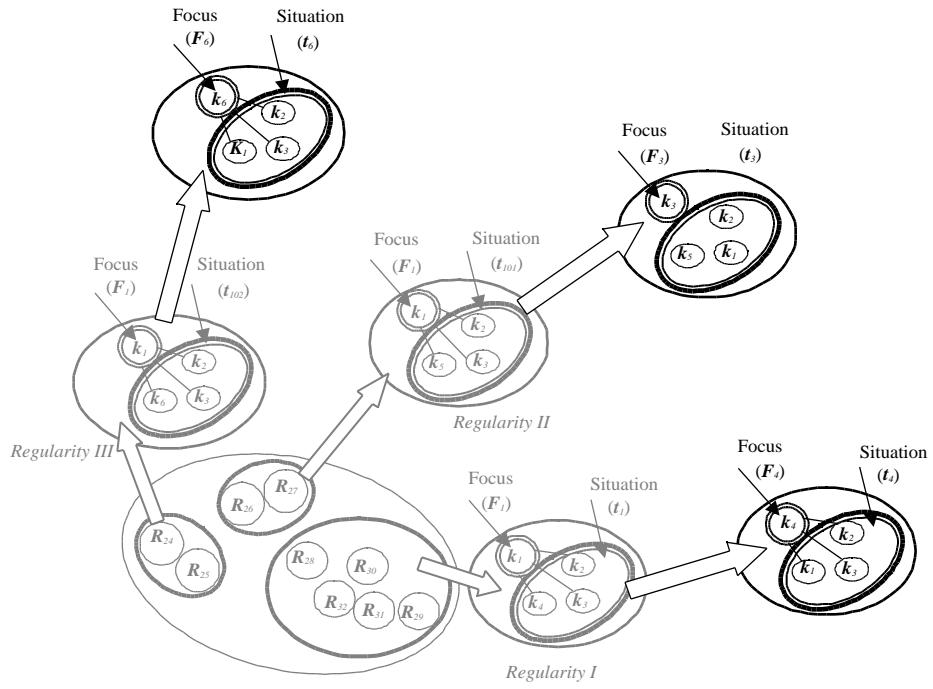


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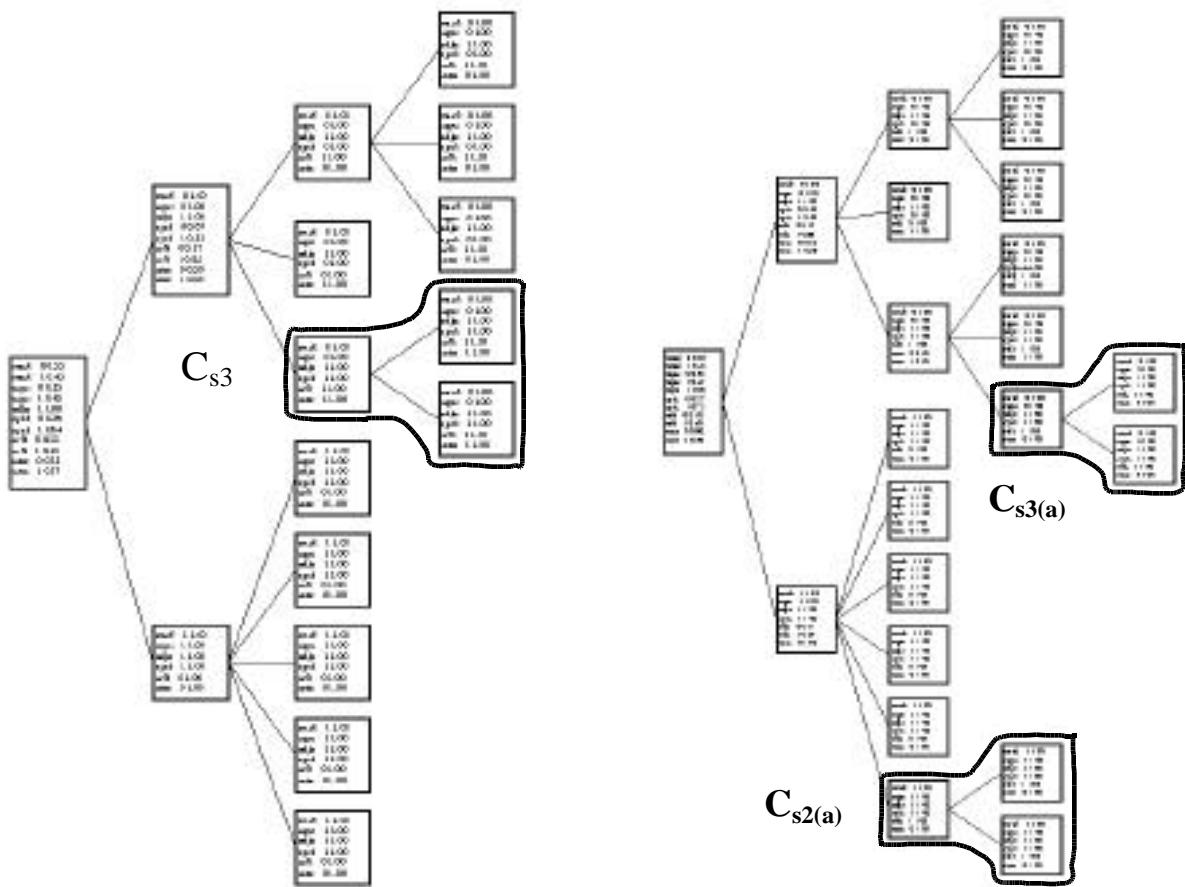
# Multiple situations



## Duality between focus and situation – or why different designers see different things in the same external representation

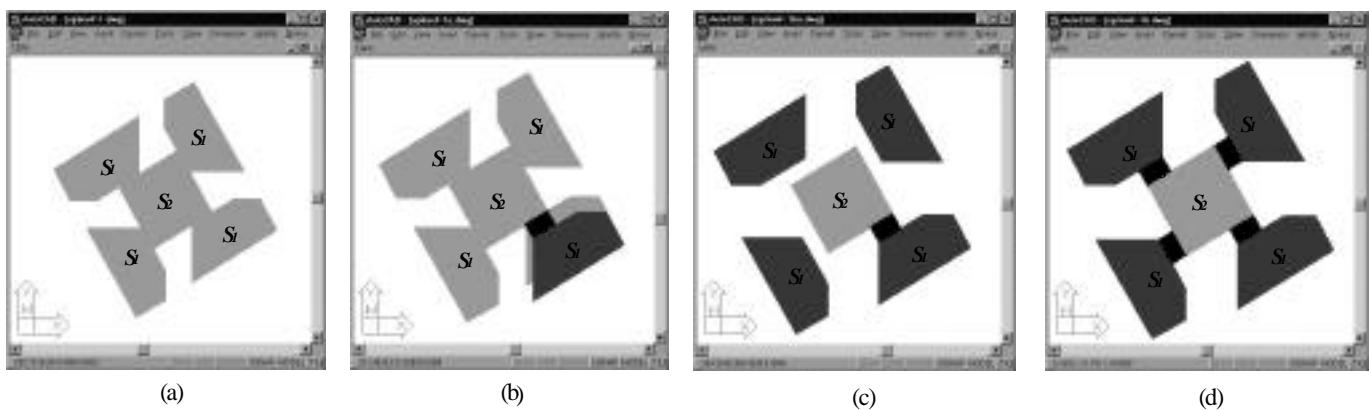


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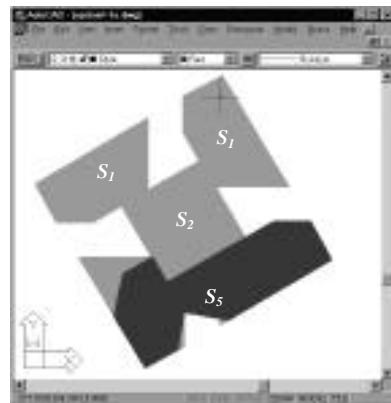


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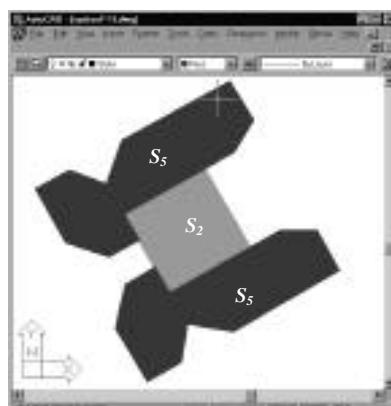
# Implementation



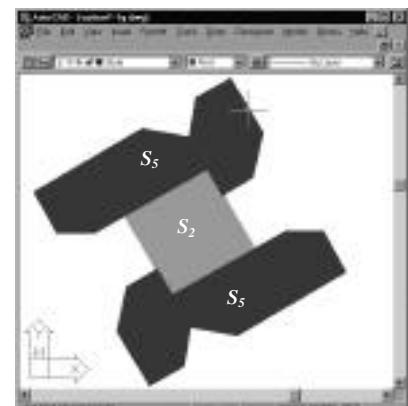
**Providing different moves  
(alternatives) in response  
to design actions**



(a)



(b)



(c)

# SITUATED ANALYSIS

- **Designing doors**

---

Description of situated social force

---

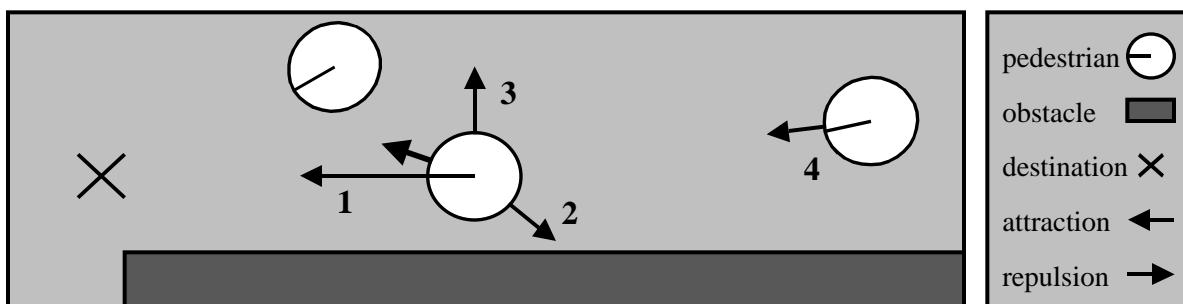
Pedestrians try to move as efficiently as possible to a destination.

Pedestrians try to maintain a comfortable distance from other pedestrians.

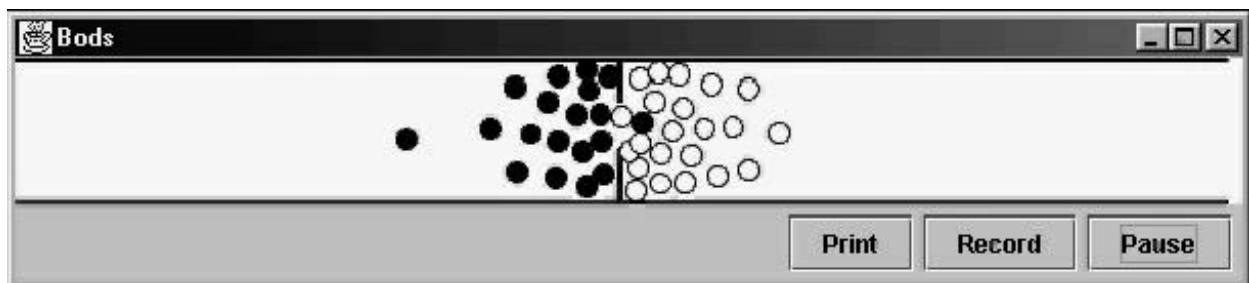
Pedestrians try to maintain a comfortable distance from obstacles like walls.

Pedestrians may be attracted to other pedestrians or objects.

---

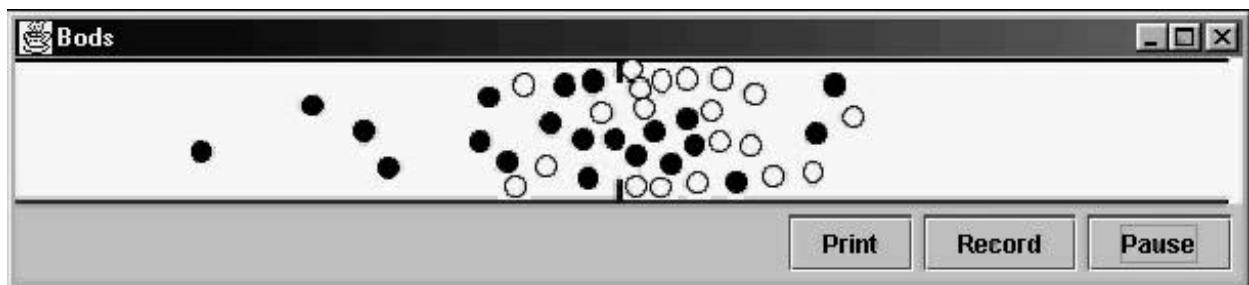


# Narrow door



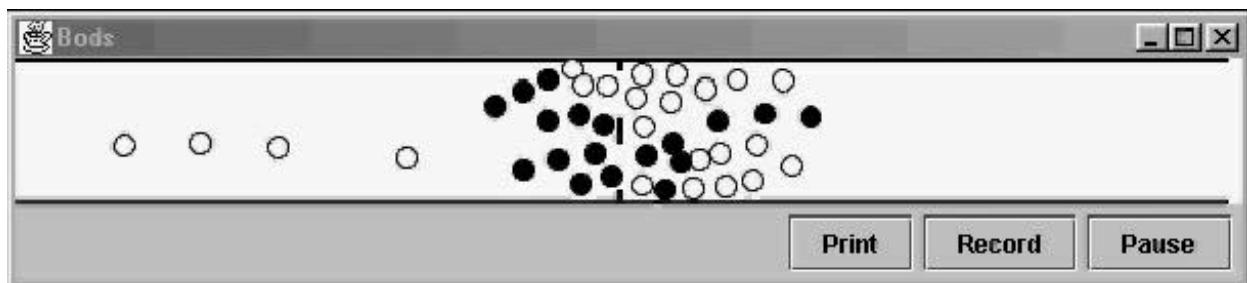
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# Wide door



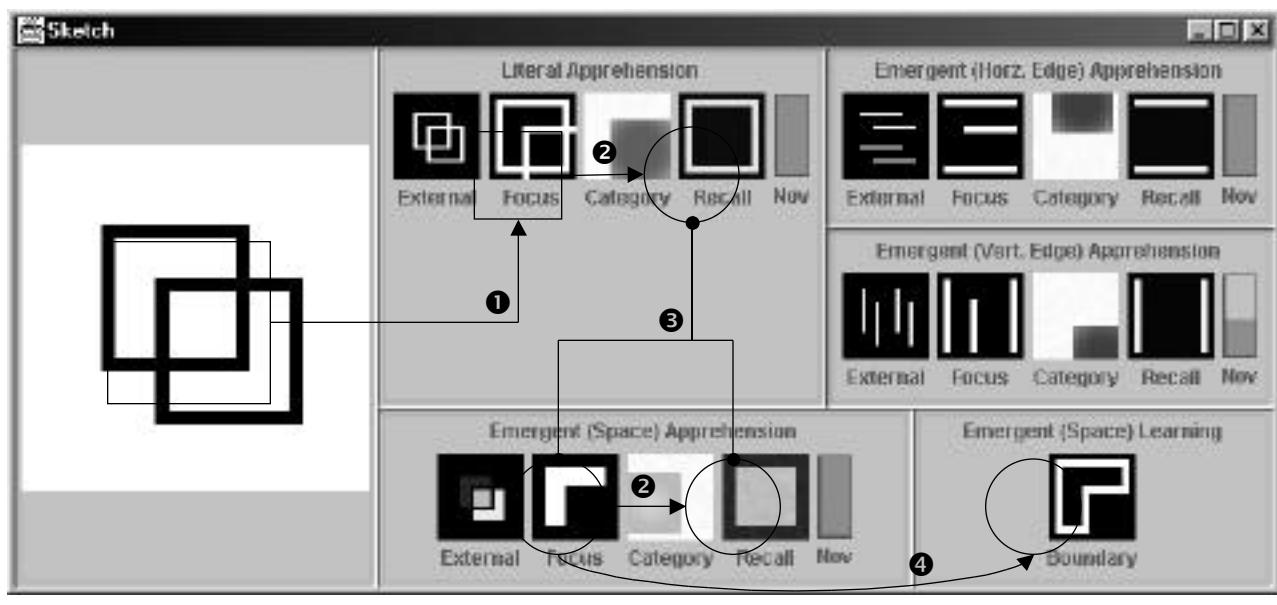
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# Two doors

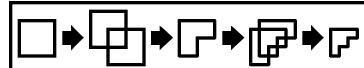


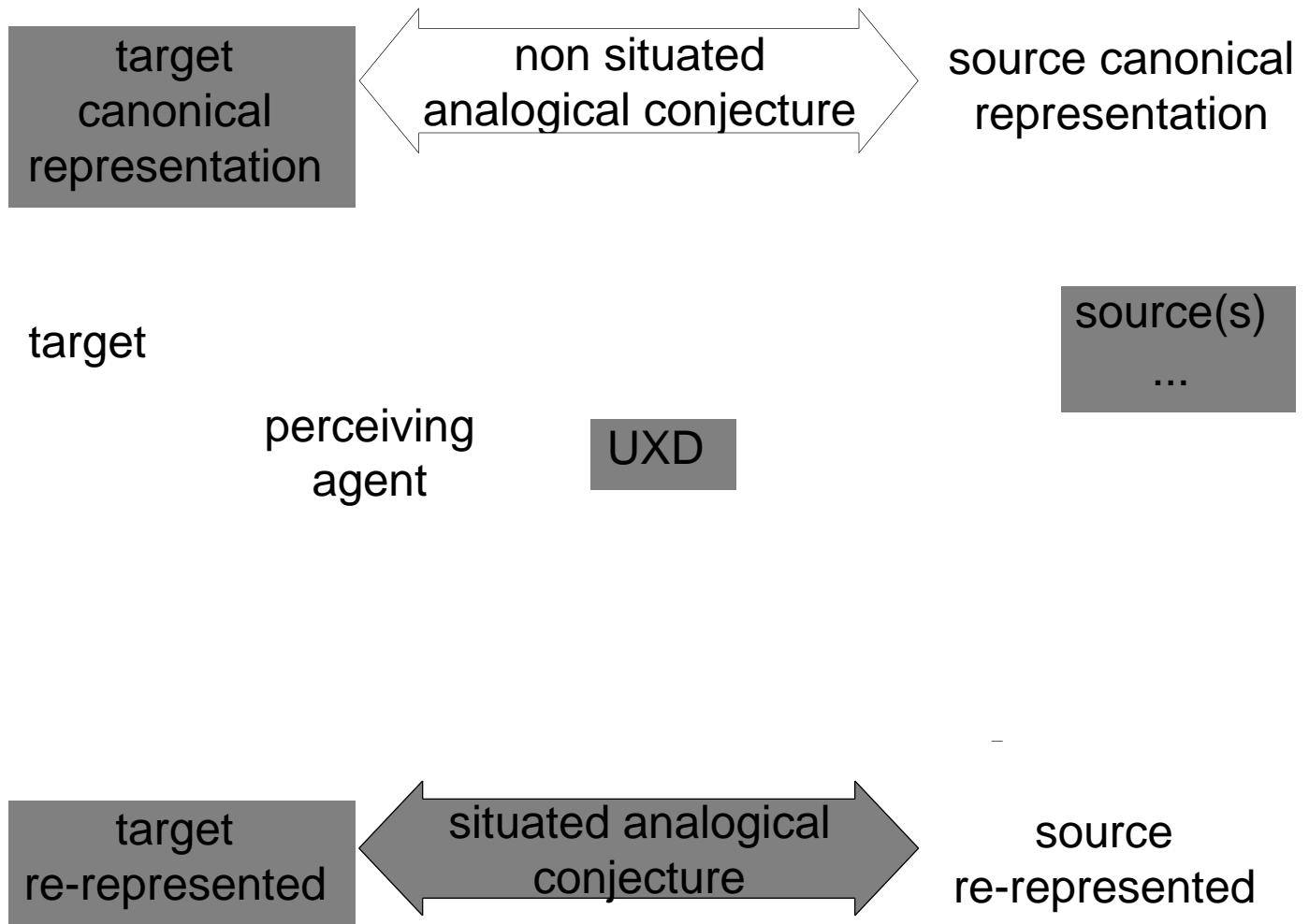
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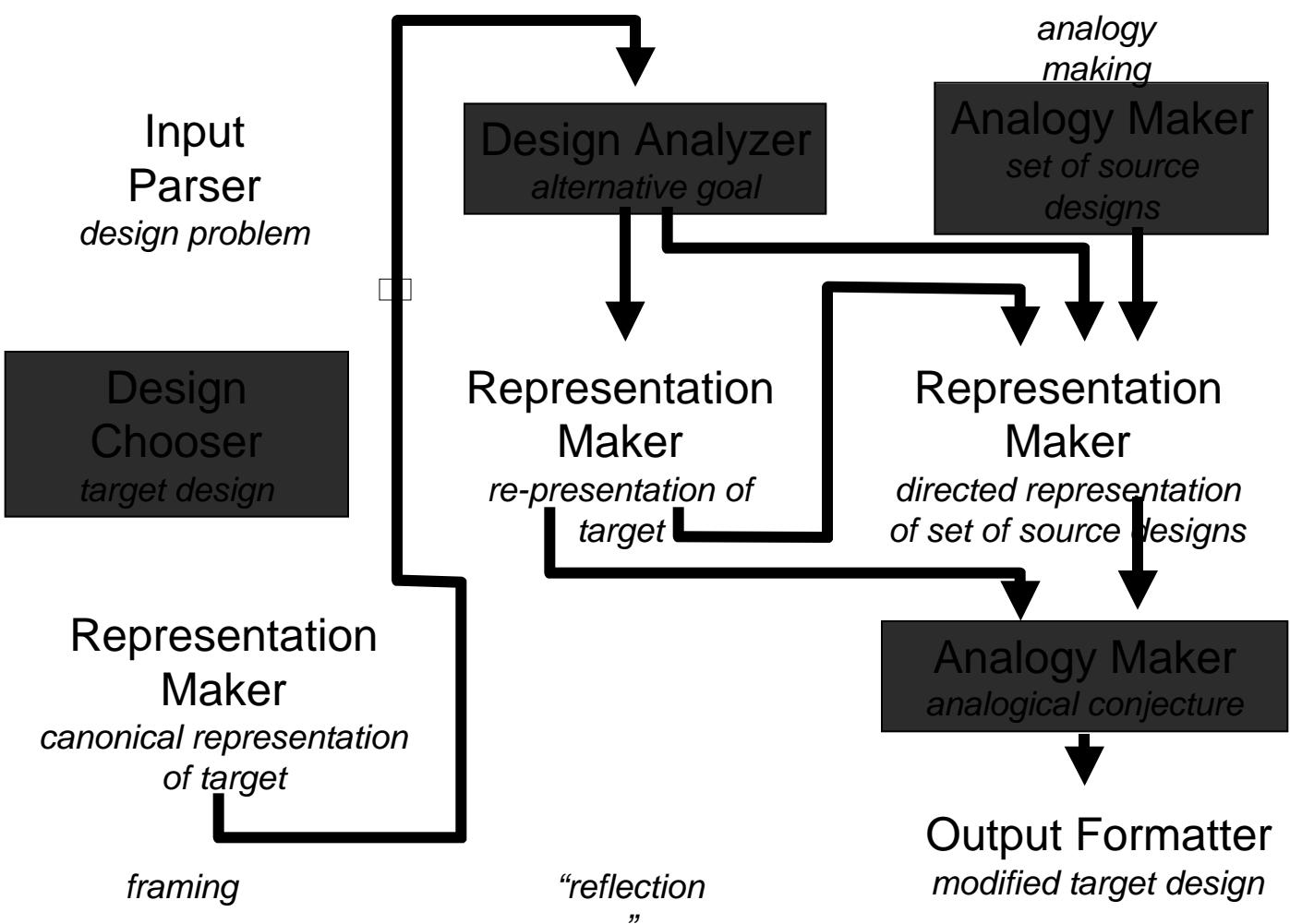
# Situated Sketching (after Stiny & Schön)

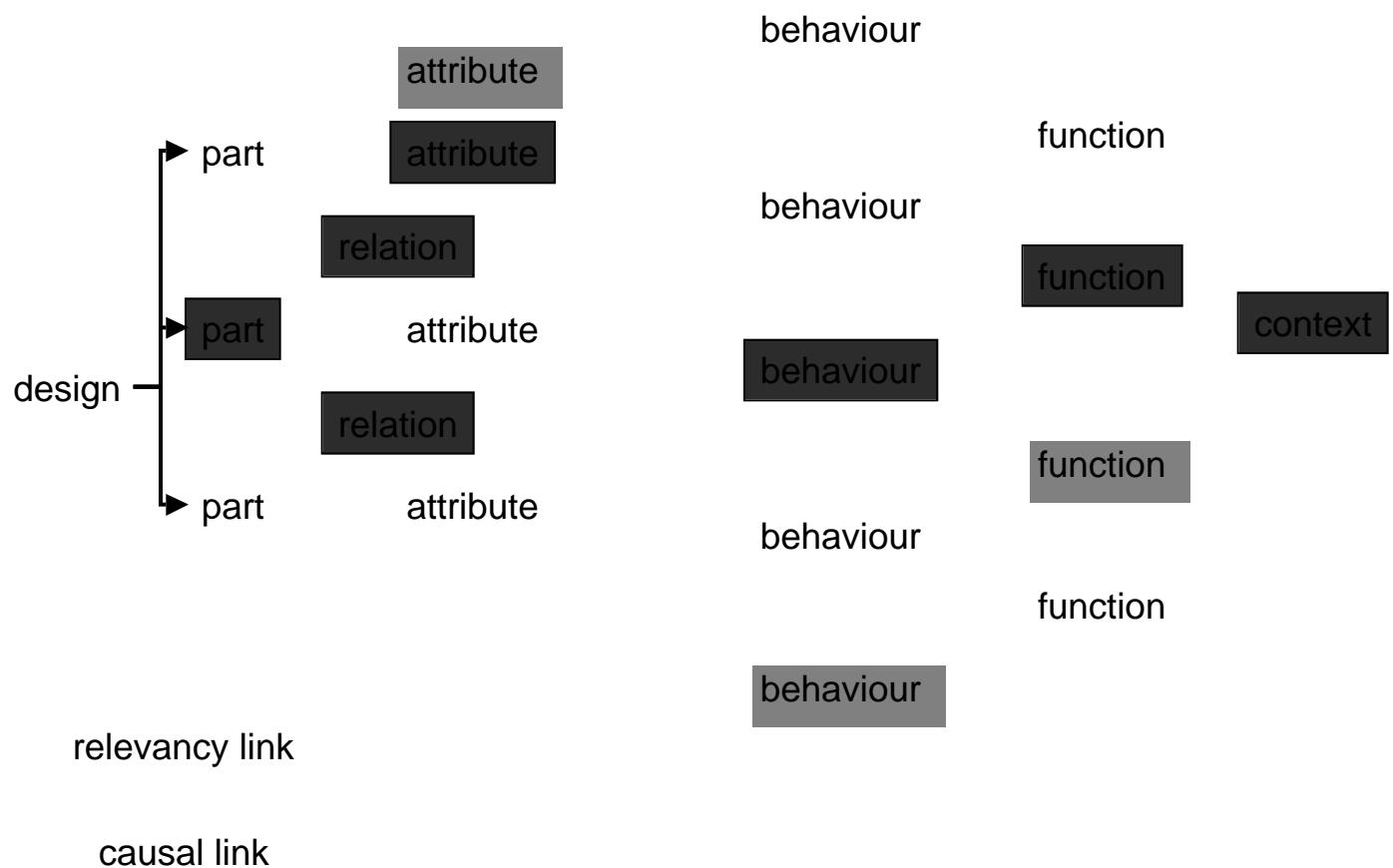


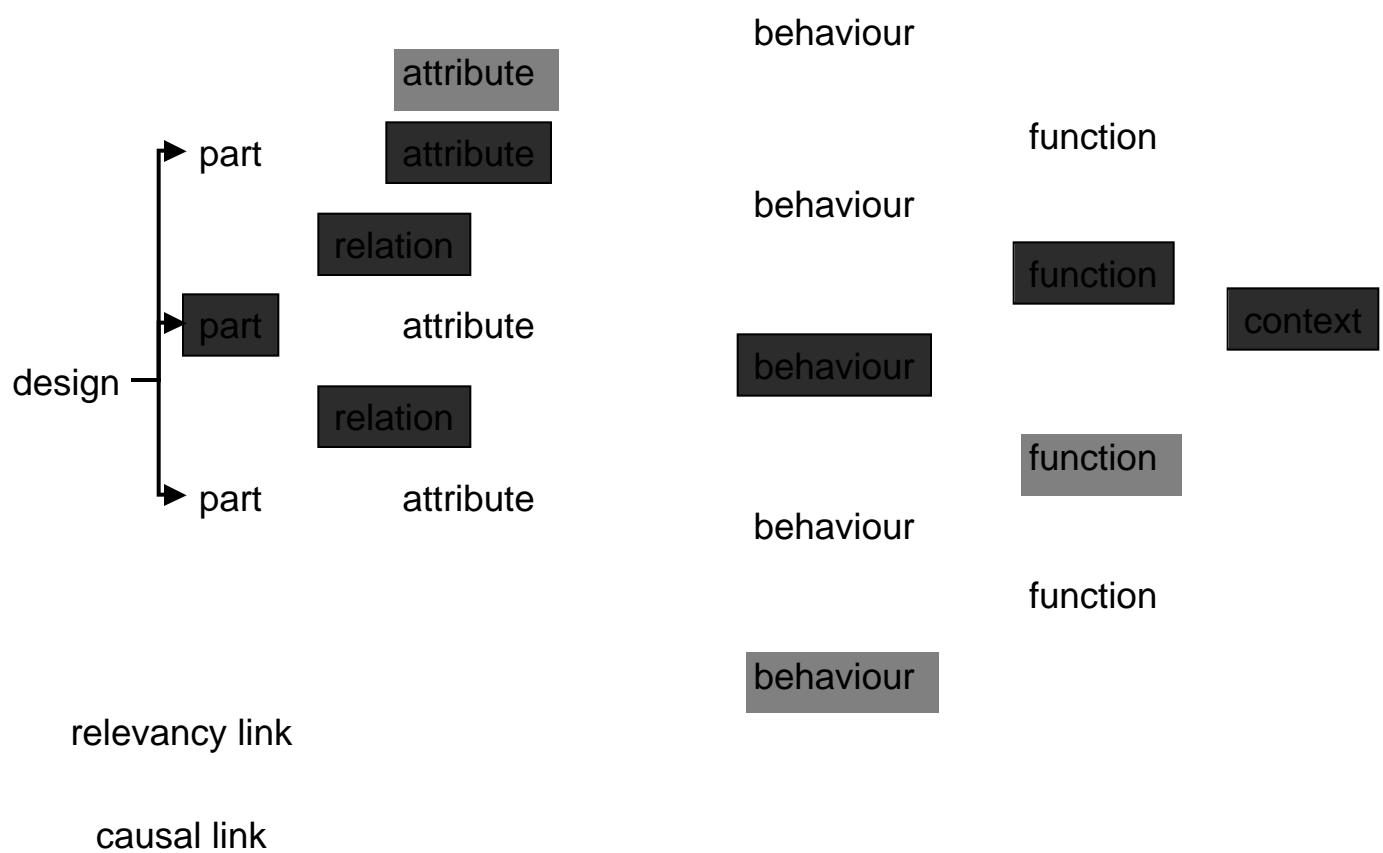
**Situated "Reflection-in-Action"**

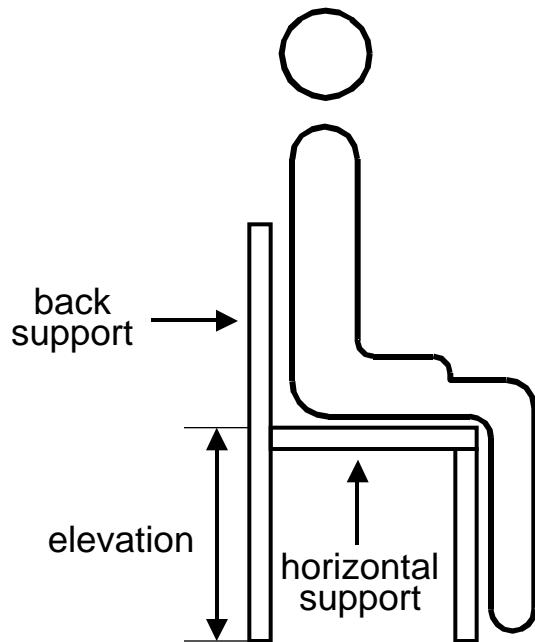






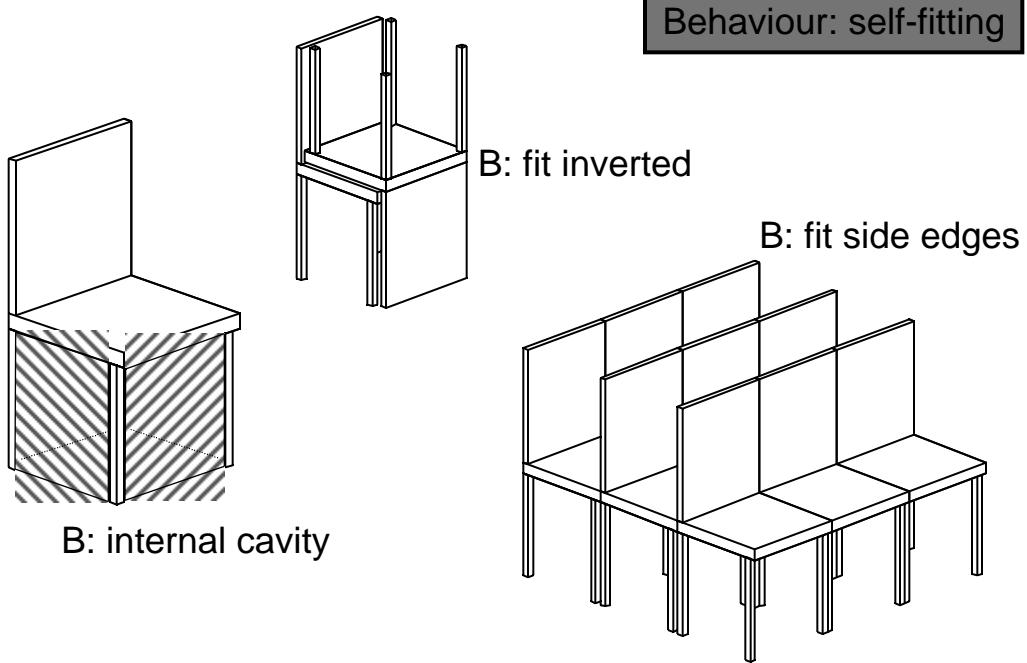






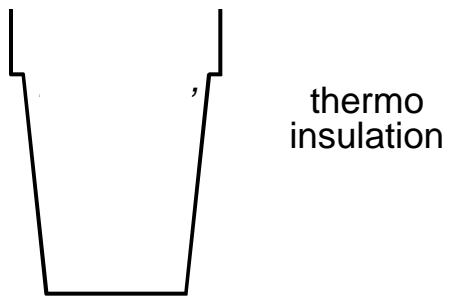
CHAIR  
*“in user context”*  
(canonical  
context)

function:  
provide  
comfortable  
sitting



**CHAIR**  
“*in storage*”  
(alternative  
context)

function:  
provide  
compactness

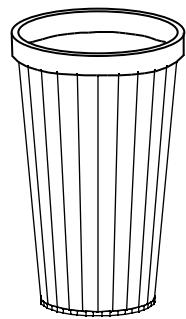


CUP  
“on dinner table”  
(canonical context)

Function:  
provide drink  
container

Behaviour: self-fitting

B: fit inverted



B: internal cavity

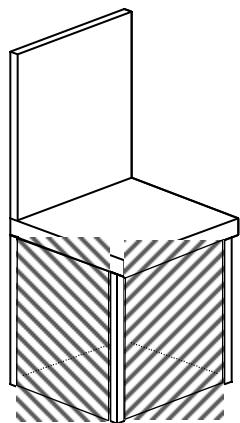
B: conical shape



B: fit top-bottom

CUP  
“in storage”  
(alternative  
context)

Function:  
provide  
compactness



Behaviour Match:

internal cavity

Analogical conjecture:

cup(bottom) - chair(seat)

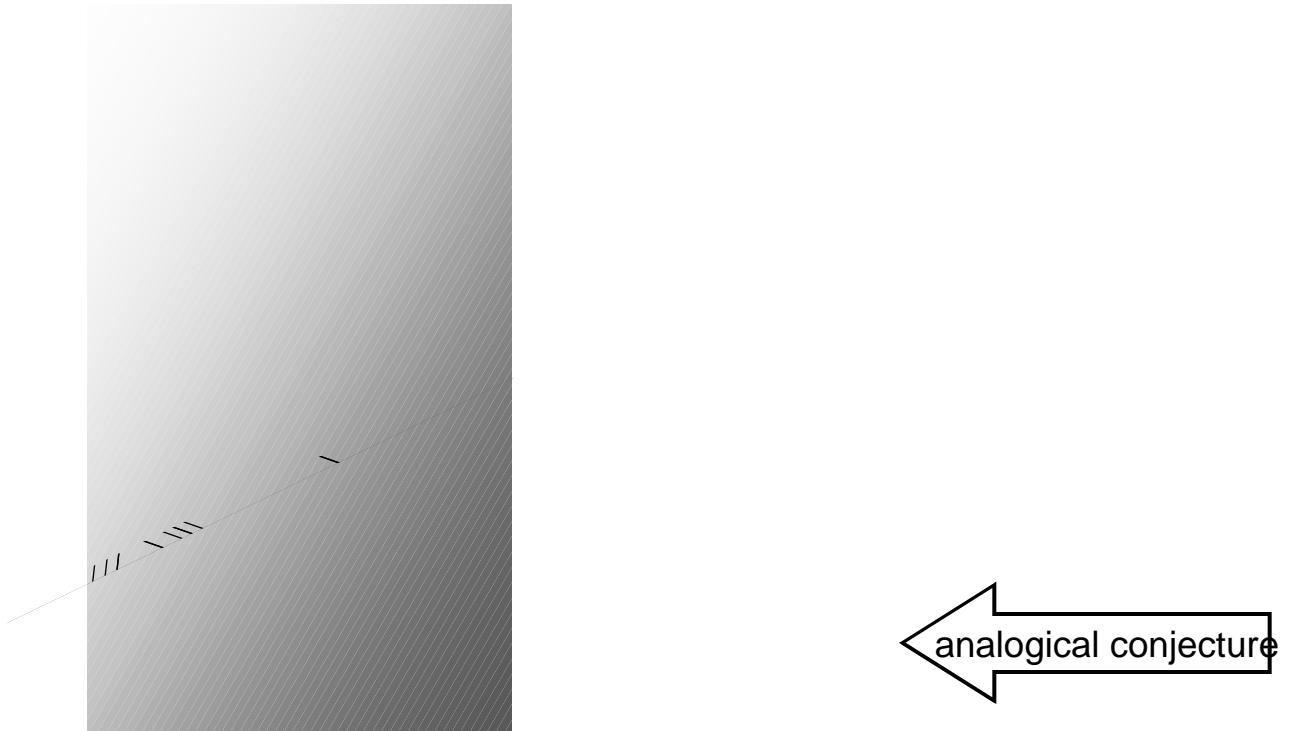
cup(side) - chair(legs)

Structure Feature Transfer:

conical shape

Behaviour Mapping:

fit top-bottom



TARGET:  
modified structure

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**Lislesel 1**

Works File Edit View Expression Values Help

Unknown Output

```
Select design to create its representation
1 standard chair
2 glass cup
3 hanger 'hook type'
4 tap
5 glass bottle
6 door
7 two bottles
8 zipper

Select 1-8 >?
```

Select target design [two bottles] context
1 on table [target canonical context]
2 controlling
3 travel
4 in storage
5 office
6 for water supply
7 wall

Select 0-7 >?

Select applicable functions
1 func-fit other T
OK Accept settings

Select 1-0 or ok >ok
RACK: NIL
BATCH: NIL
DROPED: NIL
GOTITEM: NIL
SUCCESS: NIL

<<< status >>> REPRESENTING TARGET: two bottles
CONTEXT FUNCTIONS: (FUNC-FIT)
IMPLEMENTED BY: |(BEHAV-FIT-SIDE-SIDE|)
<<< status >>> POSTING BEHAVIOUR AGENTS TO THE QUEUE...|

Ready.

**Lislesel 2**

Works File Edit View Expression Values Help

Unknown Output

```
RACK: NIL
BATCH: NIL
DROPED: NIL
GOTITEM: |(BEHAV-FIT-SIDE-SIDE 1.008991838585632 1)|
SUCCESS: NIL
<<< status >>> ACTIVE AGENT: BEHAV-FIT-SIDE-SIDE
(RULE): if exist x: biggest(x) and att-shape-square(x) or att-shape-rectangle(x) => compound has behav-fit-side-side
<<< status >>> POST SUCCESS! BEHAV-FIT-SIDE-SIDE
RACK: NIL
BATCH: NIL
DROPED: NIL
GOTITEM: |(BEHAV-FIT-SIDE-SIDE 1.008991838585632 1)|
SUCCESS: |(BEHAV-FIT-SIDE-SIDE 1.026723167163057)|
<<< status >>> POST FOLLOWERS ...
RACK: |(BEHAV-FIT-COMPACT 1.20884822751321 0)|
BATCH: NIL
DROPED: NIL
GOTITEM: |(BEHAV-FIT-SIDE-SIDE 1.008991838585632 1)|
SUCCESS: |(BEHAV-FIT-SIDE-SIDE 1.026723167163057)|
<<< status >>> GET CODELET: |BEHAV-FIT-COMPACT 1.20884822751321 1|
RACK: NIL
BATCH: NIL
DROPED: NIL
GOTITEM: |(BEHAV-FIT-COMPACT 1.20884822751321 1) |(BEHAV-FIT-SIDE-SIDE 1.008991838585632 1)|
SUCCESS: |(BEHAV-FIT-SIDE-SIDE 1.026723167163057)|
<<< status >>> ACTIVE AGENT: BEHAV-FIT-COMPACT
(RULE): if exist biggest(elem)
RACK: NIL
BATCH: NIL
DROPED: NIL
GOTITEM: |(BEHAV-FIT-COMPACT 1.20884822751321 1) |(BEHAV-FIT-SIDE-SIDE 1.008991838585632 1)|
SUCCESS: |(BEHAV-FIT-SIDE-SIDE 1.026723167163057)|
Successfully found behaviours in targets
behaviour allowing placing same objects side by side
```

Ready.

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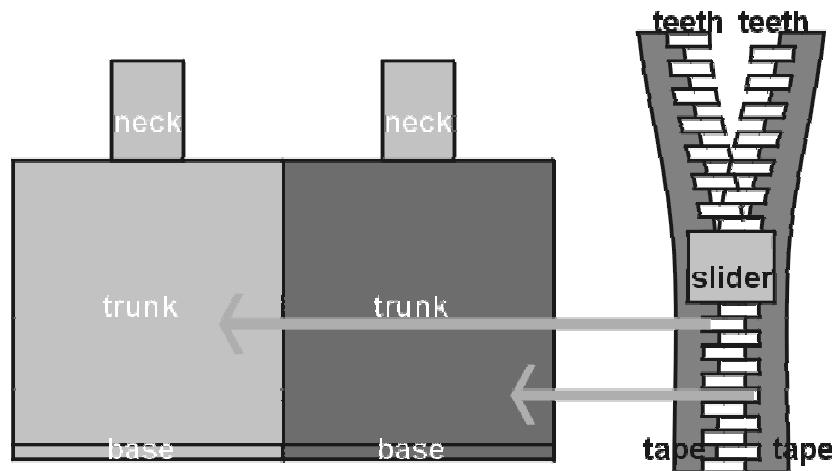
DA Listener 1

File Edit View Expression Values Undo History Help

Listener **Output**

```
|  
|  
t-behaves: ||BEHAV-FIT-SIDE-SIDE||  
Found following |BEHAV| matches to target COMP-ZBUTTLES  
comp: COMP-ZIPPER      common behaves: BEHAV-FIT-SIDE-SIDE  
comp: COMP-DOOR        common behaves: BEHAV-FIT-SIDE-SIDE  
comp: COMP-CHAIR       common behaves: BEHAV-FIT-SIDE-SIDE  
  
Developing best match, i.e., COMP-ZIPPER.  
Structure mappings for BEHAV-FIT-SIDE-SIDE  
category           target structure      source structure  
SHAPE              ELEM-TRUNK1          ELEM-TEETH1  
SHAPE              ELEM-TRUNK2          ELEM-TEETH2  
NIL
```

CL-USER > ■



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