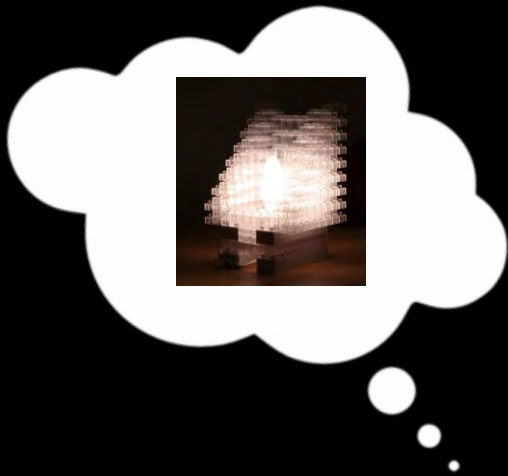




**design process**

What makes design difficult?



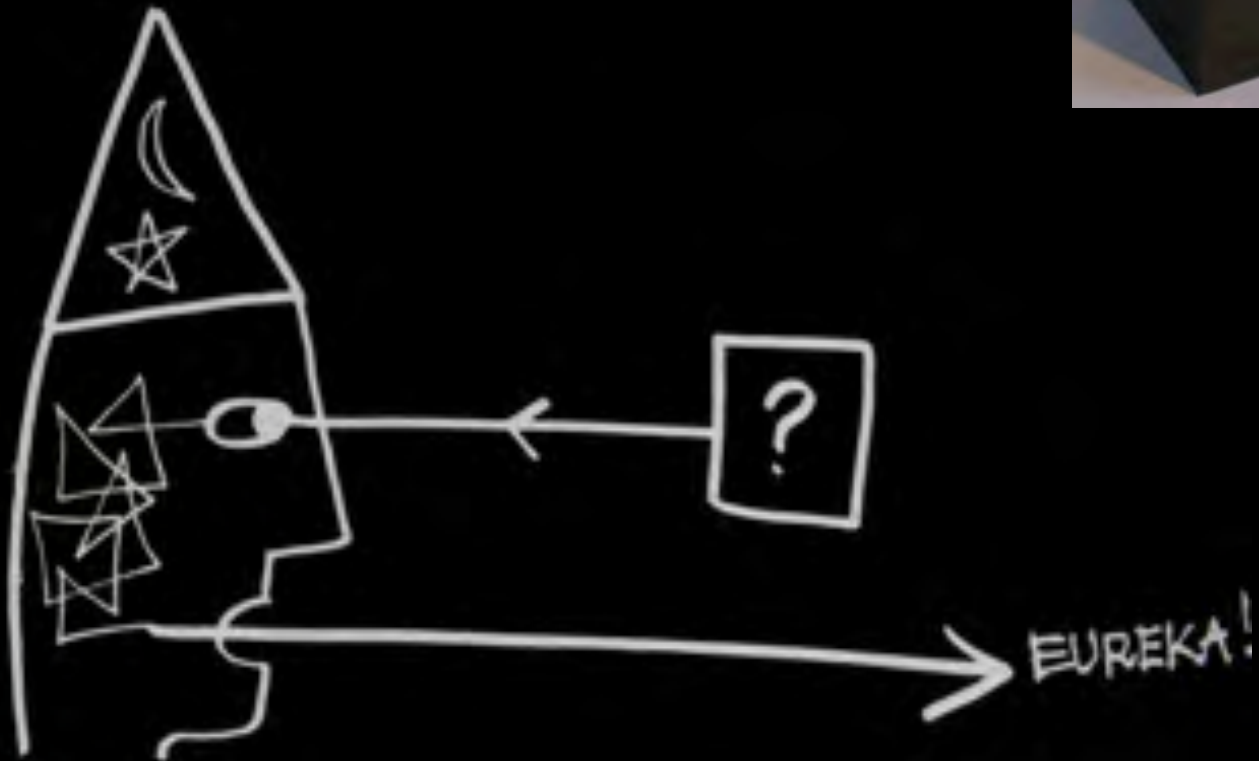
two models of the design process



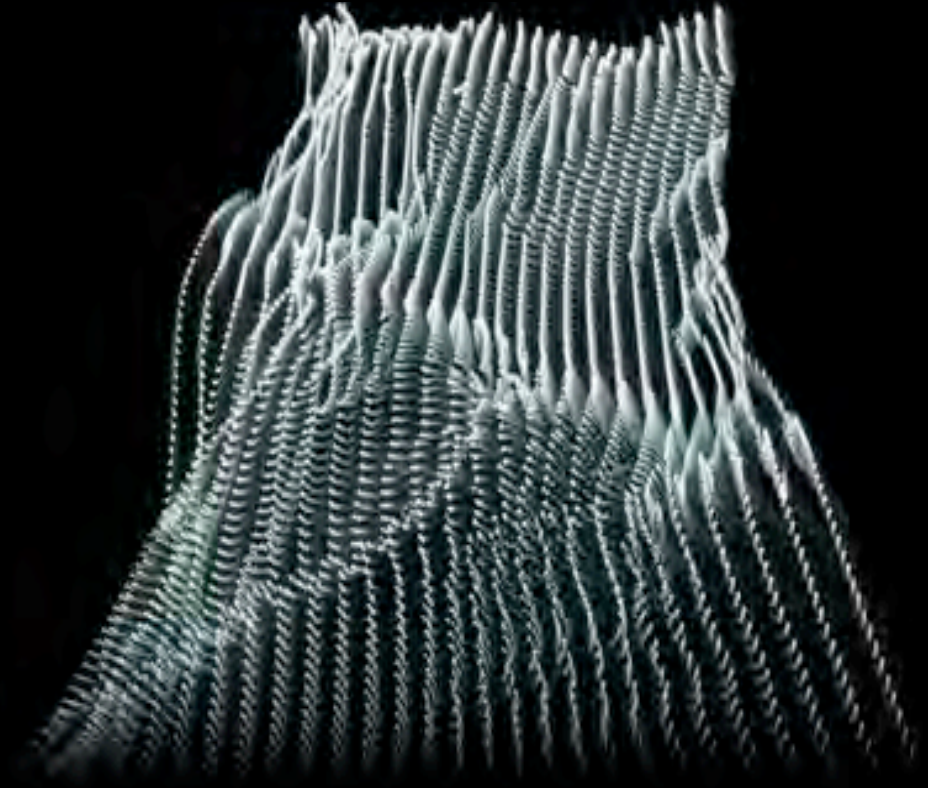
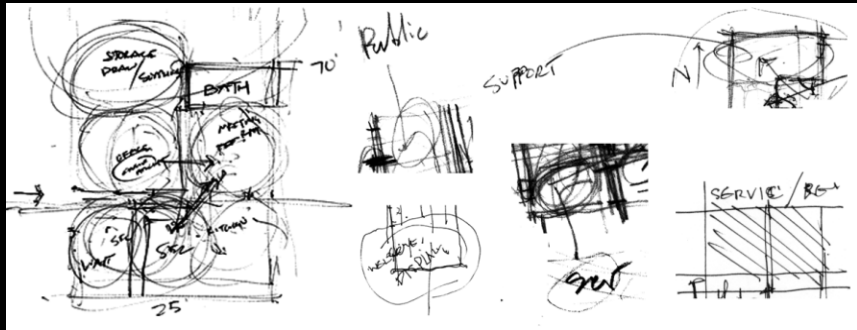
black box

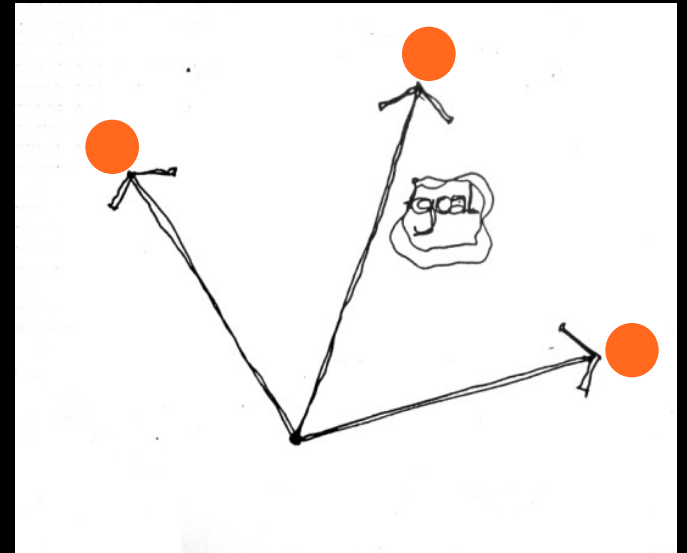


glass box

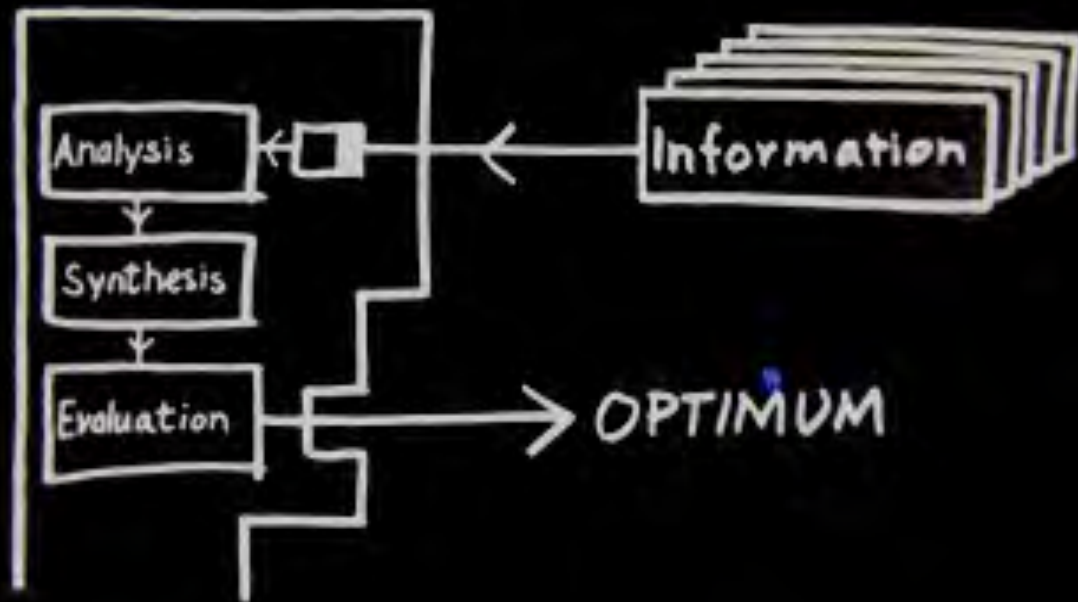
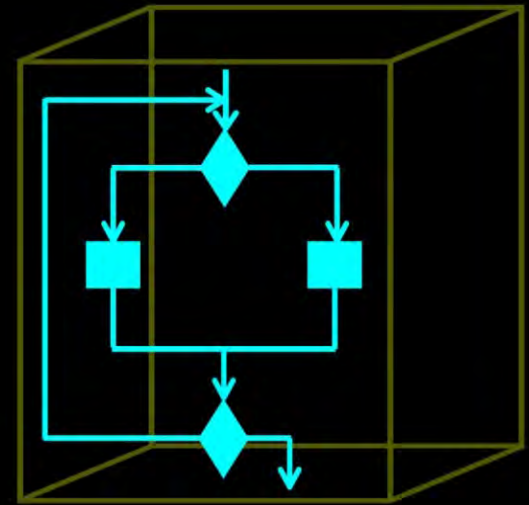


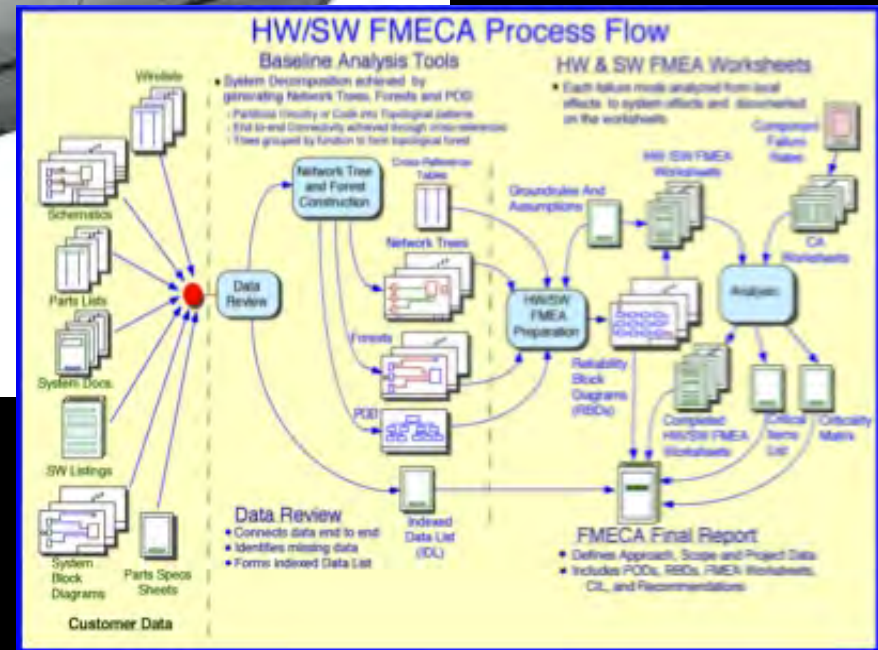
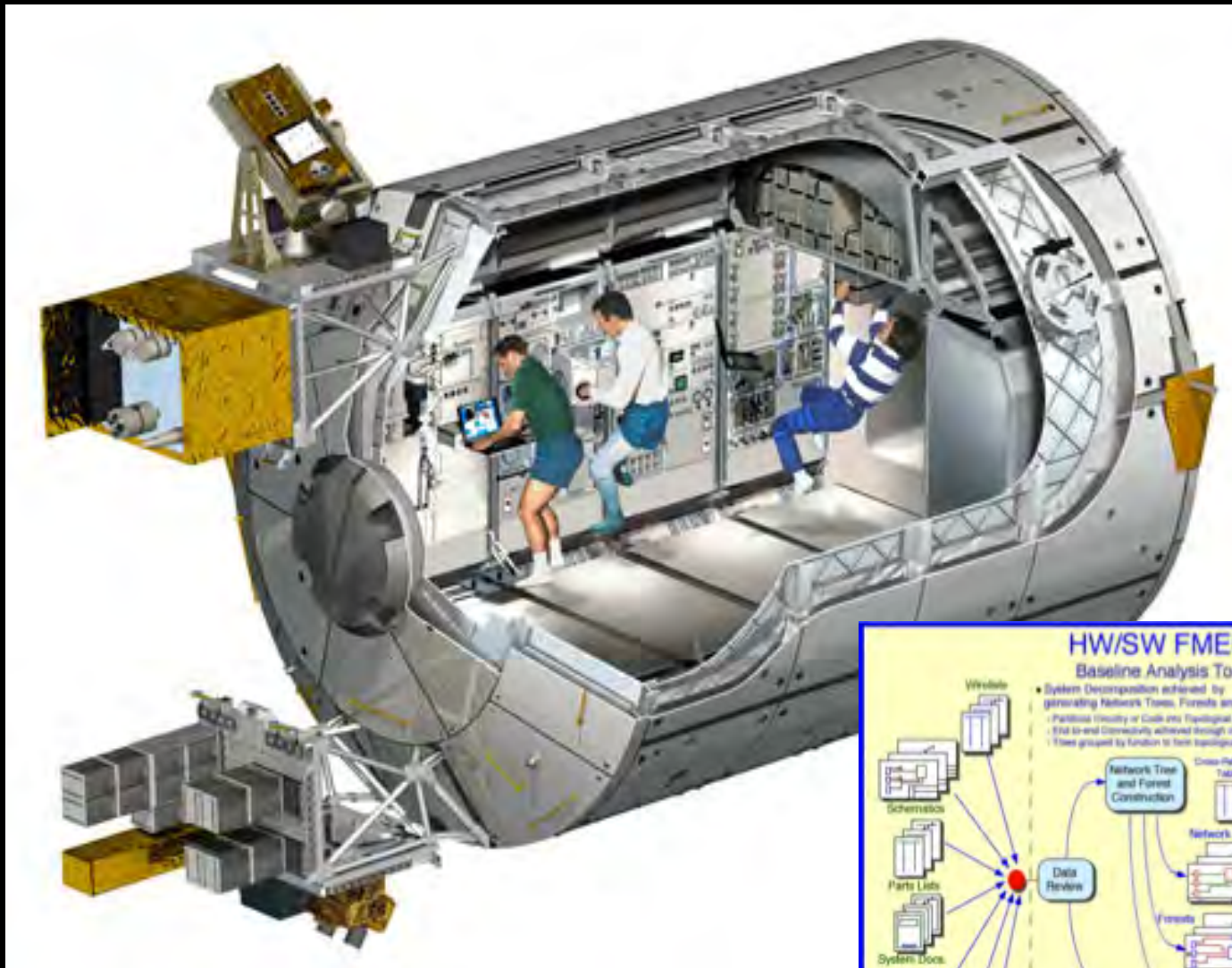




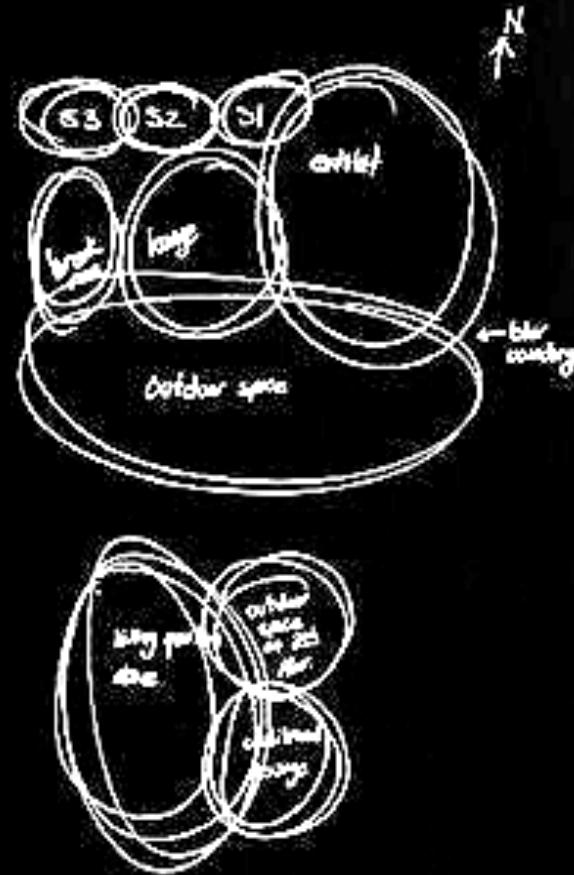
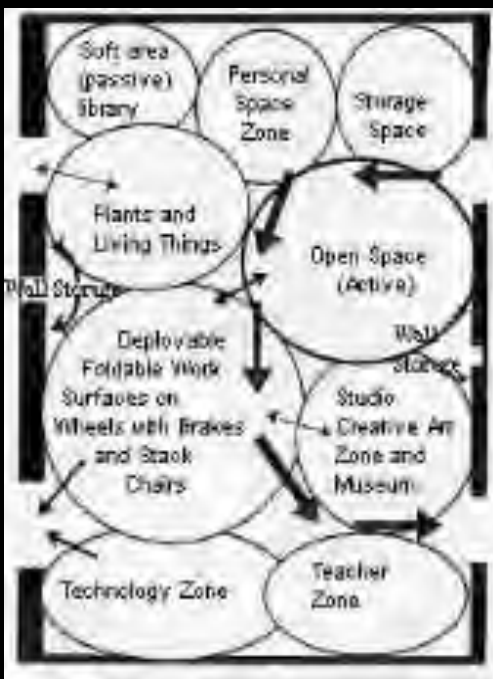
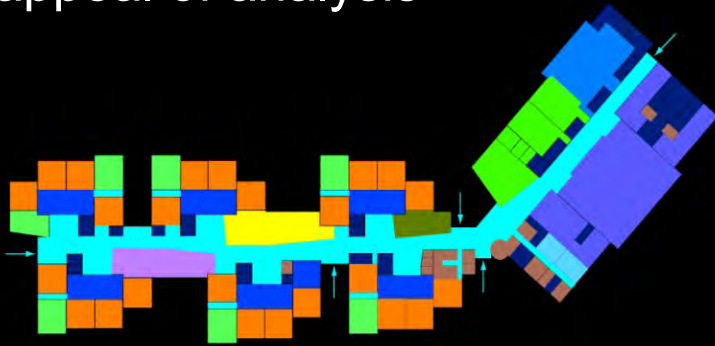




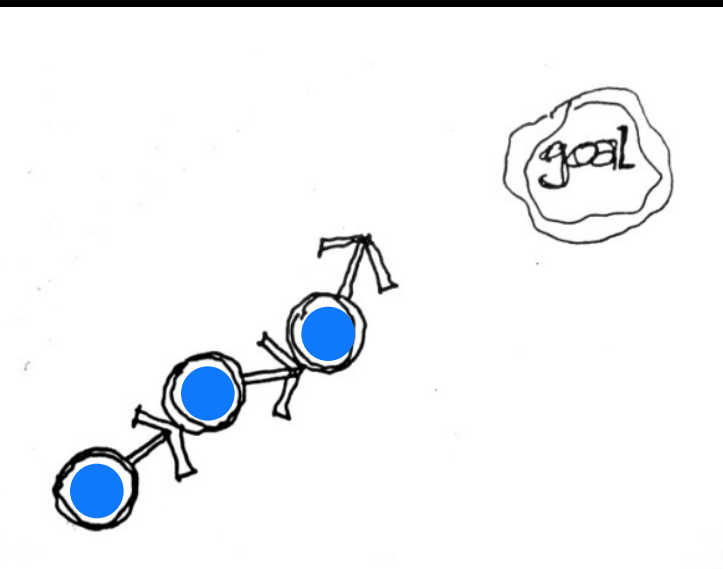


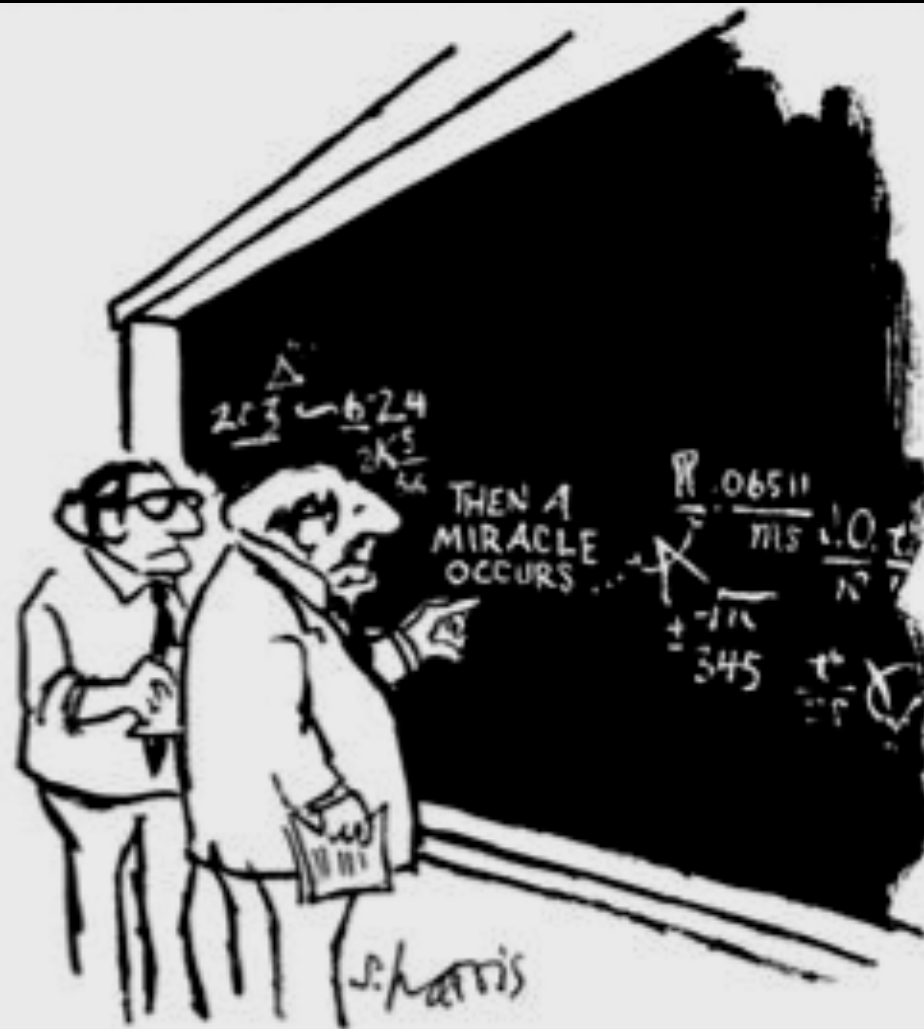


# The appeal of analysis



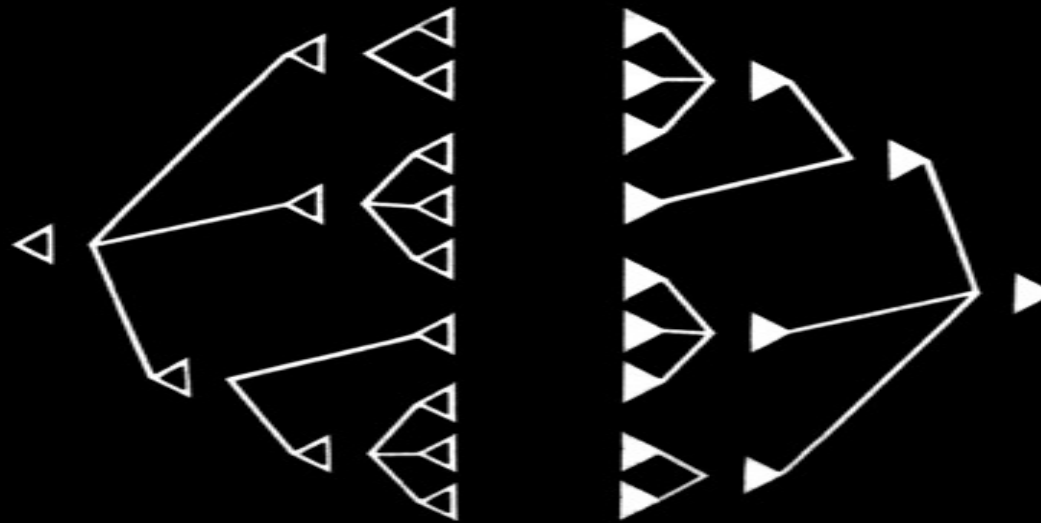
*Programmatic innovation is just as valuable as design innovation.*





"I think you should be more explicit here in step two."

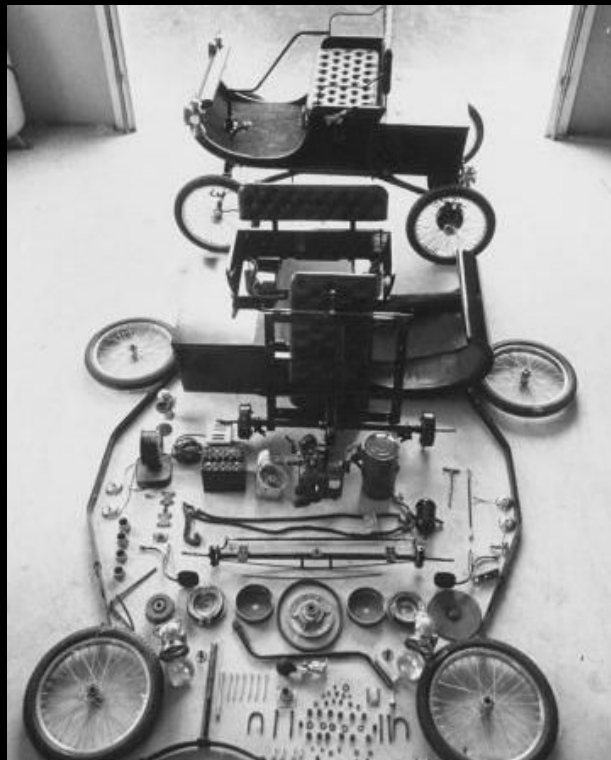
Problem

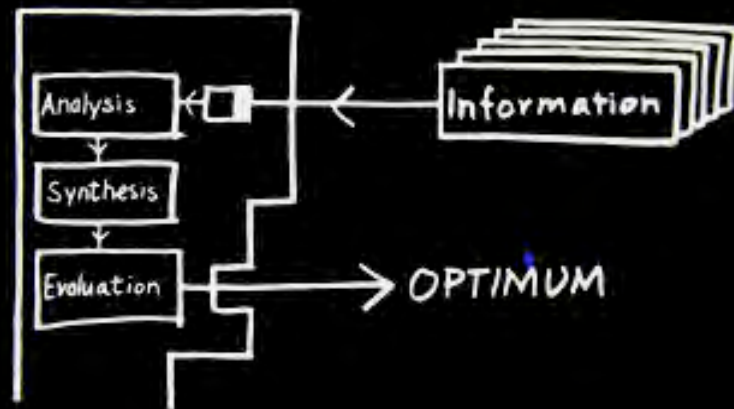
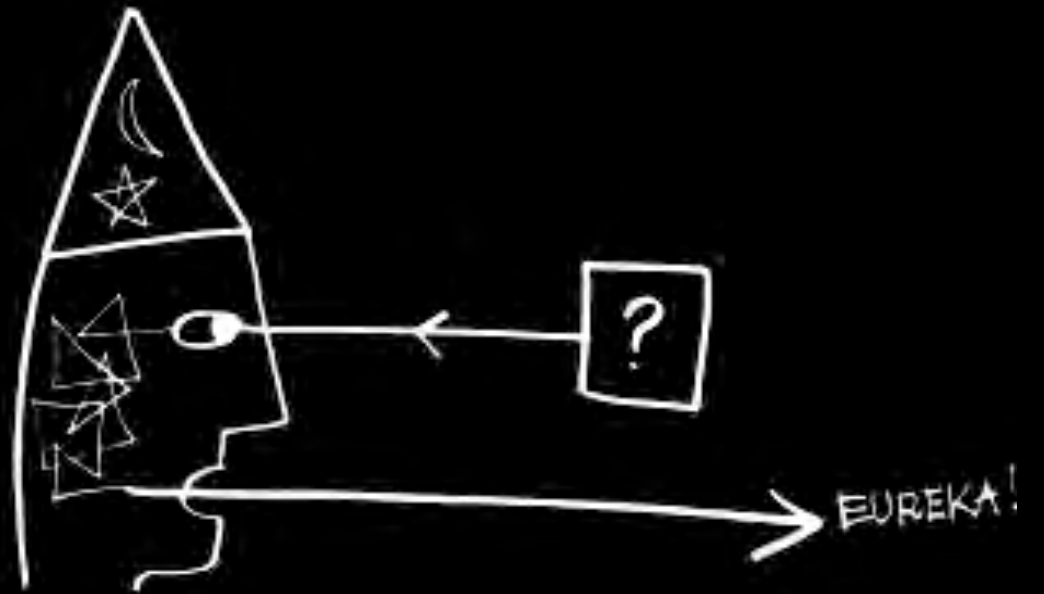


Solution

Analysis  
Objective

Synthesis  
Subjective



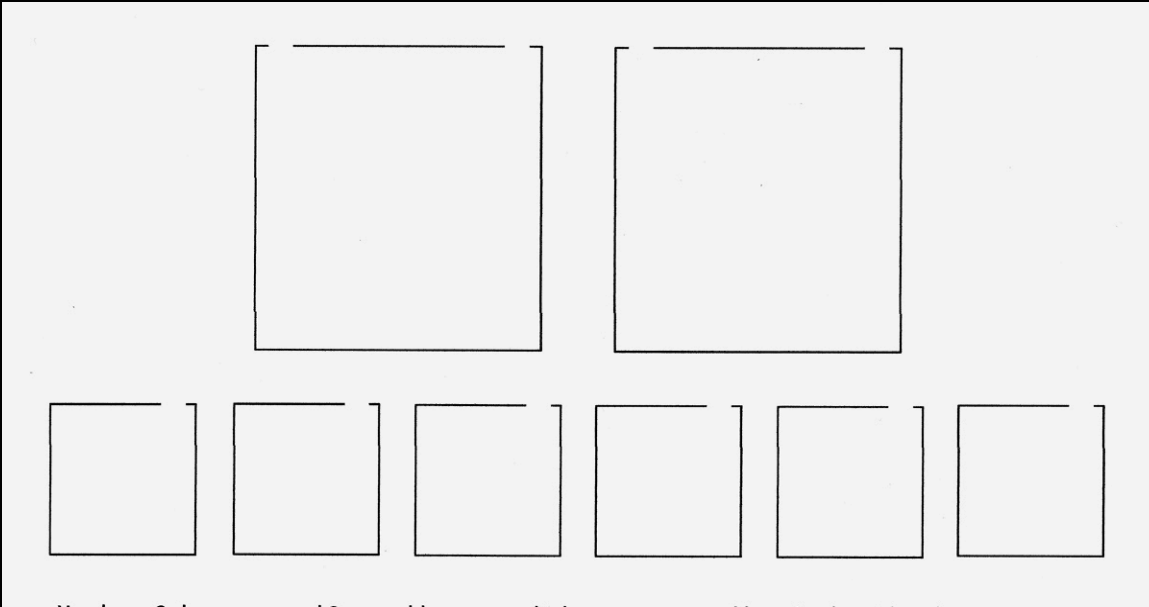


Design is a process that balances the **rational** and the **intuitive**.

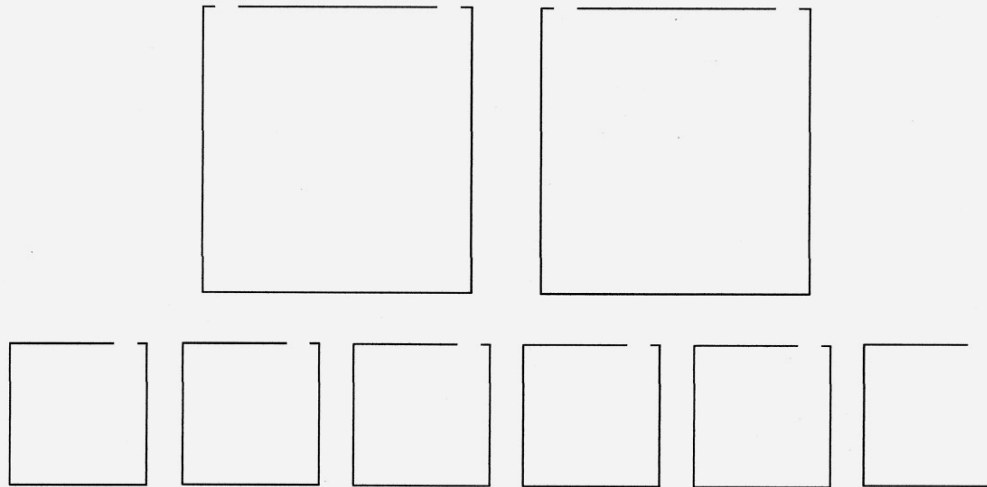


1. Design is a creative activity that involves bringing into being something new and useful. (Reswick)
2. Design is the use of scientific principles, technical information, and imagination to define a structure or system to perform pre-specified functions. (Fielden)
3. Design is simulating what we want to make before we make it. (Booker)
4. Design is making decisions in the face of uncertainty. (Asimov)
5. Design is the imaginative jump from present facts to future possibilities. (Page)
6. Design is a goal-directed problem-solving activity. (Archer)
7. Design is the process of finding a good fit between form and context. (Alexander)
8. Design is problem seeking. (Pena)
9. Design is the performance of a very complicated act of faith. (Jones)



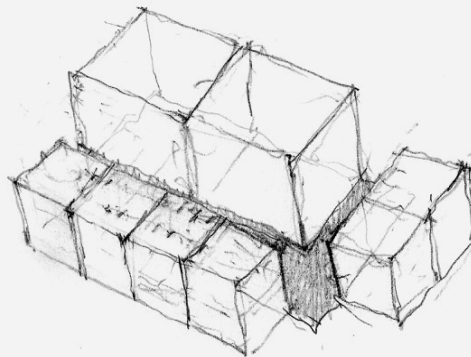


## Design Exercise

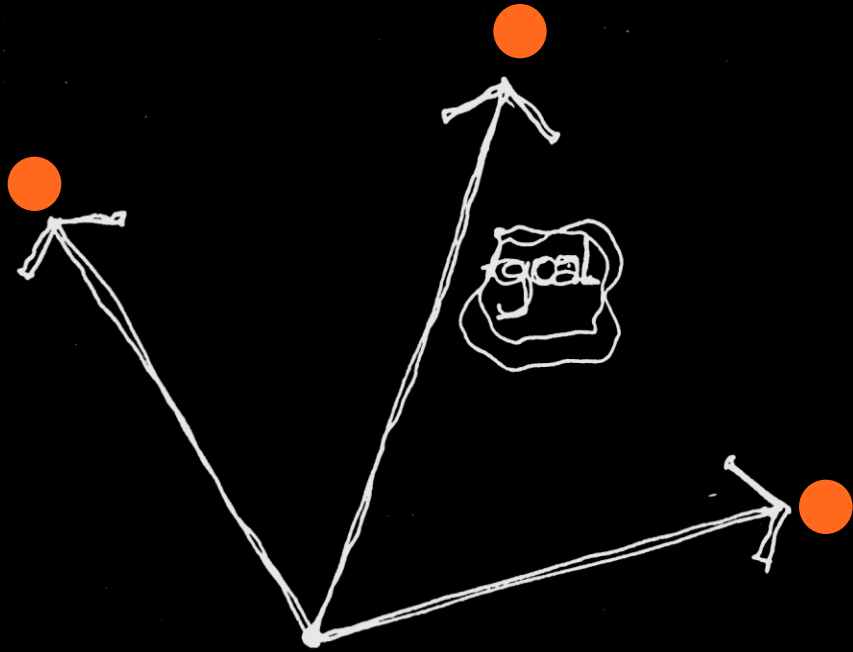


You have 6 classrooms and 2 assembly rooms, which are represented here in plan. The classrooms are all the same identical but may be mirrored. To keep it simple, they're all cubes. The assembly rooms twice as big in every dimension. No room is connected directly to another room, but solid walls may adjoin each other. Every room has an entrance that connects it to circulation space, which connects it to other rooms. Rooms must have one exposed ("exterior") wall.

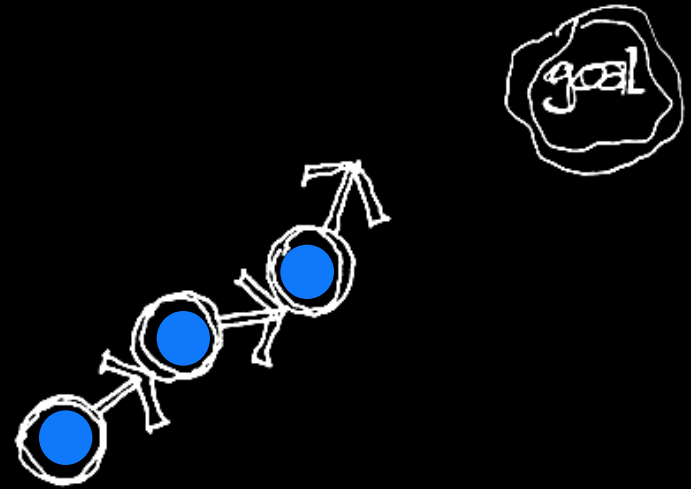
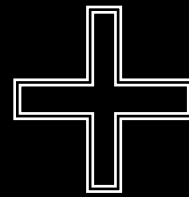
Your task is to arrange all the rooms (with circulation) into one three dimensional scheme. You must use all the rooms and they all have to be connected to each other through the circulation space. Your drawing below should show the arrangement in three dimensions.



- 1. **Generating alternatives:**  
How easily could you come up with different arrangements?
  
- 2. **Representing them:**  
Was drawing the alternatives easier or harder than imagining them? Did it slow you down?
  
- 3. **Evaluating them:**  
How easily could you select the best alternative?  
Could you quickly see the pros/cons, or was it more difficult than generating them?

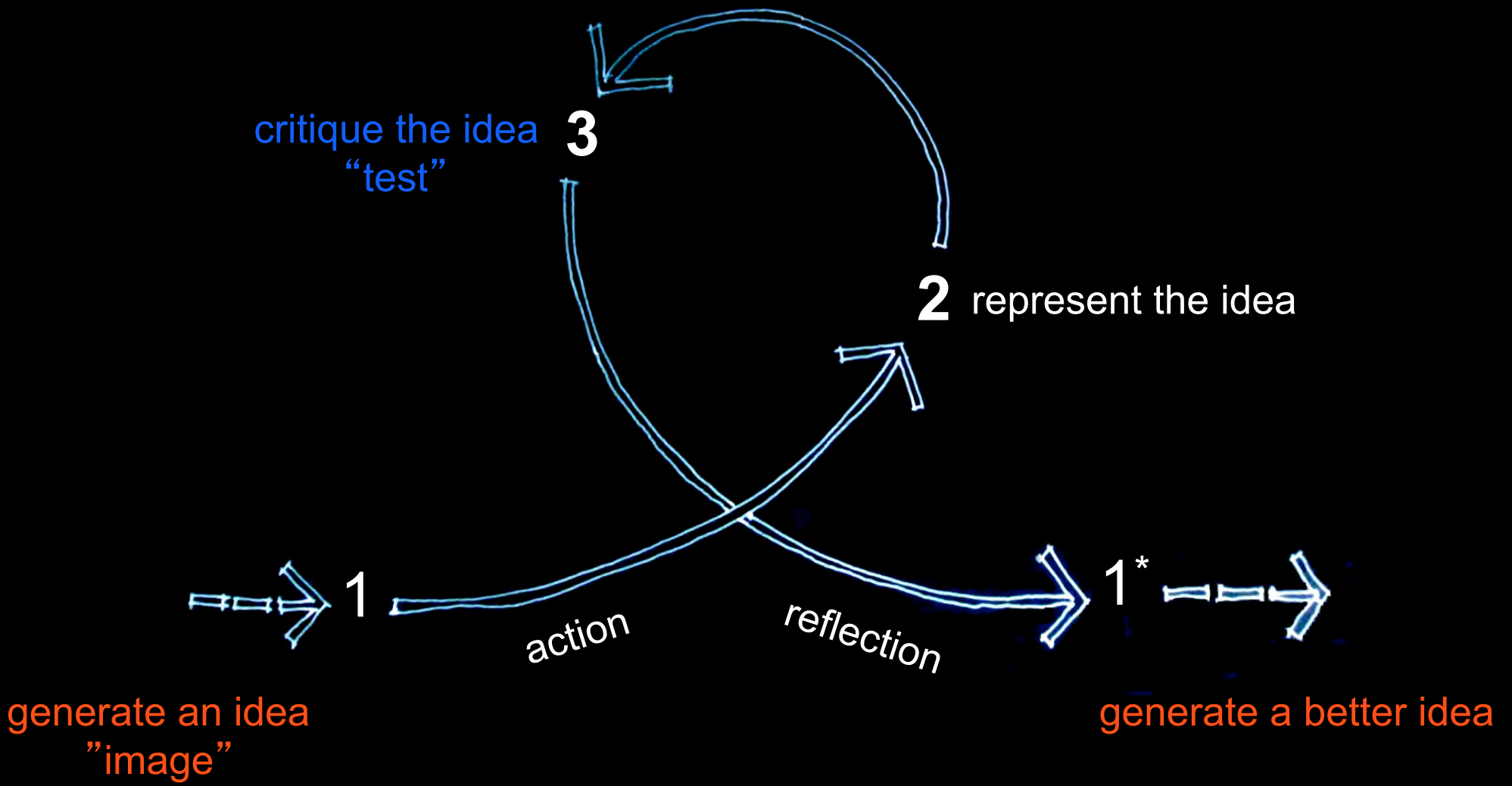


intuitive "black box"



rational "glass box"

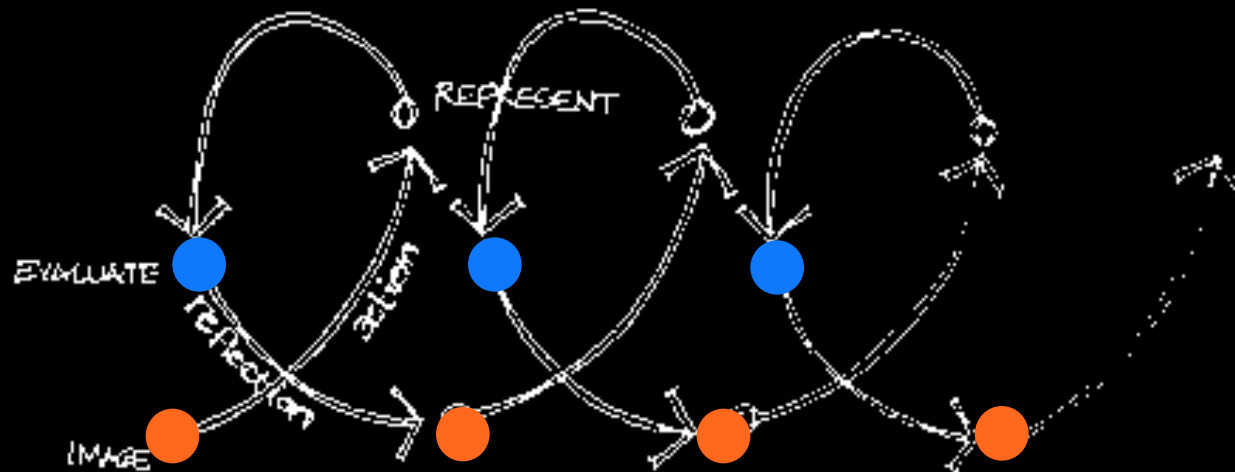
heuristic design model



# DIALECTIC:

**intuitive**

**rational**



- conjecture
- act
- concept

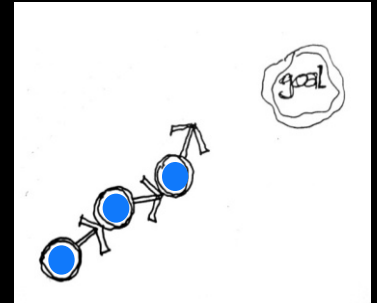
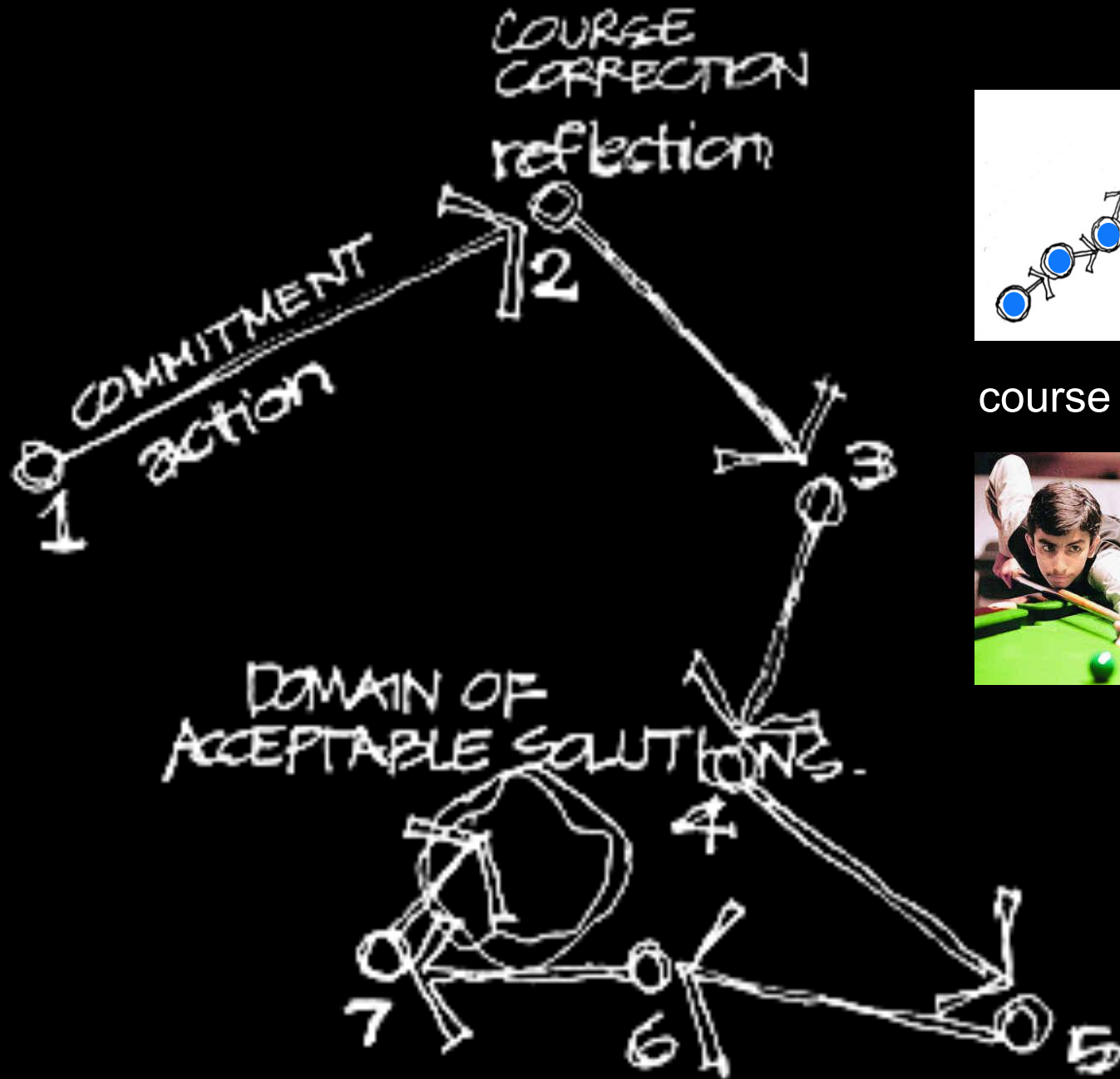
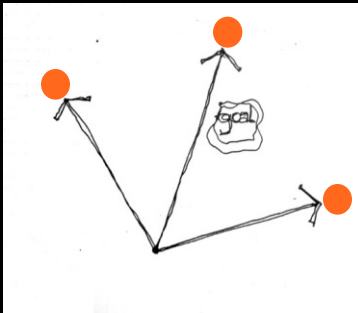
- refute
- reflect
- test

**propels**

**navigates**



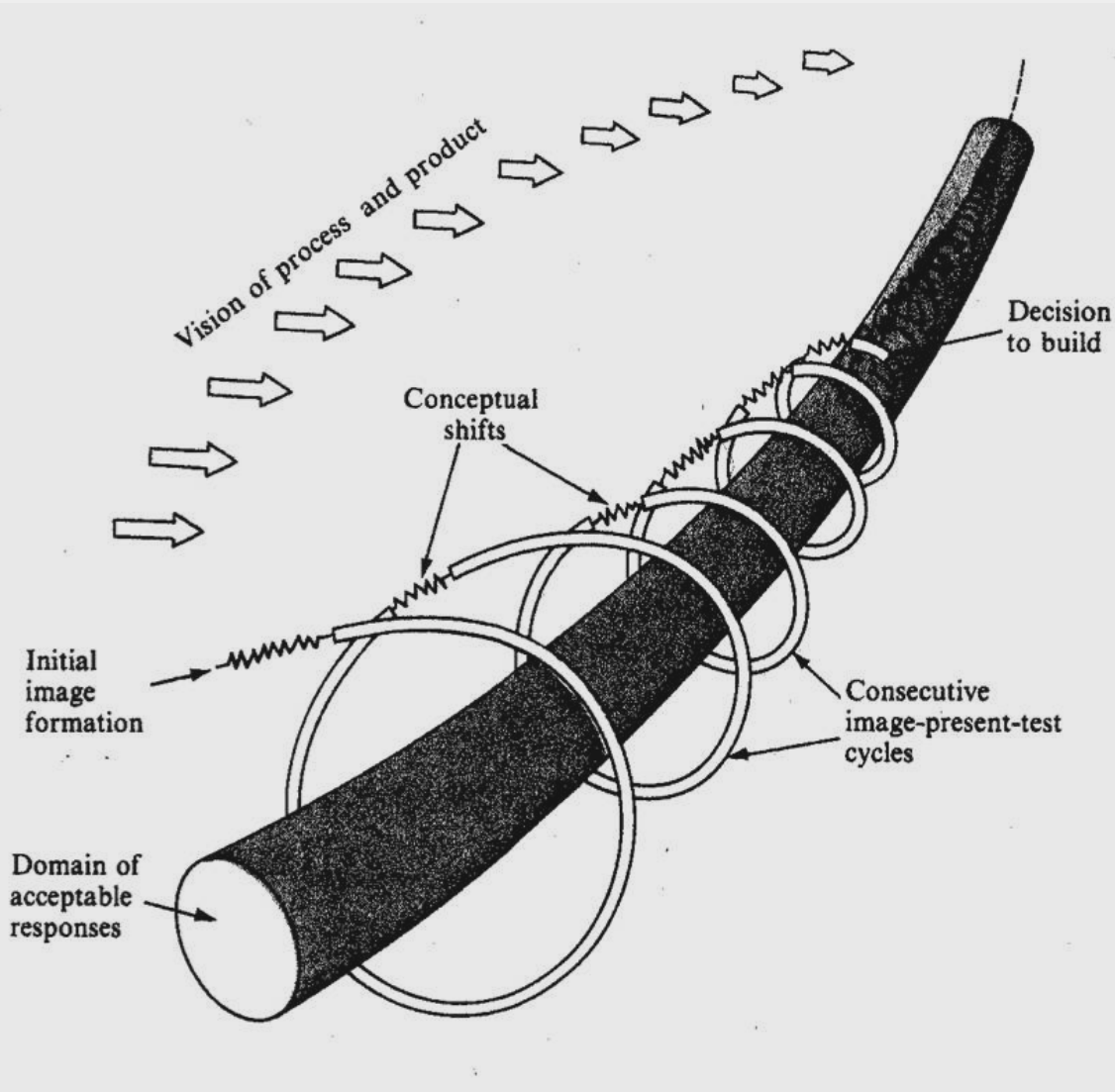
commitment  
action



course correction



# Heuristic model of design process:



sequence of successive approximations

- Designer acquires knowledge about both problem and solutions

process moves from whole solution to whole solution

- New knowledge defines new starting point for each cycle



## Some suggestions for your design process...

Recognize each of the three activities. Learn what each feels like.

- Generate lots of alternatives before you decide.
- Draw (or build) each idea so that you can respond to it—get it outside your head.
- Don't let your drawings get ahead of what you know—keep them open to possibilities.
- Change gears and evaluate: compare and select the “more promising”.

Watch out for interference: avoid critiquing what you're drawing and holding onto an idea you're evaluating.

Avoid focusing on only part of the cycle: imagining, representing, or analyzing. Keep the cycle moving.

Approach the project from different aspects, issues, scales, and viewpoints.

Complete as many cycles through the project as you can.



## Problems we encounter in design

I can't get started.

I get carried away with my idea.

I have too many good ideas--I don't know how to develop just one.

It's not perfect, but I can't figure out what's wrong.

Parts of it are perfect, but all together it just doesn't work.

I can see it in my mind and I can describe it, but I can't turn it into a building.

I'm stuck...again.

It would be a great project if I had more time.





Donald Schon's observations of the heuristic design process

Architects

- make “what if” decisions.
- look for implications.
- consider many domains.

