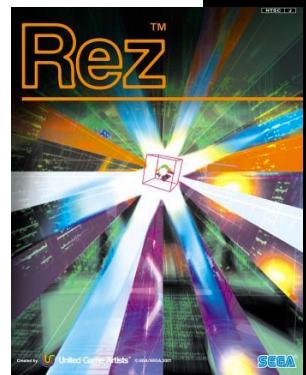


Interaction Design & Virtual Reality

Liwei chan 詹力韋
Assistant Prof.

2016.09.23

Rez 2001



Rez™

© UGA/SEGA, 2001

travelling
play
options
how to play

uchi

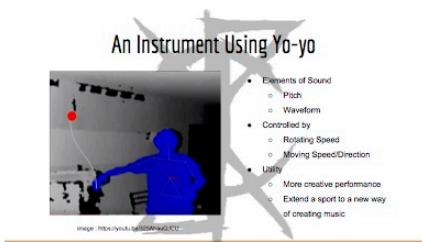
Rez VR 2016



Scientist
Engineer
Designer
Artist

The plenitude, Rich Gold.





team building

1. Identify 8 designers. Assign them to 8 teams.
2. For each team,
draw a person from the pool,
until each team reaches 3 person limit.
3. Done.

RANDOM.ORG

NCTU-ID-2016

liwei



CHANNELS (16)



#announcement

1 member | Company-wide announcements and work-based matters



Search

@ ⭐ :

#announcements

You created this channel
#announcement channel
announcements. All team

+ Add an app or custom integ



<https://nctu-id-2016.slack.com/>

renamed the channel from "general" to "announcement"

team/project management tool



About #announcement

Channel Details

Purpose

This channel is for team-wide communication and announcements. All team members are in this channel.

Created by you on September 20th

Pinned Items

1/1 Member

Shared Files

Notification Preferences

NCTU-ID-2016 

liwei

CHANNELS (16) 

- # announcement
- # c0913-course-intro
- # c0920-personal-propos
- # proj-1-360-media
- # proj-2-haptic-media
- # team-1-no-name
- # team-2-no-name
- # team-3-no-name
- # team-4-no-name
- # team-5-no-name
- # team-6-no-name
- # team-7-no-name
- # team-8-no-name
- # test-playground

DIRECT MESSAGES (2) 

- slackbot
- liwei (you)

+ Invite people

slack

#announcement This course

1 member | Company-wide announcements and work-based matters

   | @ ⭐ :

slide and related materials

You created this channel on September 20th. This is the very beginning of the #announcement channel. Purpose: *This channel is for team-wide communication and announcements. All team members are in this channel.* ([edit](#))

+ Add an app or custom integration  [Invite people to NCTU-ID-2016](#)

September 20th

 liwei 12:39 PM joined #announcement

 liwei 12:45 PM Hi. We are going to use Slack as management tool for maintaining projects happened in this course. Welcome to the course page. Let's start to explore.

Today new messages 

 liwei 7:28 PM renamed the channel from "general" to "announcement"

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September 20th

 liwei 12:39 PM any materials produced by teams. E.g., presentation.

 liwei 12:45 PM Hi. We are going to use Slack as management tool for maintaining projects happened in this course. Welcome to the course page. Let's start to explore.

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slack 

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   | @ ⭐ :

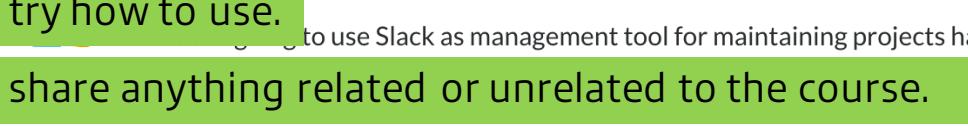
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+ Add an app or custom integration  [Invite people to NCTU-ID-2016](#)

September 20th

 liwei 12:39 PM joined #announcement

try how to use.  share anything related or unrelated to the course.

Today new messages 

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 1/1 Member

 Shared Files

 Notification Preferences

actions

1. Sign-up slack, and send me an request with your slack account to be invited to the course-team.
2. Login and input basic info of your teammates (e.g., at least names) in one of #team-#-no-name
3. Feel free to add name to your team. And feel free to change it anytime, but keep "#team-#" unchanged.
4. Upload a **team photo** as the commitment of team-building. (by next-Friday lecture)

**this
course**

this course

Interaction Design

- Iterative Design Process
- Sketching / Visual Design
- Lo/Hi-Fi Prototyping
- Ramesh's Invention Box

HCI Topics

- Touch/Tangible/Body UI
- Muscle IO (invited speaker)
- Goods and Bads in Virtual Reality

Tools

- Arduino
- Unity and its friends
- HMD-related toys

Term project

- Proposal
- Proposal Revised
- Final w/ Demo

this course

Interaction Design

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- Sketching / Visual Design
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Term project

- Project 1 – 360 media
- Project 2 – haptic media
- Project Final
- Final Presentation/ Demo

Project One



360 media

Project Two

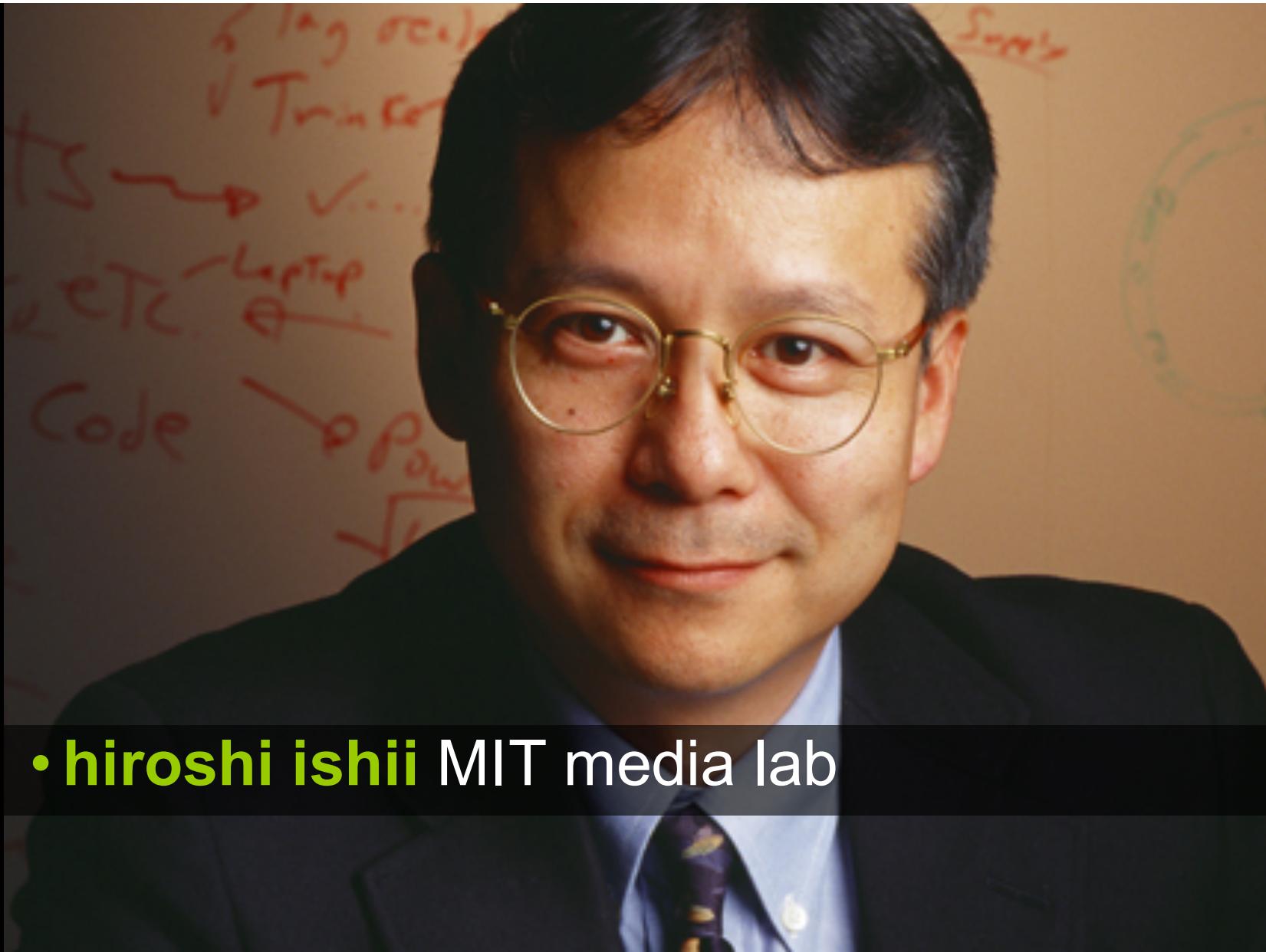


Haptic media

Project **Final**

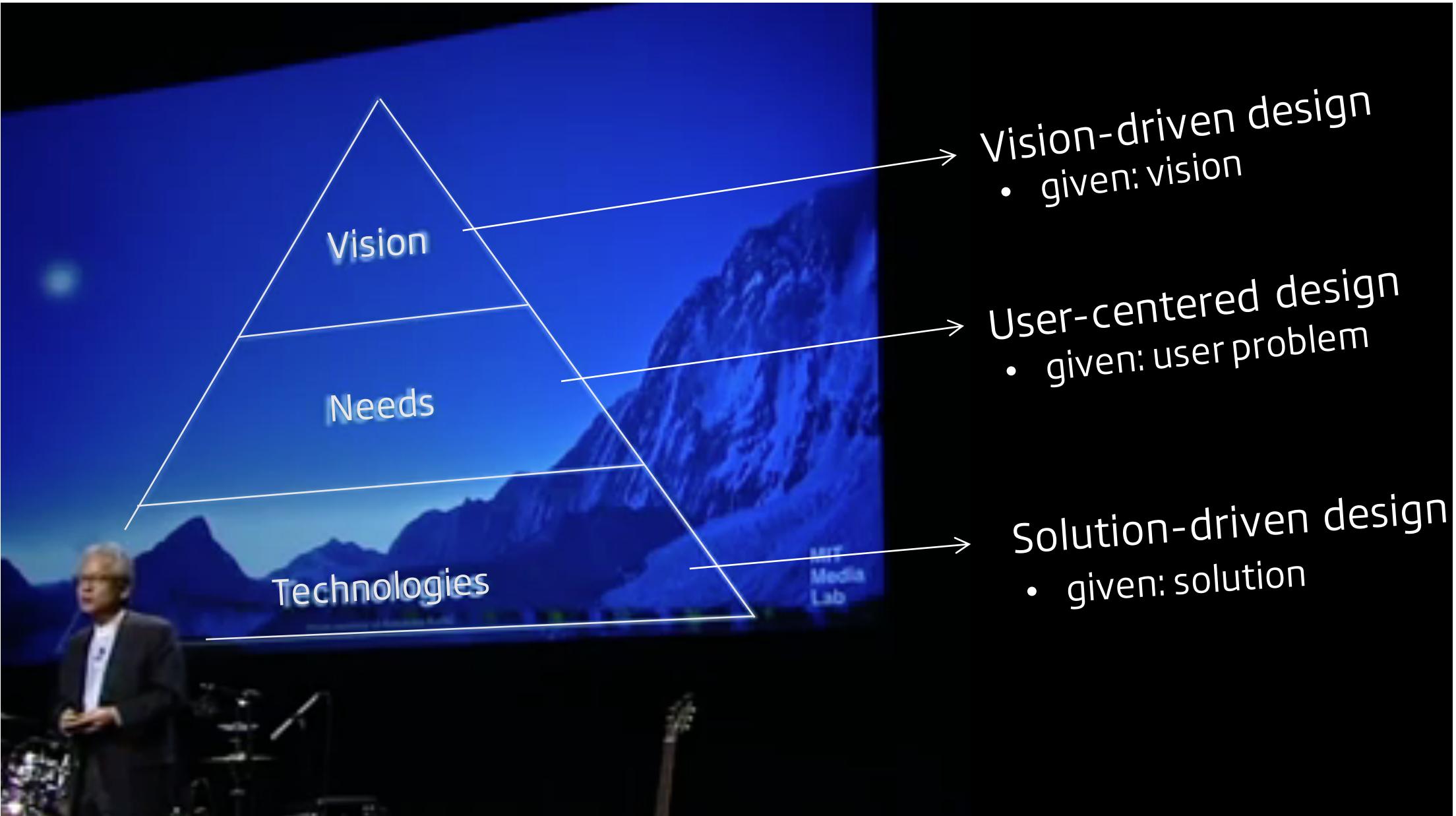


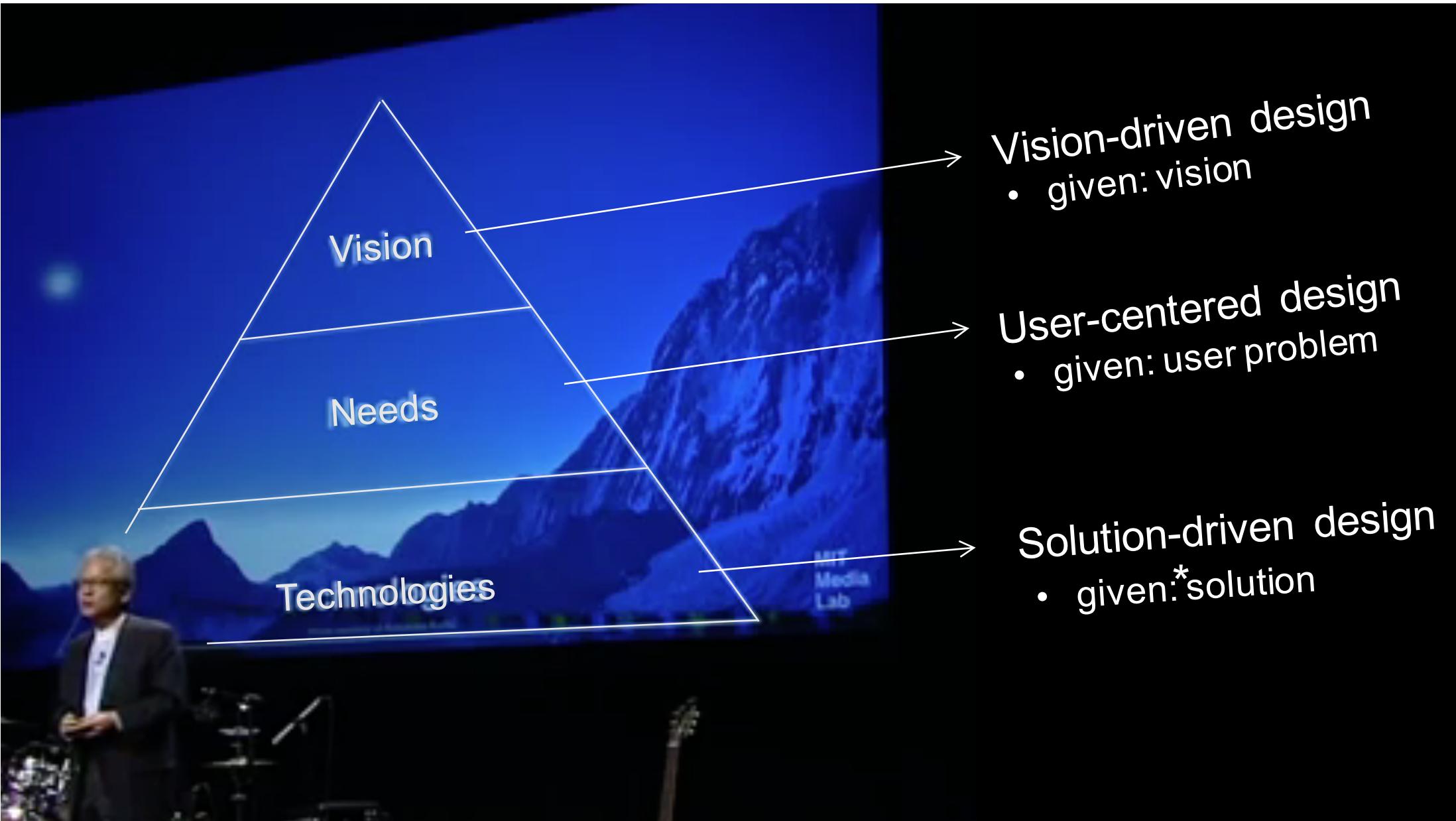
Your Tool

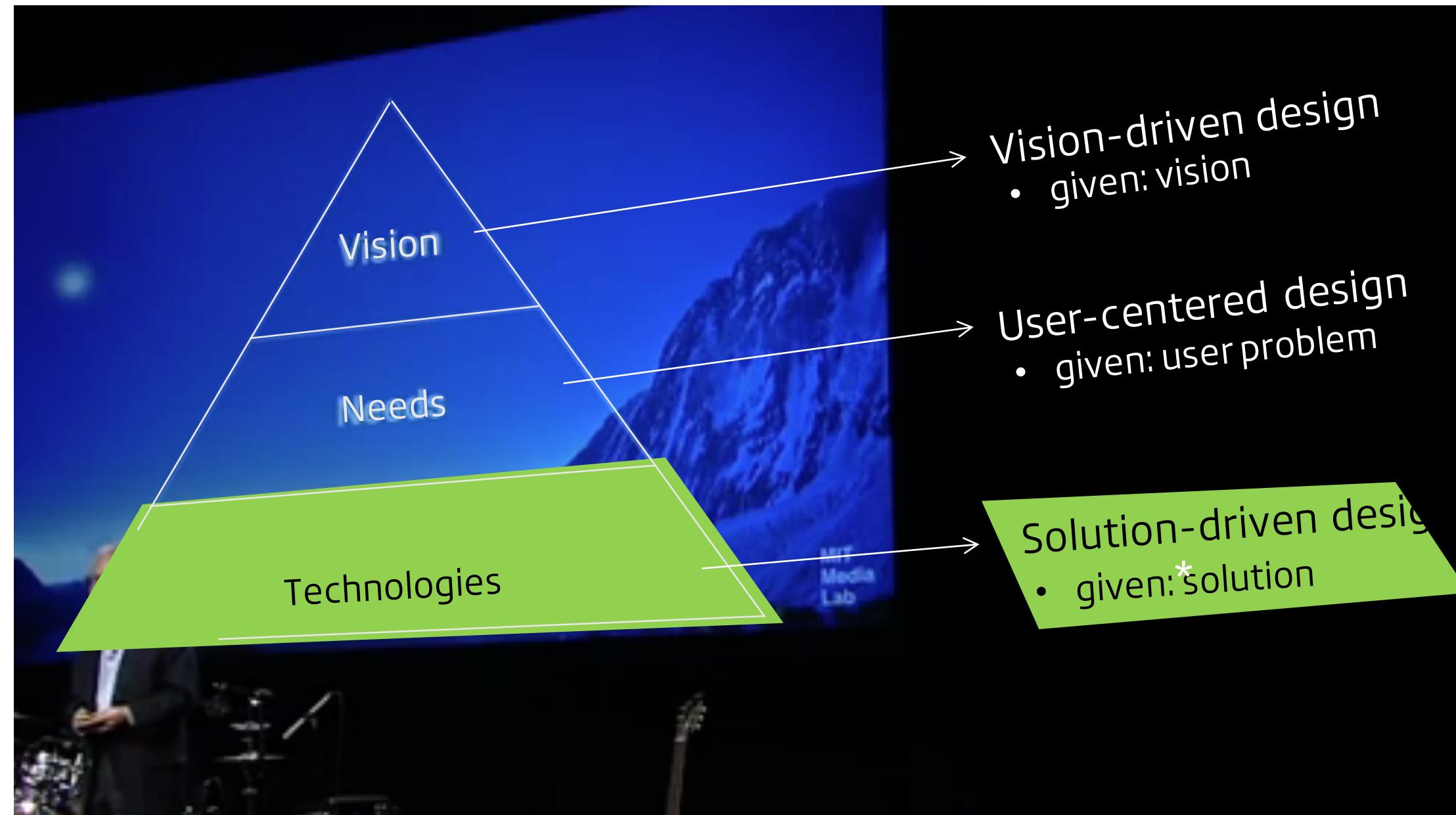


• **hiroshi ishii** MIT media lab











**solution-driven design &
user-centered design**

**solution &
problem**

“ this is just a solution
looking for problem... ”



>>conclusion

as long as it looks good
... looks like problem-driven design

no one really cares
how you reach there.

>>conclusion

“ this is just a solution
looking for problem... ”



i>>a solution
looking for
a problem<<

•a practical guide to invention

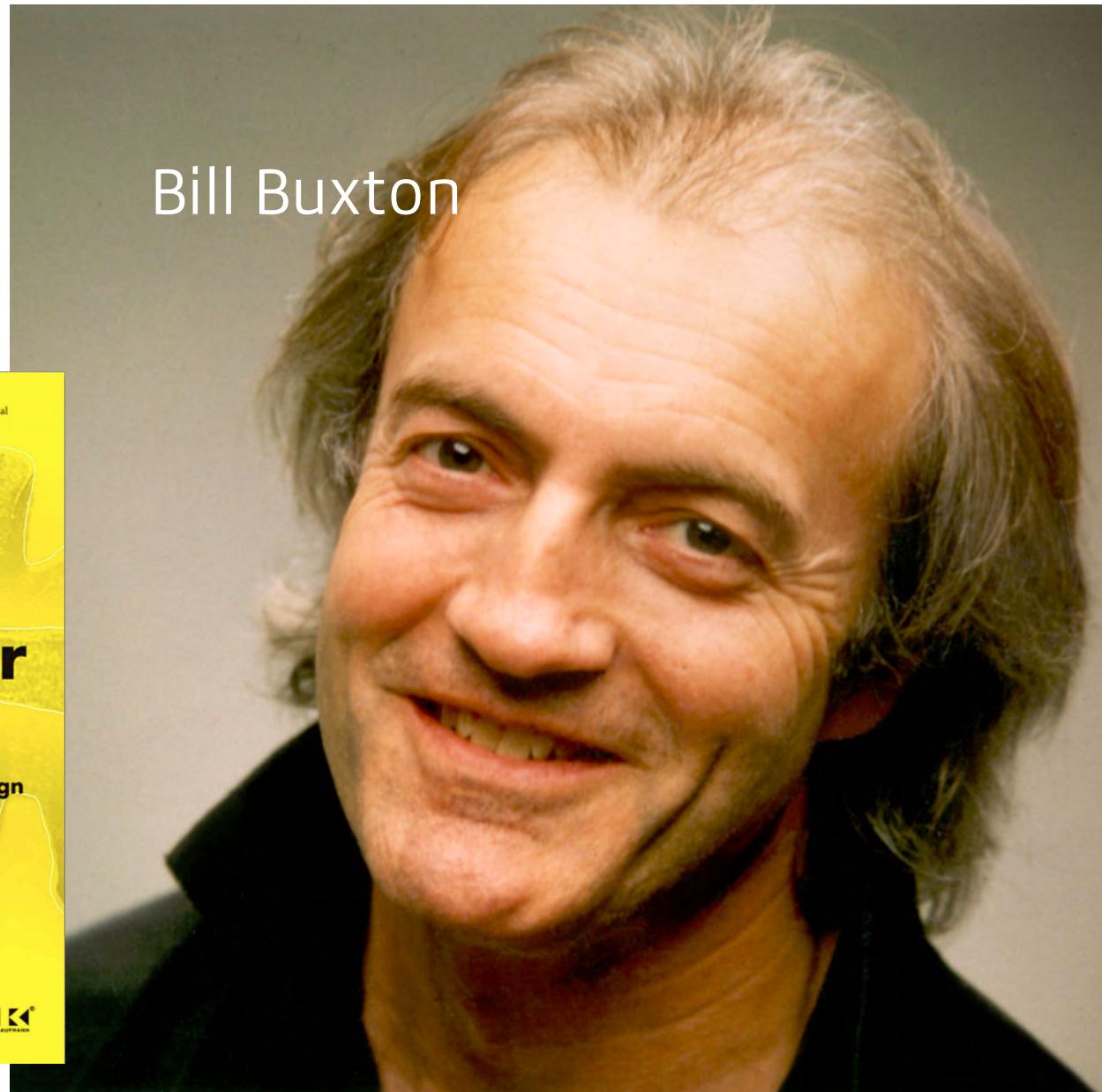
let's start with...

design process

:: a process to
approximate good
problems and solutions



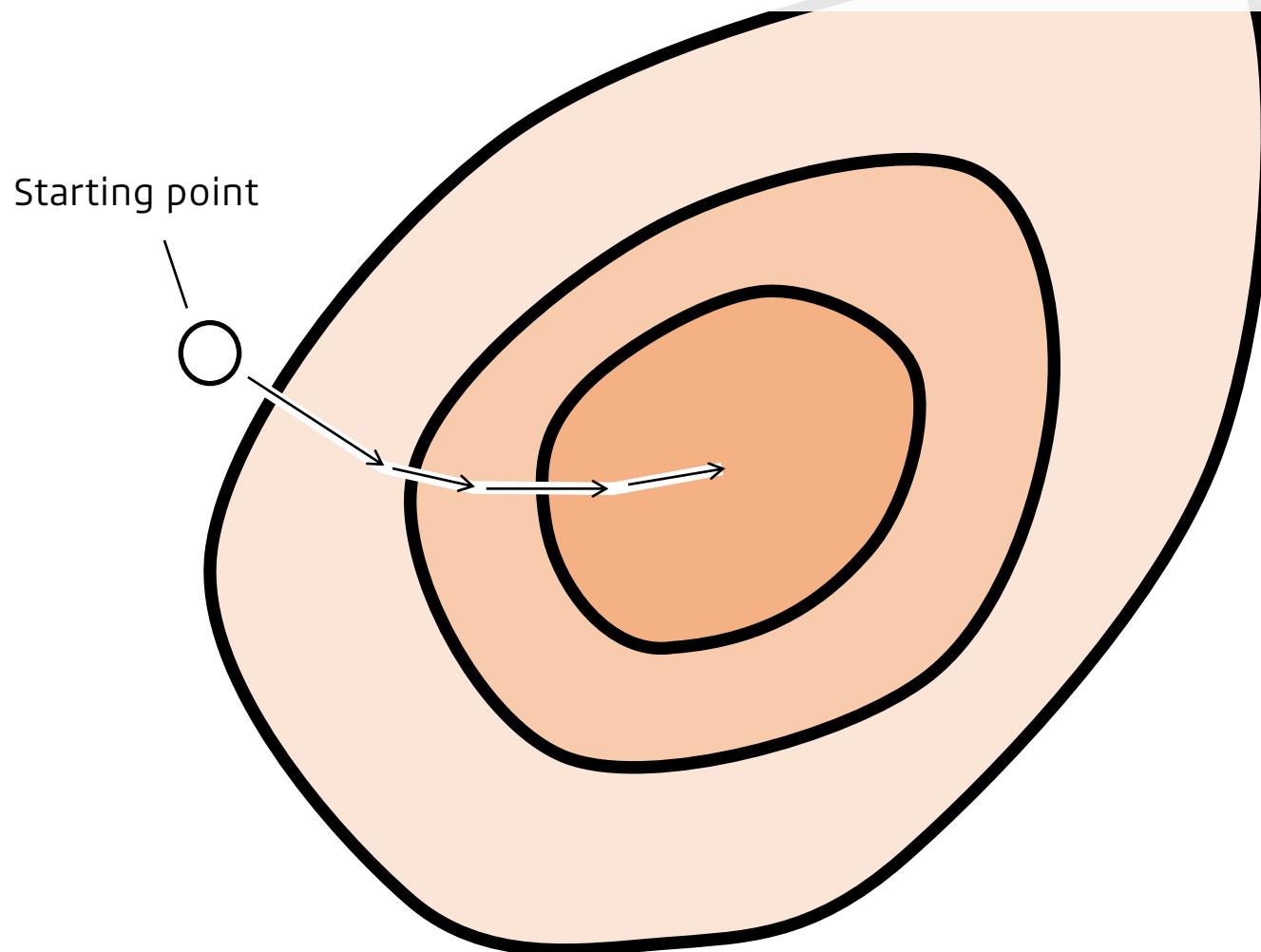
Bill Buxton



if you are familiar with gradient descent,
you are very close to design process

design process
:= gradient descent

in an optimization problem, Gradient Descent is used to find the maximal value through iterations



similar to Gradient Descent, **Design Process** approaches the optimal design through iterations.

- (1) given a design (problem)
- (2) iterative k times

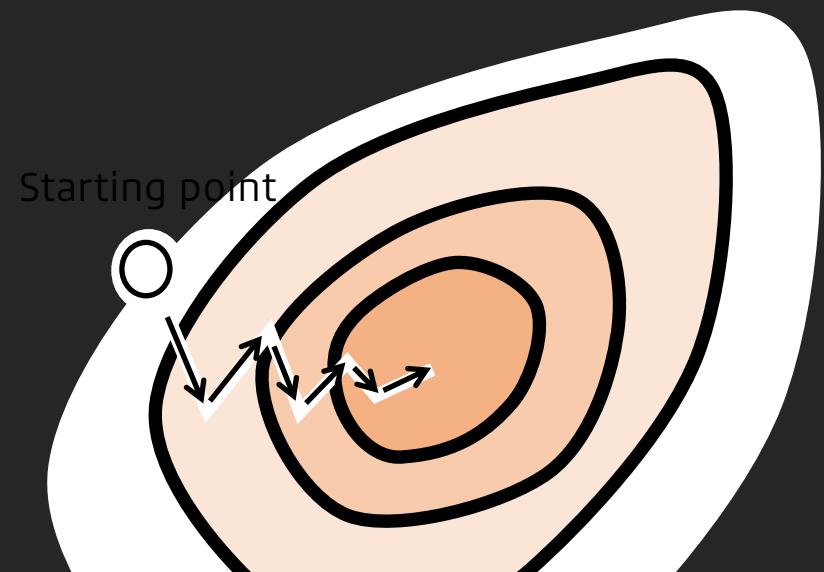
Starting point

this zigzag path is from unpredictable nature in design process

what's wrong here?

similar to Gradient Descent, **Design Process** approaches the optimal design through iterations.

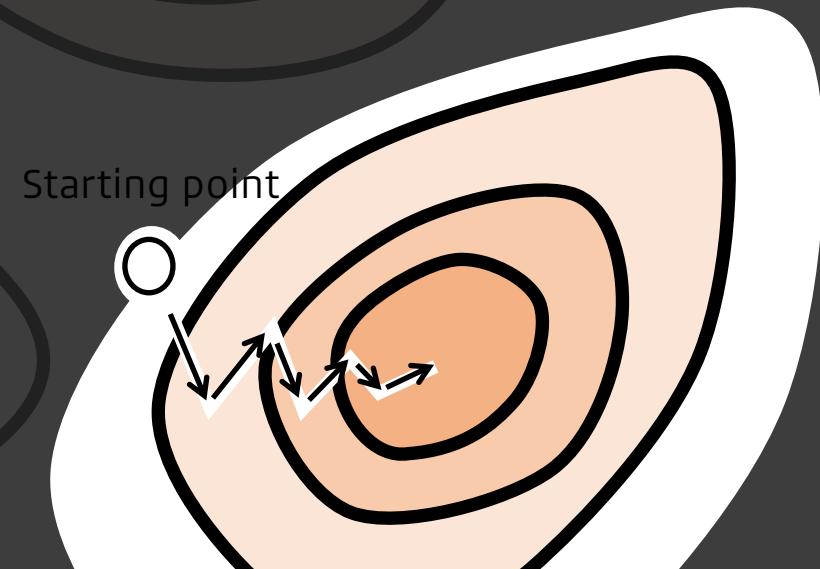
- (1) given a design
- (2) iterative k times



similar to Gradient Descent, Design Process approaches the optimal design through iterations.

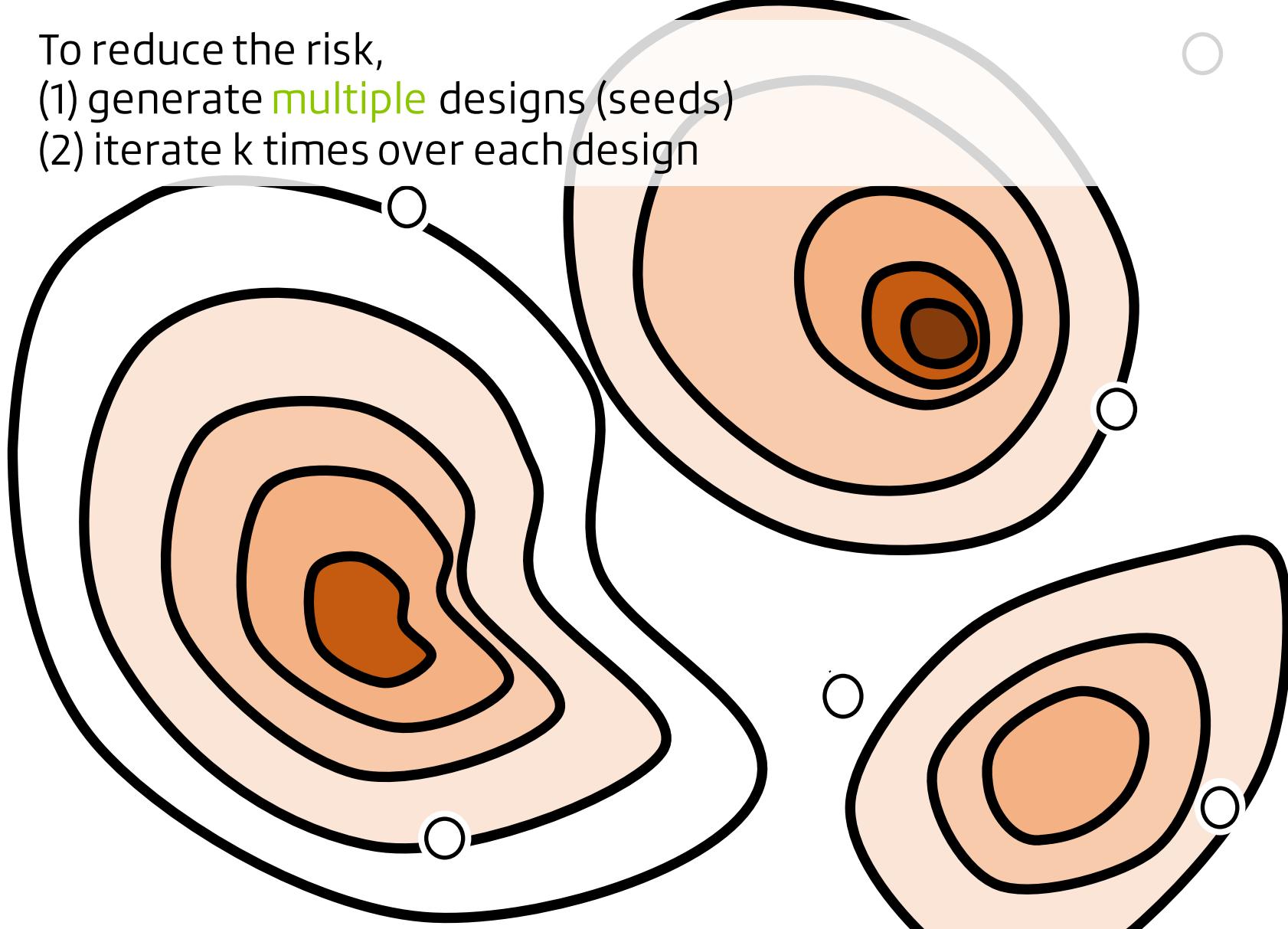
- (1) given a design
- (2) iterative k times

→ FAIL if the iteration starts with a small hill



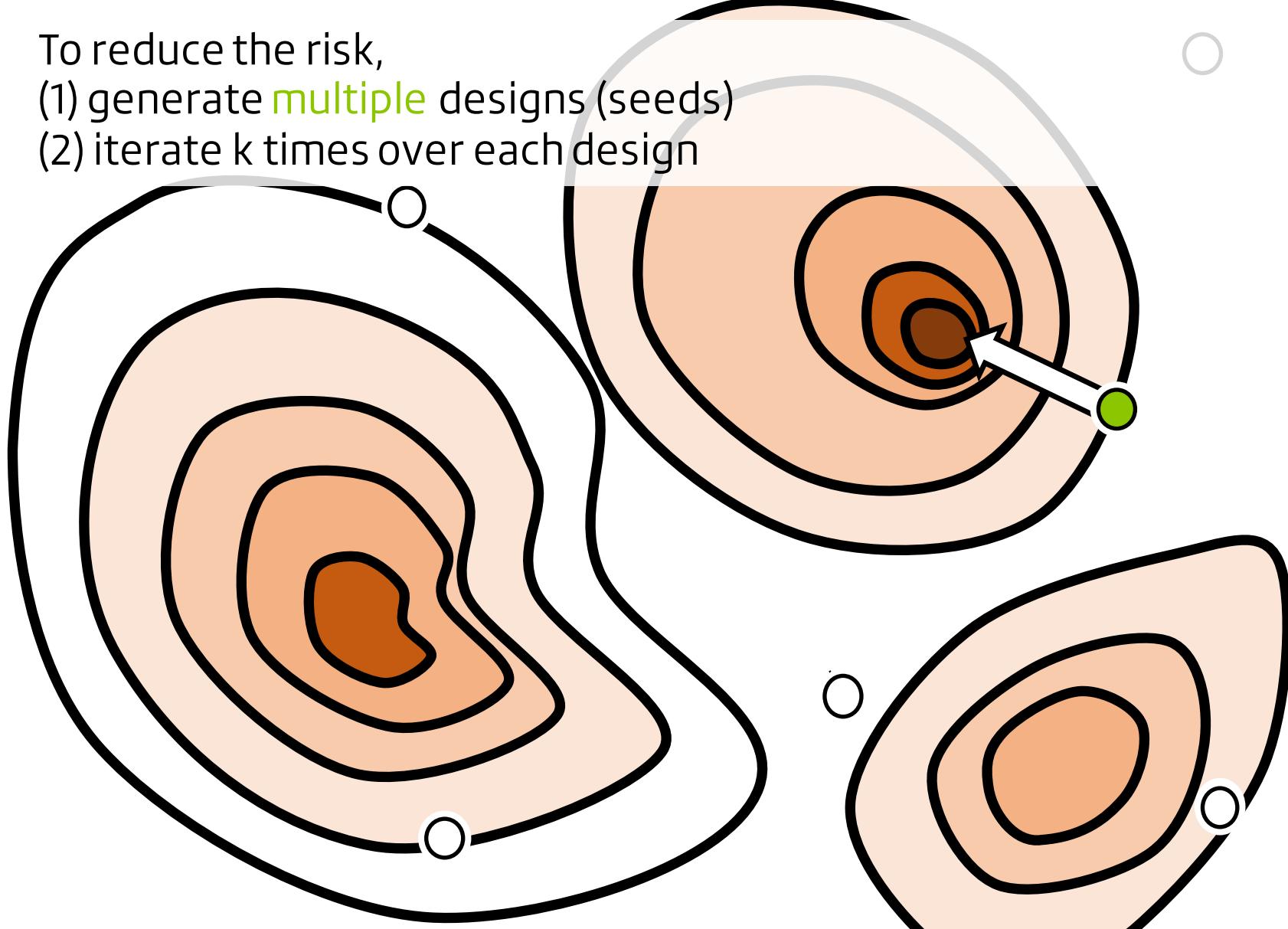
To reduce the risk,

- (1) generate **multiple** designs (seeds)
- (2) iterate k times over each design



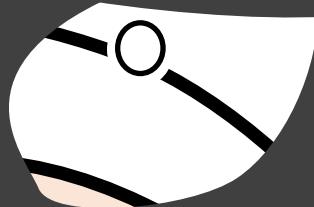
To reduce the risk,

- (1) generate **multiple** designs (seeds)
- (2) iterate k times over each design



To reduce the risk

- (1) generate multiple designs (seeds)
- (2) iterate k times over each design



let's say we generate n designs (seeds),
→ there will be $[n \times k]$ iterations.

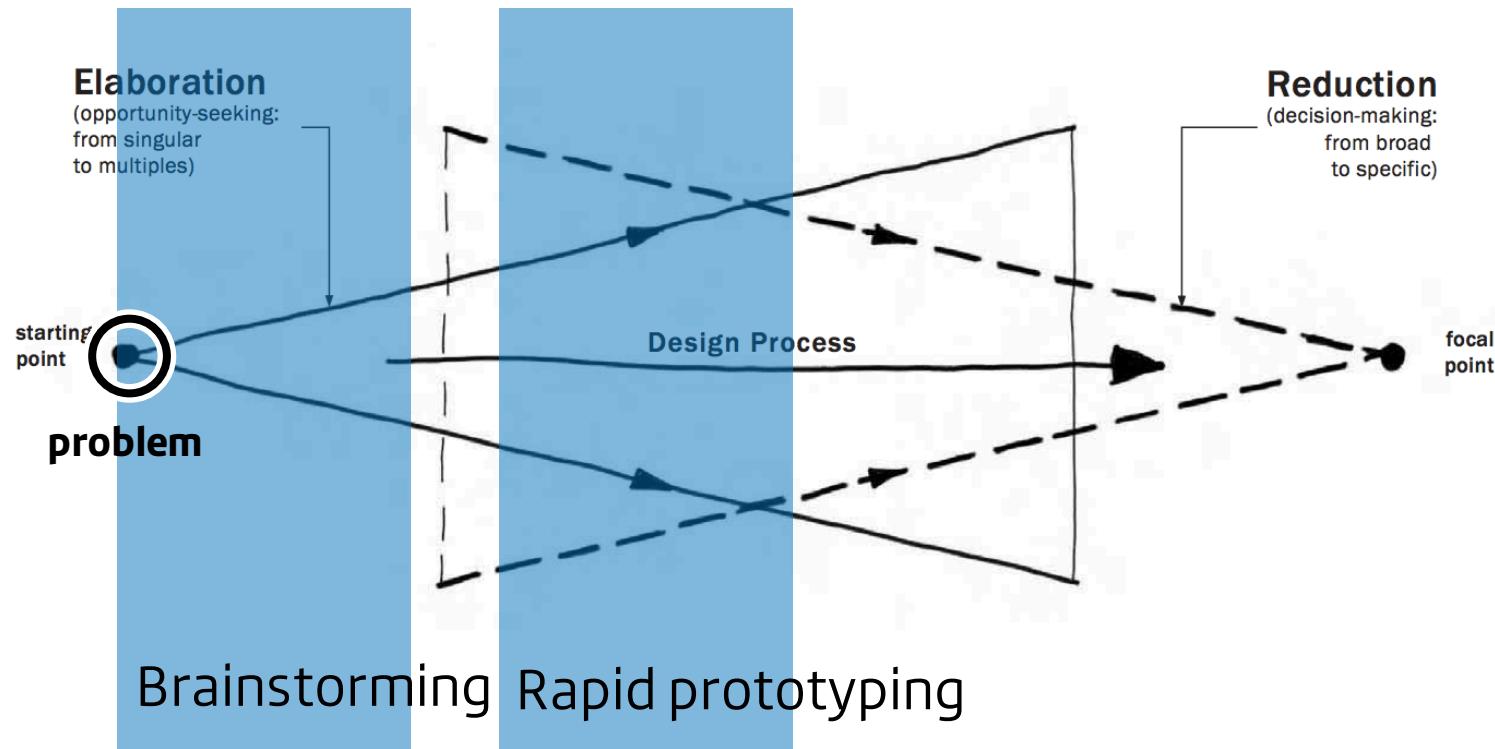
the key is to iterative very FAST.

Brainstorming
& Sketching

Rapid Prototyping

design process

:= an act of *elaboration* and *reduction* of design alternatives for the purpose of optimization



When to use design process?

**when to use
design process?**

when you have a problem...

When to use design process?

when you have a problem...

take Stanley (張永儒)'s lecture on
User-Centered Design

problem>>solution

what if we don't have problems...

> find someone
who can give you a problem.

:: what if the problem is...

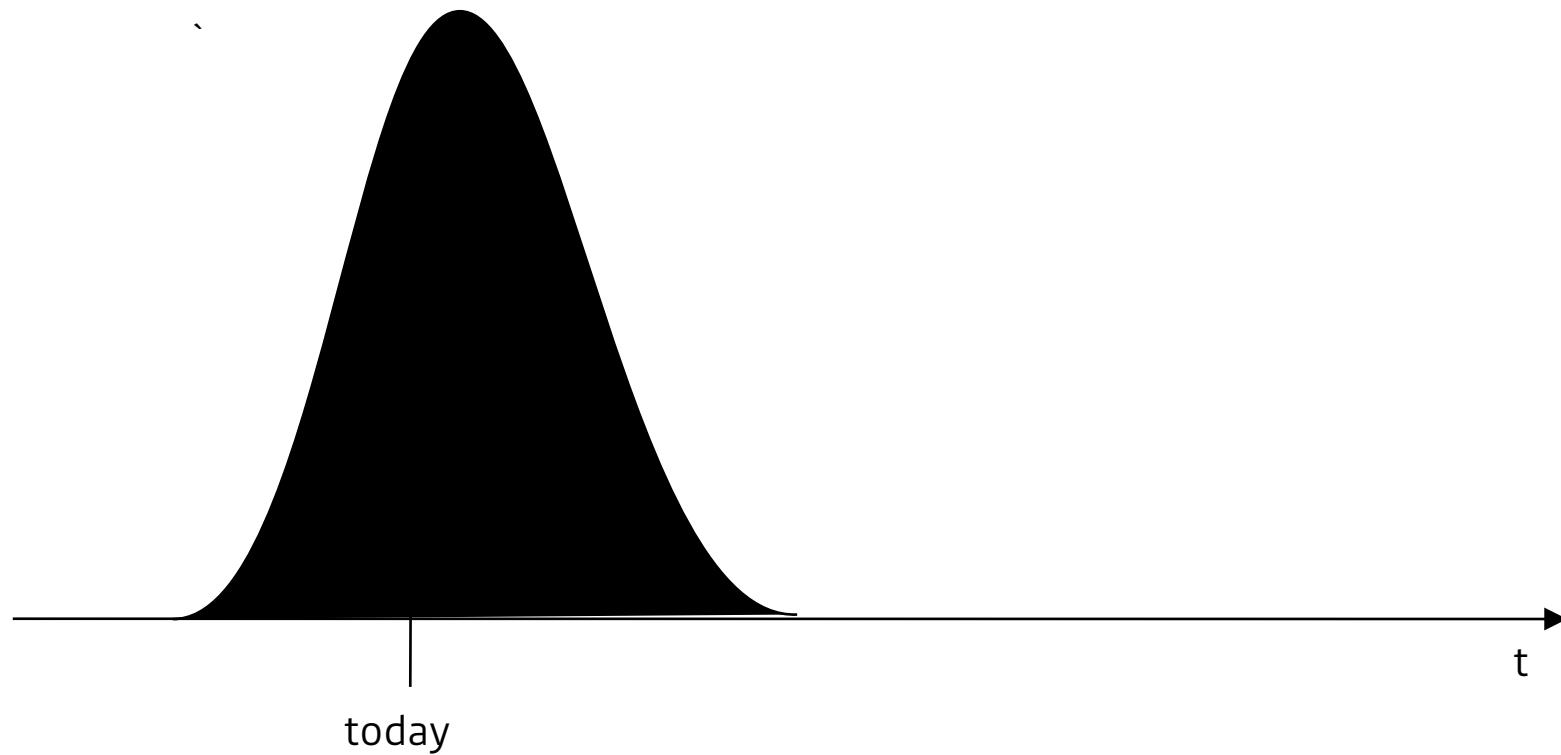
discouraging.

ok...

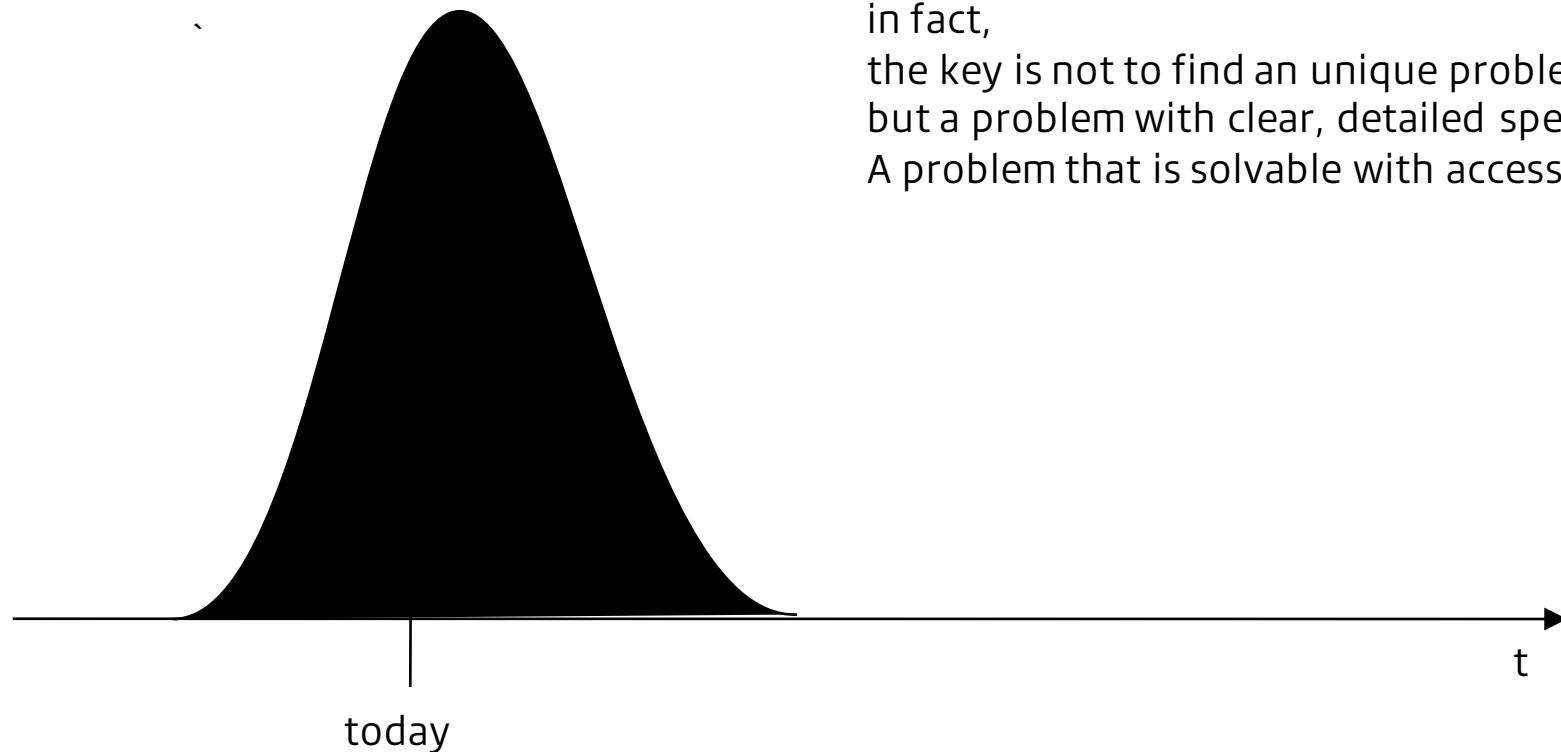
let's find an unique problem.

this is hard. why?

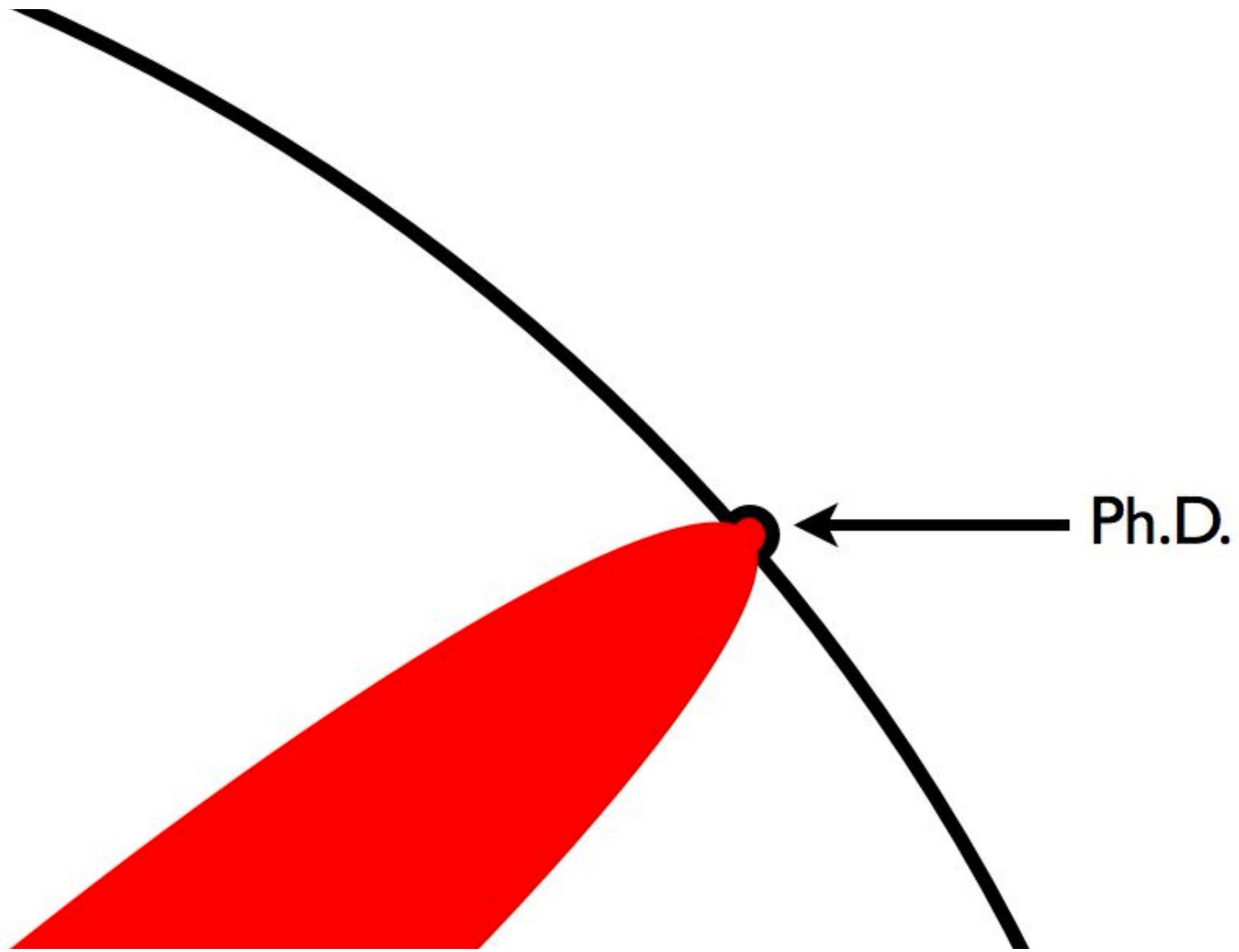
Problem space is traversable..
And in my opinion.. It is only traversable.



Problem space is traversable..
And in my opinion.. It is only traversable.



in fact,
the key is not to find an unique problem.
but a problem with clear, detailed specification.
A problem that is solvable with accessible solutions.



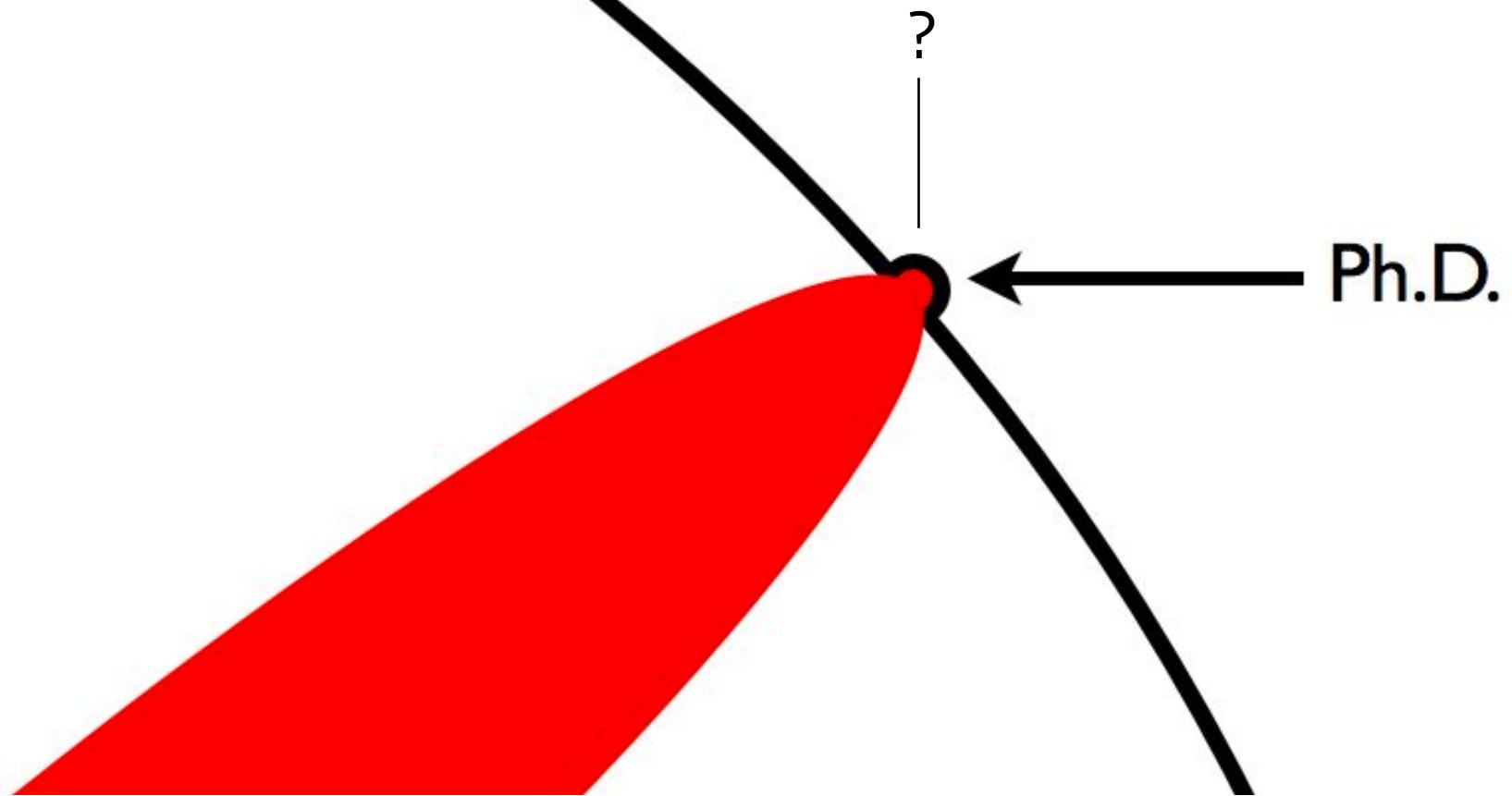
Ph.D.

Virtual Reality

Haptic

zoom-in

*Haptic
in Virtual Reality*



let's find an **unique** solution.

this is damn easy.



DEMO

:: create 5 *unique solutions in the lecture

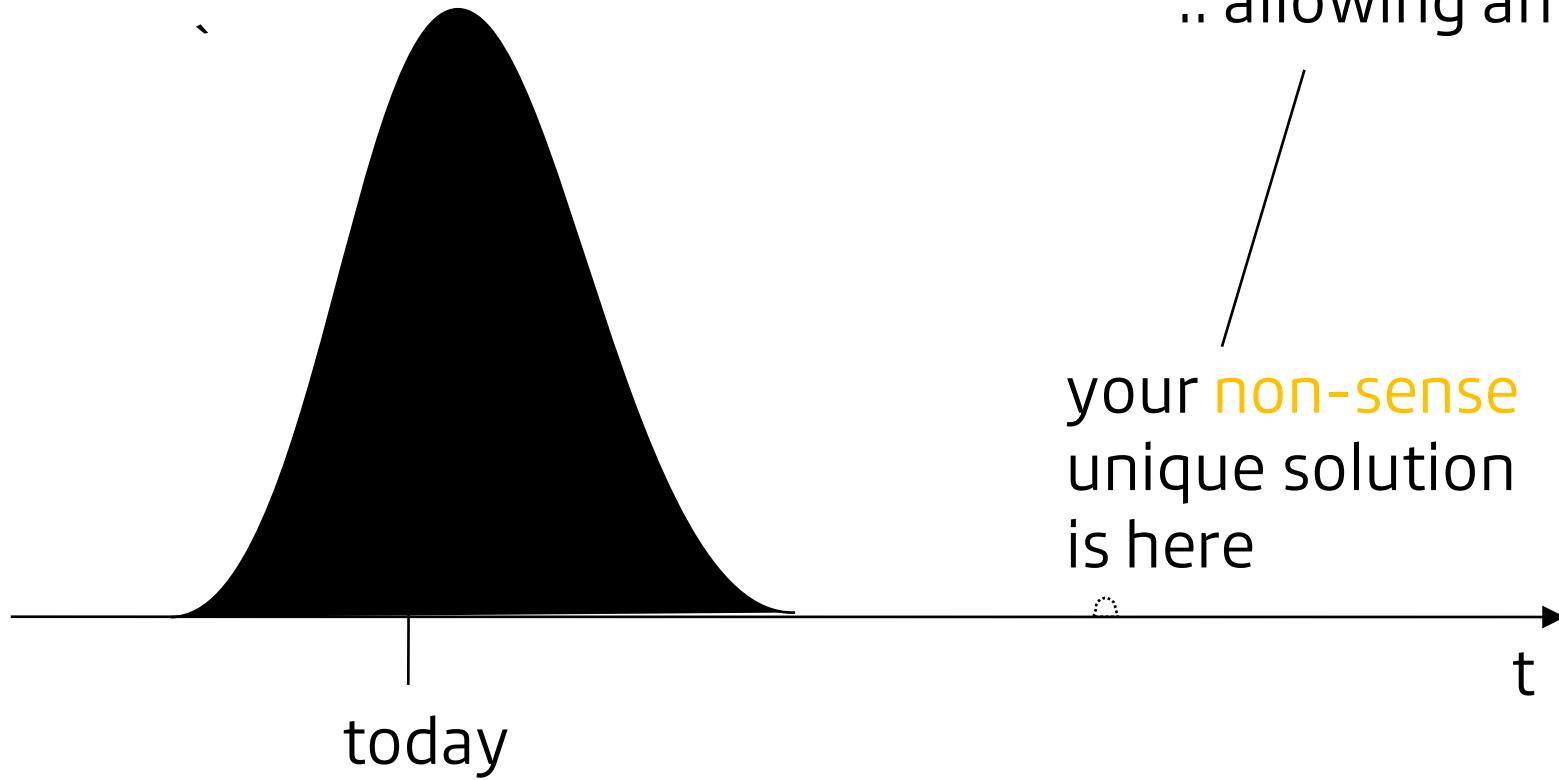
Solutions without corresponding problems...
are they still *solutions?

hmm...
hmm...
hmm...

my philosophy::
every solution has its own problem.

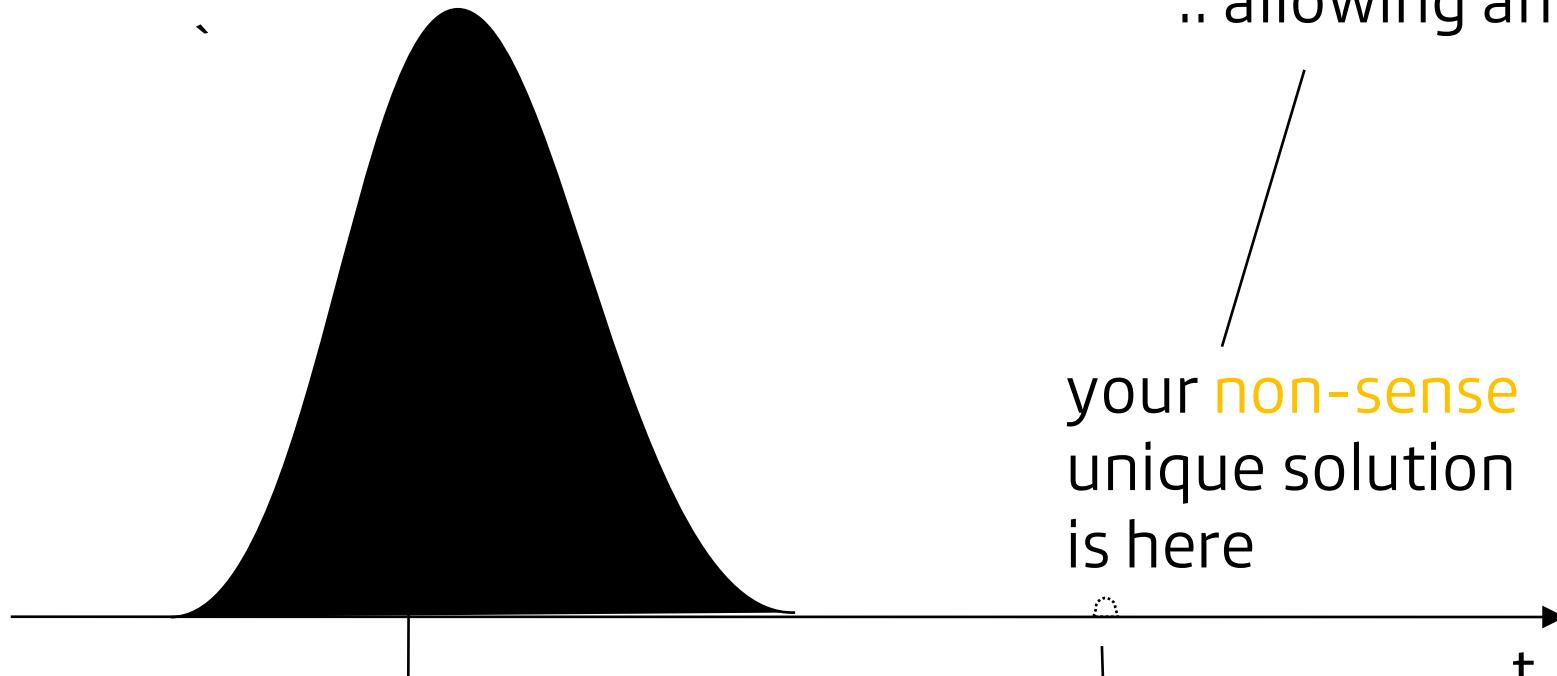
just that we are not *smart enough to see it.

how it works ?



deter judgement
:: allowing an idea in water

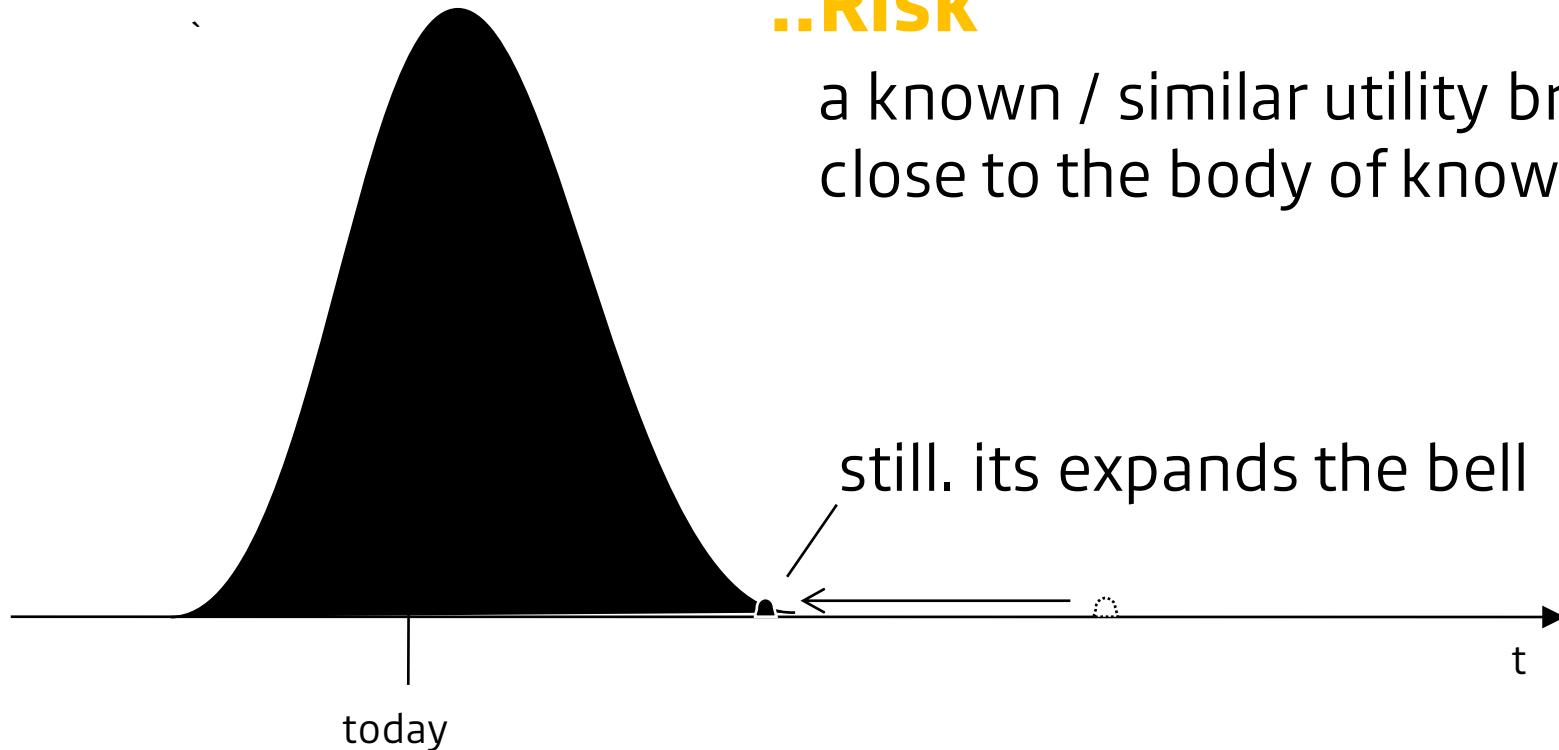
your **non-sense**
unique solution
is here



deter judgement
:: allowing an idea in water

your **non-sense**
unique solution
is here

it will become solid and positioned
until you figure out how to associate it
with a meaning (e.g., problem / utility)



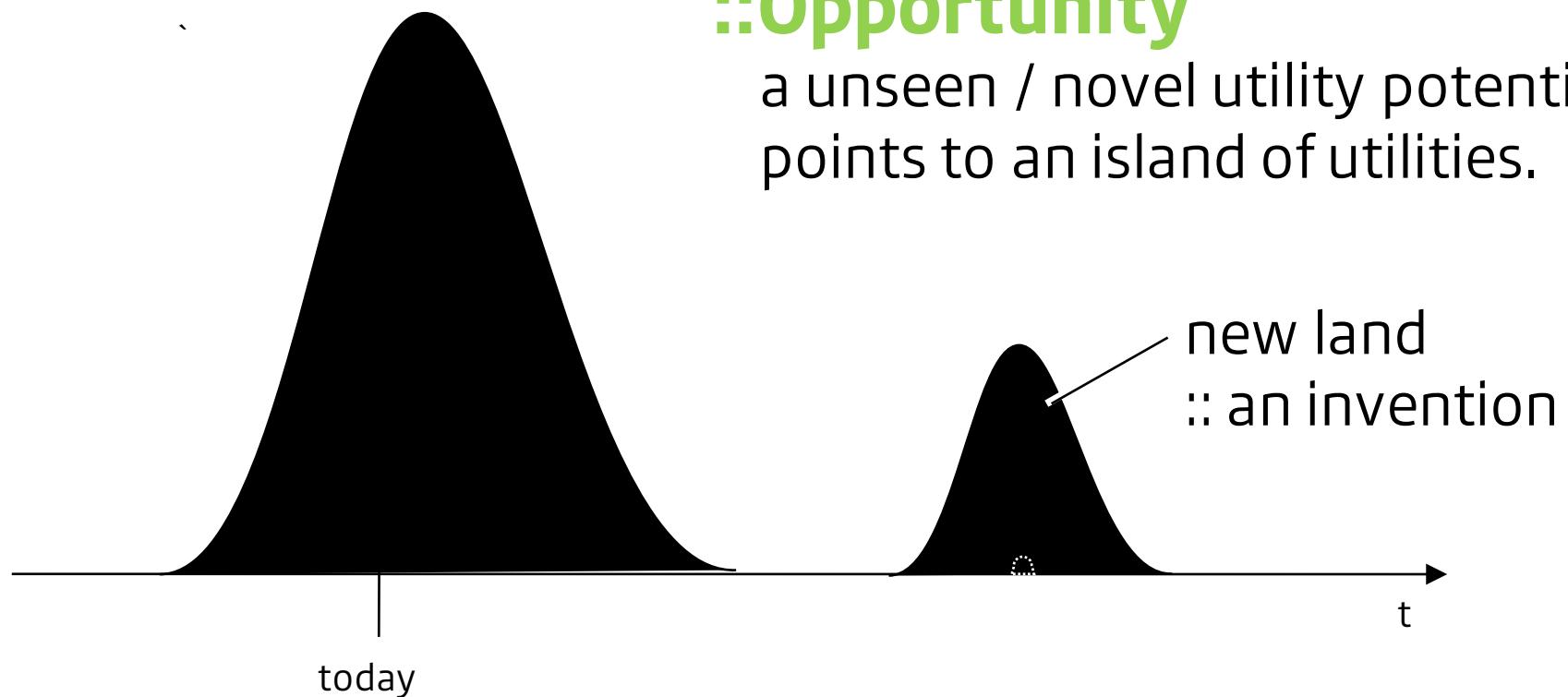
::Risk

a known / similar utility brings it close to the body of knowledge

still. its expands the bell

::Opportunity

a unseen / novel utility potentially points to an island of utilities.

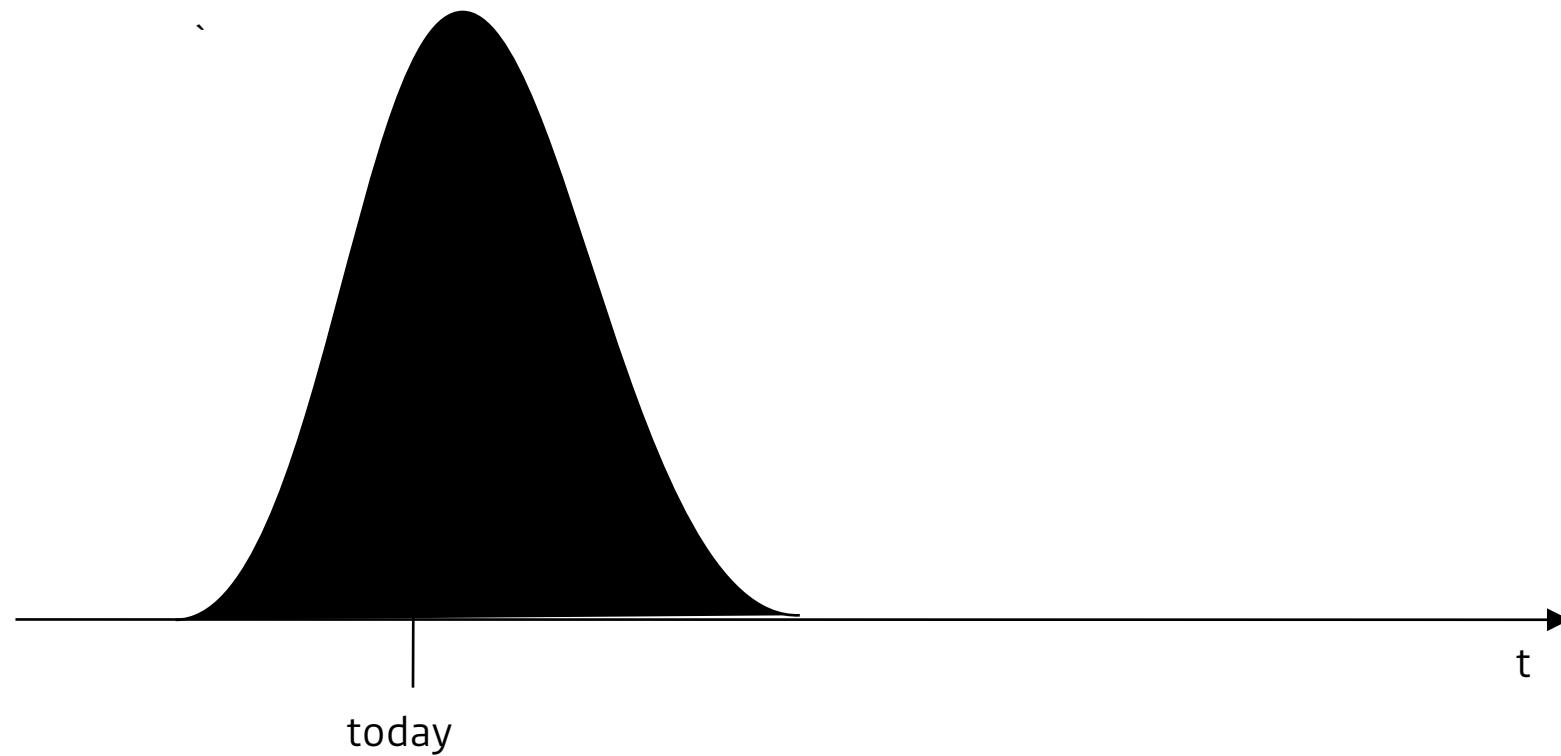


too many dead ends ... —————— waste of time ?
when using solution-driven approach



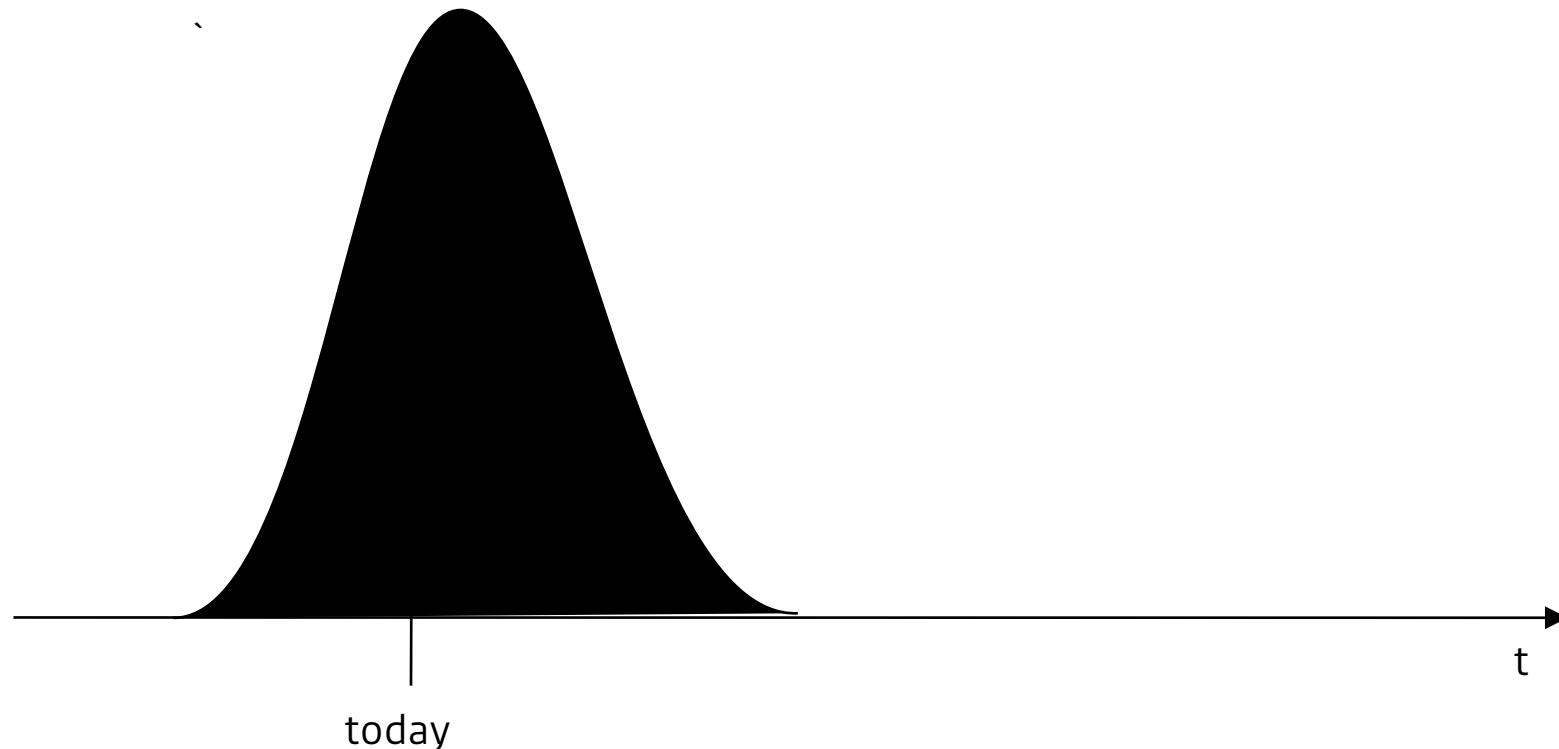
key::
allowing
many ideas
stay in water

how it **really** works?



how it **really** works?

1. a systematic way to generate many unique solutions
2. a systematic way to search problems

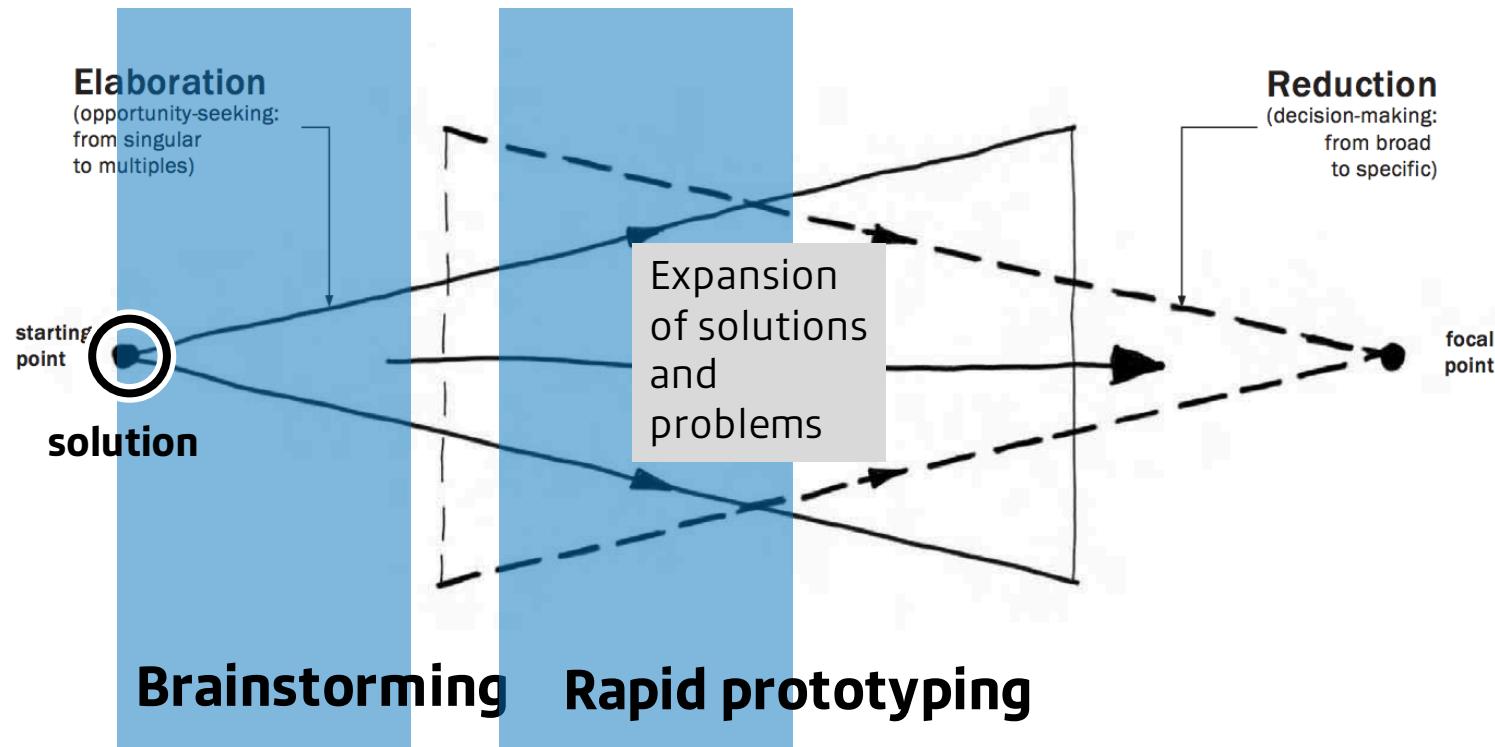


solution >> problem

let's reverse !!

design process

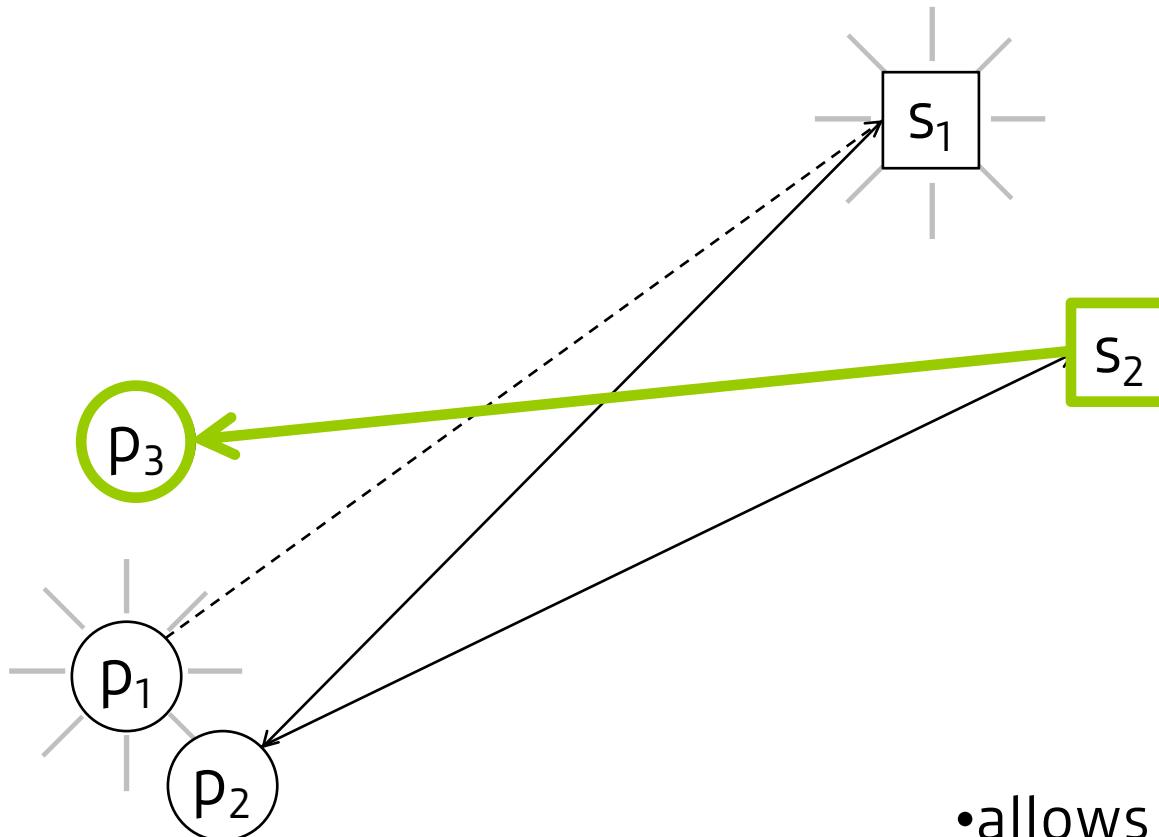
:= an act of *elaboration* and *reduction* of design alternatives for the purpose of optimization



1. Start with something new, interesting, never seen before.
2. Iterate quick. by looking for variations of solutions and problems
3. Give up solutions quick.



•solution
•problem >> problem
solution



- allows you to let a **great idea** overwrite the initial project specification

looking for
problem **and**
solution

Learn to think as a researcher

find: solution
for given problem
(e.g., web site)
→ **designer**

find: problem & solution
(but has to be novel)
→ **researcher**

find: problem
for given solution
(e.g., a patent)
→ **marketing**

- use an **unusual process**,
- namely to **iterate solution & problem**: