

# Introducing a new wicked challenge: your own transformational journey

*This course has been supported by a financial grant of PATO*

# First, a question:

- Do you believe in your personal transformation?

If the answer is no or if you are not doing it for yourself, then stop!

# Introducing a new wicked challenge: your own transformational journey

Session 1: Empathize **with yourself**

Session 2: Define **yourself**

Session 3: Ideate, **biomimicry around yourself**

Session 4: Prototype, **what can you change?**

# Session 1: Empathize with *yourself*

**Aim: complete your own empathy map!**

**To support your empathy map you can make use of:**

- Empathize with yourself
- Short interview with 2 colleagues
- Identify familiar strengths and values

**To deliver:**

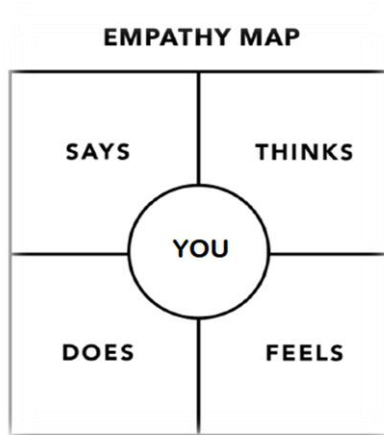
- Filled out empathy map

## Says:

- Based on interviews
- Based on strengths
- Based on not yet strengths

## Does:

- Based on interview
- Based on strengths
- Based on not yet strengths



## Thinks:

- Based on strengths
- Based on own filled out stories
- Based on core values
- Based on not yet strengths

## Feels:

- Based on own filled out stories
- Based on strengths
- Based on core values
- Based on not yet strengths

# Use of Empathy-based stories

First perform this task on your own, then ask  
2 colleagues what they would say about your behavior in these same situations.

# In case of your own judgement

## You are happy

- Imagine, you are working in a team that aims to create something innovative and Hannah is on your team. Now, the project is going great according to you, and you are very happy about your contribution. Can you name the type of behavior, strengths, suggestions, strategies that Hannah has seen you do and that contributed to the success of the project ?

## You are not happy

- Imagine, you are working in a team that aims to create something innovative and Hannah is on your team. Now, the project is not going great according to you, and you are unhappy about your contribution. Can you name the type of behavior, strengths, weaknesses, suggestions, strategies that Hannah has seen you do and that contributed to the failing of the project ?

## Use of predefined strengths and values

After having completed the stories by yourself and with your colleagues, have a look at the following tables. You might recognize several aspects from the stories that can be categorized as a common strength, not yet your strength or value. If so use them in your empathy map! If you are more comfortable using your own words and if you have left over types of behaviors, put them in your empathy map!



# Strengths

- Adaptability
- Affiliation
- Analytical thinking
- Charm
- Communication
- Coordination
- Courage
- Dedication
- Drive
- Eagerness to learn
- Empathy
- Helpfulness
- Independence
- Influence
- Inventiveness
- Meticulousness
- Positivity
- Pragmatism
- Reliability
- Serenity
- Sincerity
- Vision

# Not your strengths

- Adaptability
- Affiliation
- Analytical thinking
- Charm
- Communication
- Coordination
- Courage
- Dedication
- Drive
- Eagerness to learn
- Empathy
- Helpfulness
- Independence
- Influence
- Inventiveness
- Meticulousness
- Positivity
- Pragmatism
- Reliability
- Serenity
- Sincerity
- Vision

# Core values

- Humanity
- Social justice
- Impartiality
- Transparency
- Integrity
- Obedience
- Efficiency
- Courage
- Honesty
- Responsibility
- Expertise
- (Reliability)
- Social responsibility
- Effectivity
- (Innovation)
- Profitable
- Empowerment
- Collegiality
- Entrepreneurship
- Sustainability
- Customer oriented

## Session 2: Define *yourself*

**Aim:** complete your own influence diagram!

**To support the creation of your influence diagram  
you can make use of:**

- Empathy map
- Online tool

**To deliver:**

- Influence diagram of your current behavior.
- Definition what you want to change or improve.

# Use a tool to create an influence diagram

Influence diagrams help visualizing how the current decisions, values and types of behavior influence each other.

# Influence diagram



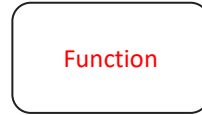
The decision of how you behave and what type of strategies you employ in your work and cooperation with colleagues. (e.g. to be optimistic, to take other perspectives into account)



Chance variables that are out of your own control (e.g. what other people think, how they react)



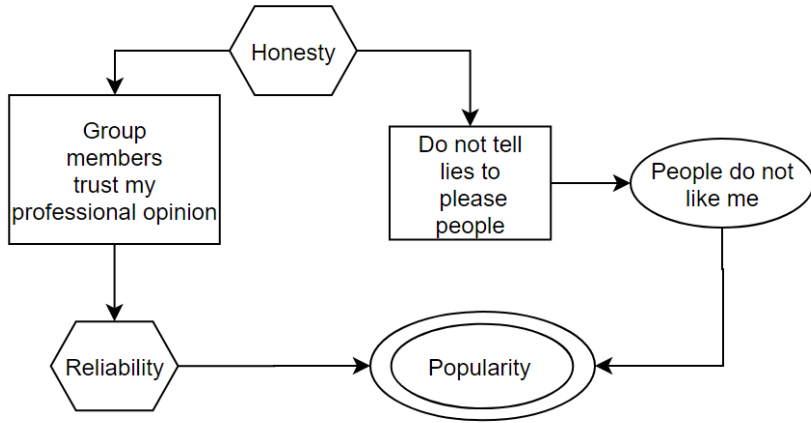
The objective of the decision. This is what you want to minimize/ maximize/ optimize. (e.g. honesty, creativity, innovation )



A function of the quantities that depend on it or an intermediate variable (e.g. amount of work that can be done, quality of your work )



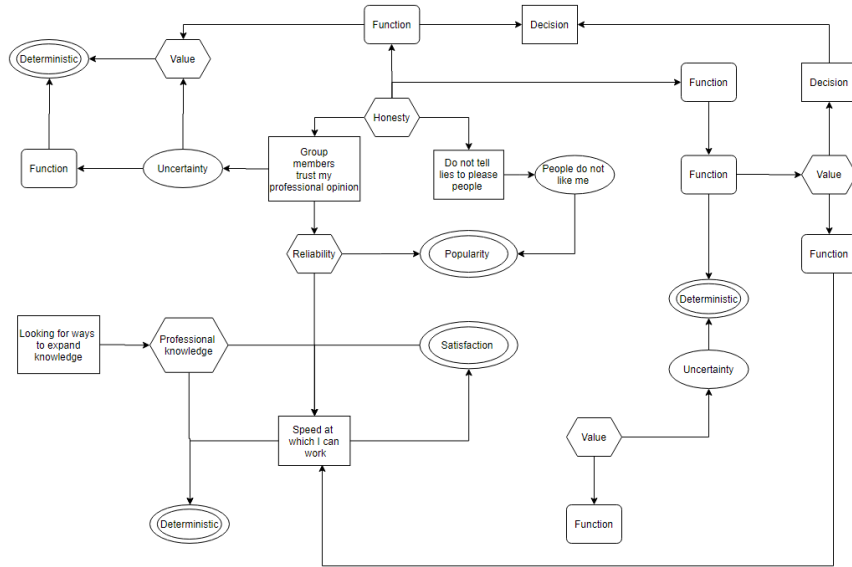
This correlates with the unpredictability whose result is calculated deterministically. (e.g. state of happiness, satisfaction )



Start with small parts of your behavior. Each part of the influence diagram of will be made with traits of empathy map.

The final step is to connect all these parts in the final diagram, creating a diagram that will be as complete as possible.

# Connect all the aspects of your behavior to create a complete influence diagram of yourself





# Personal transformation intention

Finish this session with a description of several intentions (at least one) that show how you want to innovate yourself. Take time to specify the type of situation in why you want to apply the intention and how, so avoid keeping the intention general.

For example, one of your intentions may be that you want to be more reasonable. Instead of saying: I want to behave more reasonable, say: In the situation that I do not agree with someone else, I want to understand their reason and come up with an idea that incorporates both perspectives.

# Session 3: Ideate, biomimicry around *yourself*

**Aim:** design your new influence diagram!

**To support the design of your reframed intentions,  
you can make use of:**

- Biomimicry
- Influence diagram that incorporated principles of biomimicry

**To deliver:**

- Reframed intentions

# Reframing your formulated intentions with biomimicry: an introduction

Designers have initially always defined challenges in human terms, such as protecting policemen or avoiding shark attacks. For designers to find solution analogues in biology, designers redefined their challenges in more broadly applicable biological terms, often in the form of a question such as 'How do biological solutions accomplish xyz function?' Instructors termed this reframing step as 'biologizing' the challenge.

# Principle Extraction

Once the biological phenomenon is sufficiently understood, principles are extracted into a solution neutral form. For your transformation journey the principles of nature will be explained using biomimicry 3.8.

# Use biomimicry 3.8 to see whether your intentions align with these principles



# Step 1. Reframe your intentions

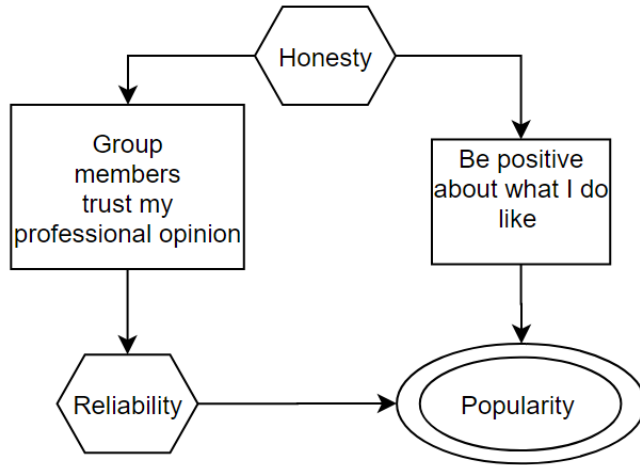
Reframing your intentions involves considering how they currently match with the principles of biomimicry 3.8. If your intentions are not aligned, what should change about the intentions such that they are more in alignment with the biomimicry principles.

## Step 2. Principle Application

The biological principles are translated into your transformational journey by formulating your intentions in a way that they are aligned with the explained principles of biomimicry 3.8.

Apply these changes to your influence diagram to discover how your full diagram is influenced by the application of biomimicry!

# Visualize how your renewed intentions will change your influence diagram





# Session 4: Prototype, what can *you* change?

**Aim:** create the future of your transformational journey!

**To support your future, you can make use of:**

- Your reframed intentions

**To deliver:**

- SMART actions
- Meeting with fellow course member to reflect on progress

# Use SMART- actions

You have learned a lot about yourself and finally it is the last step toward your transformation. In order to find out what you want to change/improve, compare the two influence diagrams. Construct SMART-actions that will help you to concretize how you can realize your transformation.

# SMART

**Specific:** goals should be unambiguous; clearly describe the activity you want to accomplish.

**Measurable:** goals should be measurable; you should be able to reflect if the goal is accomplished or not.

**Action based:** goals should be focused on what you will do rather than solely on outcomes.

**Realistic:** short-term goals should be within your reach.

**Time anchored:** goals should be linked to a specific time frame rather than being open ended.

# Be honest about your time management:

Do you think that your time planning is effective?

# Some tips

- Set realistic goals
- Make gradual changes and build on your success
- Do not let a minor setback stop you! Begin again tomorrow 😊

# Use your fellow course mates!

For you to reflect on your progress we advise you to plan a meeting with a fellow course member. In this meeting you can reflect on your progress and exchange tips and tricks!

**This was your roadmap for your personal transformation journey!**



# Business Model Innovation in an Exponential World

**Wicked problems, design thinking, systems thinking and collective intelligence**

Prof. Walter Baets, PhD, HDR  
University of Cape Town  
Rotterdam University of Applied Sciences  
Eindhoven Engine



*This course has been supported by a financial grant of PATO*



# Seminar Structure

**1. Theoretical scope on the context: complexity, exponential technologies, societal exponentialities, agility**

Assignment: item tree of the project

empathy map for your personal transformation journey (PTJ)

**2. Insights in some tools: focus on the problem area, design thinking, systems thinking**

Assignment: empathy map as input in the item tree

empathy based stories for your PTJ

**3. The potential of collective intelligence: values as a driver**

Assignment: from item tree to causal loop diagram

make a few small influence diagrams for your PTJ

# Seminar Structure

## 4. Organizing self-organization

Assignment: frame the problem area into scenarios

make your influence diagram and personal transformation

intention for your PTJ

## 5. Biomimicry based ideation: are we sustainable and in tune with nature?

Assignment: ideate the scenarios of assignment 4 and if necessary adapt the scenarios

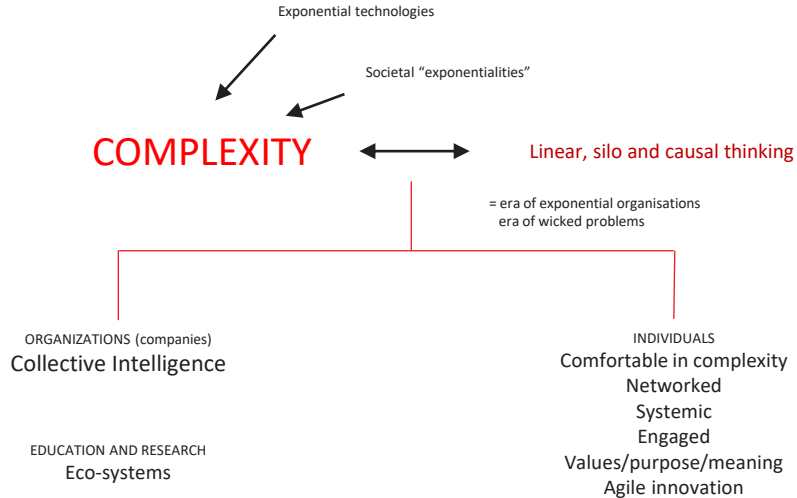
ideate your PTJ influence diagram with biomimicry

## 6. The business model canvas

Assignment: complete the canvas for each scenario

define your personal transformation journey using SMART

# Theoretical scope on the context



We cannot continue to find remedies for the symptoms, we need to work on the causes  
The next new skill set will not help us

TRANSFORMATION: from linear to complex

# Complexity and Wicked Problems

Agents, emergence and feedback loops (ever changing system)

*The roundabout*

Wicked problems have no upfront solution

*Hence focus more on understanding fully the problem*

Tools: Design thinking and systems thinking (no systems engineering)

# Societal Exponentialities

- Climate, emission, energy transition
- Broken social contract (inequality, poverty, illiteracy, exclusion, rural areas)
- Broken trust in democracy (populism, extremism, alternative truth)
- Migration, violence/wars, integration

*Therefor a focus on impact, SDGs, meaning*

# Exponential Organizations

Massive Transformative Purpose

External: employees on demand; community and **crowd**; algorithms; engagement

Internal: interfaces; dashboards; experimentation; autonomy of employees; social media

*We need to be liberated from our linear and  
causal way of thinking*



## Alternatively:

We do what we have always done, and  
we get what we always got

We cannot innovate,  
we re-search







## Flatland: Edwin Abbott, 1884

A. Square in search of the third dimension



Wanderer, your footprints are the path,  
and nothing more.

Wanderer, there is no path,  
it is created as you walk.

By walking, you make the path before you,  
and when you look behind you see the path  
which after you will not be trod again.

Wanderer, there is no path,  
but the ripples on the waters.

ANTONIO MACHADO



# Your personal transformation journey

Become the  
innovator  
you wish to be

# Assignment 1

Open brainstorm around your innovation and create a structured item tree

Make your empathy map for your personal transformation journey (PTJ) – see roadbook

# Insights in some tools

# History

IDEO: human centered design - 1978

Roger Martin (Rotman): The Design of Business - 2009

15 years ago it became popular - PRME 2008

Wicked problems (as an expression of design):  
1992 - Buchanan; 1935 - John Dewey

D-schools: Stanford, Potsdam, Cape Town (Hasso Plattner)

## SHOW DON'T TELL

Communicate your vision in an impactful and meaningful way by creating experiences, using illustrative visuals, and telling good stories.



### FOCUS ON HUMAN VALUES

Empathy for the people you are designing for and feedback from these users is fundamental to good design.



### CRAFT CLARITY

Produce a coherent vision out of messy problems. Frame it in a way to inspire others and to fuel ideation.





### EMBRACE EXPERIMENTATION

Prototyping is not simply a way to validate your idea; it is an integral part of your innovation process. We build to think and learn.



### BE MINDFUL OF PROCESS

Know where you are in the design process, what methods to use in that stage, and what your goals are.



### BIAS TOWARD ACTION

Design thinking is a misnomer; it is more about doing than thinking. Bias toward doing and making over thinking and meeting.



### RADICAL COLLABORATION

Bring together innovators with varied backgrounds and viewpoints. Enable breakthrough insights and solutions to emerge from the diversity.

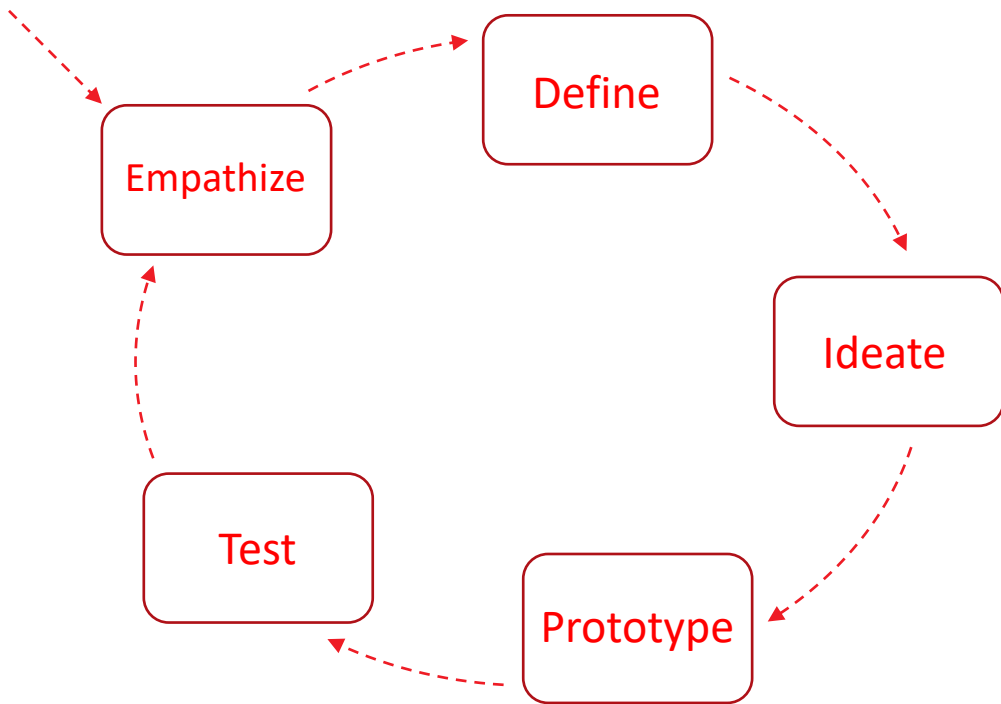


# The principles of the approach

Integration of Design Thinking and  
Systems Thinking

Learning log

Peer feedback



# Systems thinking tools

Soft Systems Methodology

Causal loop diagrams and systems dynamics

Agent based simulations

# Systems thinking and wicked problems

Concentrate on understanding the problem area (wide)

Solutions are possible outcome scenario's once the problem is well understood



A very great musician came and stayed  
in our house  
He made one big mistake...  
He was determined to teach me music  
and consequently, no learning took place.  
Nevertheless, I did casually pick up from him  
a certain amount of stolen knowledge

RABINDRANATH TAGORE

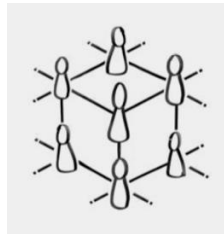




# Who

## Observe/Empathize

*Get to know your customer's lifestyle and needs and empathize with her or him.*



### 1. Observe your client

Represent your client with 20 pictures, which you bring together in a 4 minutes slide show

### 2. Interview your client

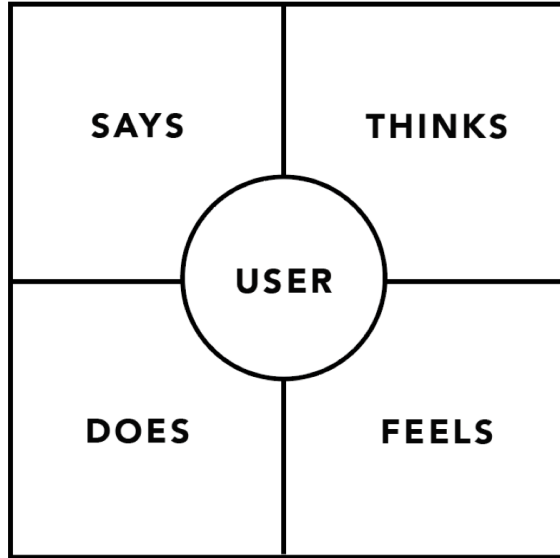
Interview at least 4 of your clients and summarize with a video clip

### 3. Empathize

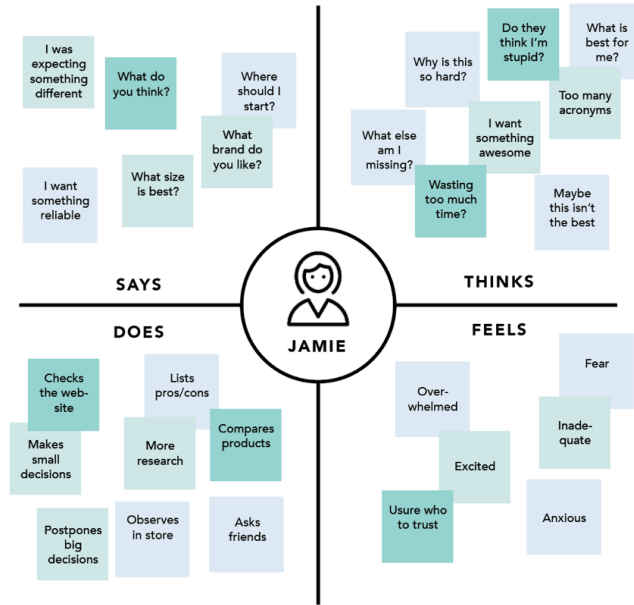
Get in the shoes of your client, creating an empathy map



# EMPATHY MAP



## EMPATHY MAP Example (Buying a TV)



# Assignment 2

Make an empathy map of one particular focus group

Integrate the results of the empathy map in the item tree; be creative and bold

Work on your empathy-based stories for your PTJ  
– see roadbook

# The potential of collective intelligence

# Complex Adaptive Systems

Artificial Neural Networks

Agent Based Simulations

Artificial life simulations

# Artificial life research / Interacting agents

(John Holland; Chris Langton)

## The mechanism of collective intelligence

- Self-organization of bees
- A soccer game
- An orchestra/jazz/flamenco
- The role of autonomous agents
  
- Artificial Neural Networks
- Agent Based Simulations

# The conditions for collective intelligence to work (the soccer metaphor)

- Are all players good (not necessarily excellent)
- Is the playing field correctly defined?
- Do all players share the same goal?
- Did we agree on a minimum set of interaction rules
- The role of the coach, trainer, conductor

# Values as a driver for wicked problem innovation

Values/purpose (lighthouse)

Personal transformation (the outcome)

Design thinking (the approach)

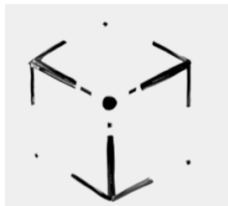
Systems thinking (the viewpoint)



# What

## Frame/Identify

*Now that you know who you develop your project for, start defining it. Seek for feedback.*



### 1. Frame your idea

Frame your idea using Soft Systems Methodology (the CATWOE root definition)

### 2. Systemic picture

Draw a systemic picture using causal loop diagrams

### 3. Eco-designing

Check the impact of your idea on the broader ecosystem using the eco-designing tool

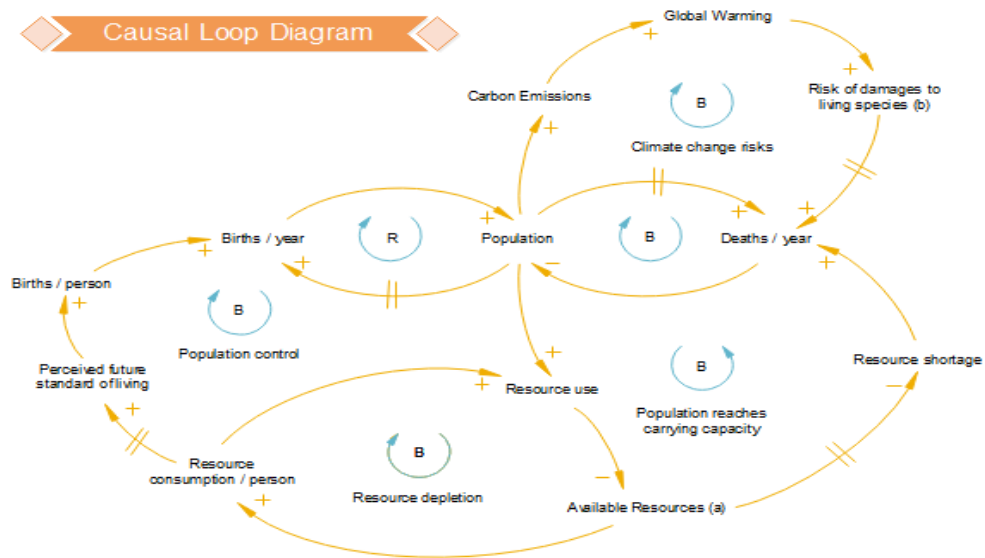
### 4. Visualization

Visualize your project at this stage, using a collage

## CATWOE Analysis

<b>C</b>	Customers
<b>A</b>	Actors
<b>T</b>	Transformation process
<b>W</b>	World view
<b>O</b>	Owners
<b>E</b>	Environmental constraints

## Causal Loop Diagram



# Assignment 3

Start connecting the items in the bottom of the tree with each other (causal loop)

Restructure and simplify if necessary; produce a systems map

Make a few small influence diagrams for your PTJ – see roadbook

# Organizing self-organization

# Organizing for emergence

Living Labs

Transformational journeys

Studios (MIT architecture)

Learning communities (leven lang ontwikkel tuin)

## MISSION STATEMENT FOR KAZURI Swahili for “Small and Beautiful”

The mission of Kazuri is to provide and sustain employment opportunities for disadvantaged members of Kenyan society.

In order to achieve this we must produce top quality Hand-made and Hand-painted Ceramic Jewellery and Pottery. This will ensure that we are well equipped to compete in both the international and local market place.

The Kazuri workshop in Karen employs over 340 women, mostly single mothers.

It is equipped with a Clinic, providing free medical care for the employees and their immediate family. Kazuri also absorbs 80% of the medical bills outside the Factory Clinic.

In the developing world of today's Africa, the greatest contribution we can make is to create employment, especially for the disadvantaged and this remains our guiding philosophy. The result is reflected in the strength of the Kazuri Family and the beauty of our products.

Mark and Regina Newman  
Nairobi, Kenya  
1st January 2006

# Alice in Wonderland



[Link to movie](#)



## THE COMPETENCIES OF THE CREATIVE CREATOR (the desired outcome)

A very great musician comes  
and stayed in our house.  
He made me big mistakes ...  
He was determined to teach me music.  
And consequently we learned both guitar  
together, and I did eventually pick up from him.  
A certain amount of stolen knowledge.  
-Neil Young

**Make  
it your  
experience**

**I/YOU**  
Same meaning  
Leading people  
History of the art  
Researcher

**IT/ TECHNIQUES  
& TOOLS**  
New media literacy  
Computational thinking  
Design thinking  
Creative thinking  
Critical thinking

**Learn  
with a purpose**

**Start  
a journey**

**Show  
up as  
yourself**

**ITS/ CONTEXT**  
Virtual collaboration  
Organic team management  
Tech cultural working  
Global connectivity  
Connecting people

**Engage  
all your senses**

**WE/PURPOSE**  
Responsible innovation  
Global cultural sensitivity  
Local challenge  
Transdisciplinary  
Use art

### KEY:

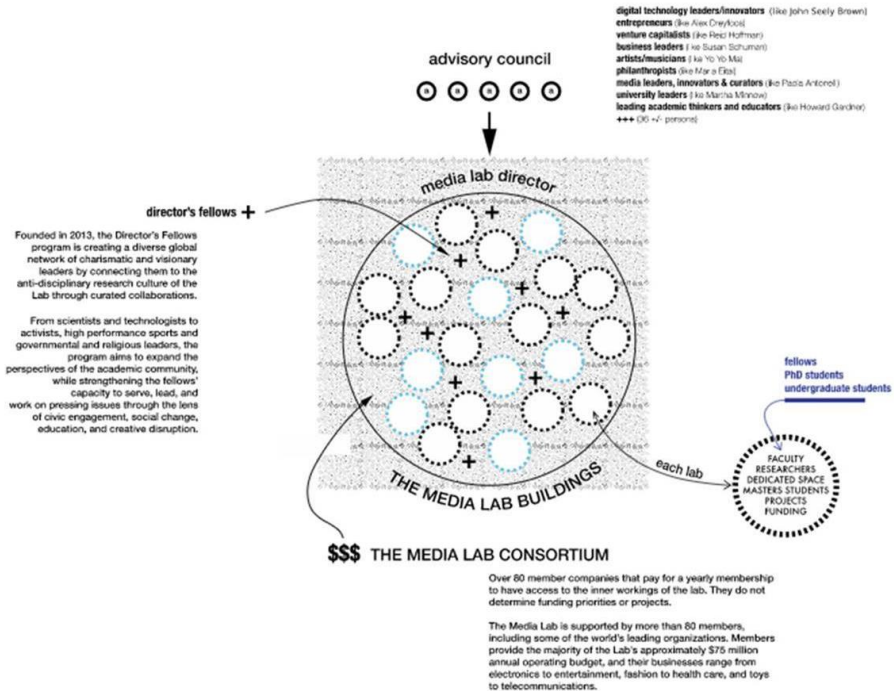
- Personal Journey:**  
The innovator
- Professional Journey:**  
Prototype/Creation
- IT/Techniques & Tools:**  
Creative thinking
- WE/Purpose:**  
Values, purpose, meaning,  
challenges of humanity
- ITS/Context:**  
Innovation technologies,  
design thinking, systems  
thinking, problem solving
- IT/Techniques & Tools:**  
Disruptive technologies  
and media

### WHAT WE OFFER

1. A transformational journey  
to one year action learning  
engagement with four separate weeks  
of face-to-face engagement
2. Program for executives and leaders (a  
one-week full immersion program)
3. Thematic summits:  
Artificial Intelligence, Augmented and  
Virtual Reality, Data Science, Digital  
Medicine, Robotics, Biotechnology and  
Nanotechnology
4. Collaborative Learning: Energy,  
Environment, Food, Global Health,  
Security, Poverty, Water
5. Open innovation experiences  
& Impact Fellows Journeys  
(postgraduate/doctoral)
6. Company specific systemic  
transformation experiences (could  
include but is not limited to: "open"  
hackathons, startup challenges,  
immersion of project teams)
7. Trainings (for corporate, the public  
sector and exchange students)
8. Kofi camp

A Transformational Journey

Eda Bay



## ATT members +

Advanced Tech Team (ATT) members for applications, intellectual property generation, risk management/mitigation & commercialization with a startup mentality.

entrepreneurs-in-residence **e**

ethicists & artists \*

CP = charismatic professor

engaged in multi-disciplinary research projects  
remains within home department at Harvard  
leads a lab at Wyss

P = professor

usually part of CP's team already  
remains within home department at Harvard  
co-leads the lab at Wyss

fellows  
PhD students  
graduate students

Wyss Institute  
as a "wrapper"

RE-FRAMING from bioengineering to  
Biologically Inspired Engineering

A PLACE AND SPACE for collaboration  
a great building w/ lots of social space

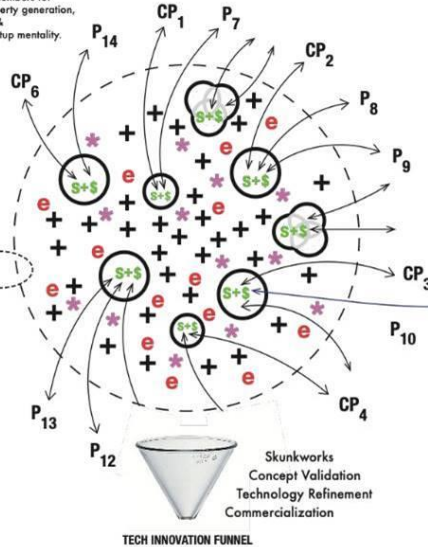
LEADERSHIP TRIAD that is charismatic and effective  
Don Ingber, Founding Director and CP1  
Ayis Antoniou, Administrative Director  
Angelika Fretzen, Tech Translation Director

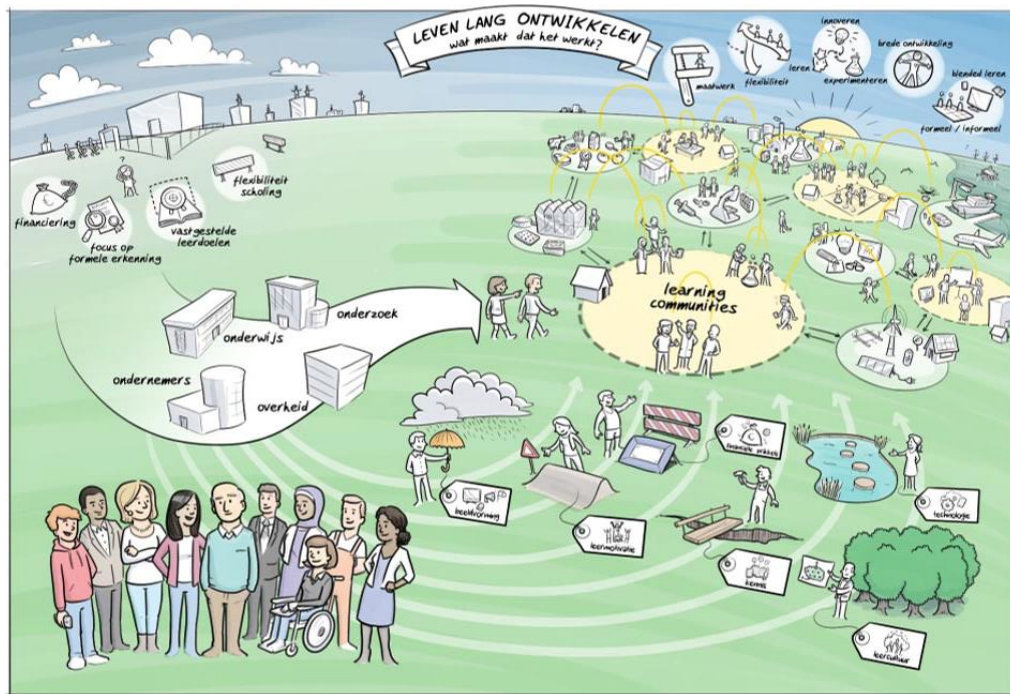
CULTURE OF INDEPENDENCE

ADMINISTRATIVE AND START-UP SUPPORT **S+\$**

TECHNOLOGY INNOVATION FUNNEL

WYSS INSTITUTE PROJECTS funded and mentored







If you want to build a ship,  
call people together and  
give them a desire  
for the endless sea

Antoine de Saint-Exupery



# Assignment 4

Frame the 'problematique', based on your causal loop diagram

Define at least two viable scenarios to explore towards solutions, based on your causal loops

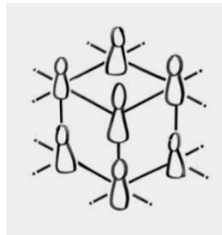
Make your influence diagram and personal transformation intention for your PTJ  
– see roadbook

# **Biomimicry based ideation: sustainability, circularity and the relationship to the planet**

# What for

## What value can we add

*It is time to ideate your proposal, to enrich it and to see how you could add more value for the customer*



### 1. Life principles of biomimicry

Use a biomimicry design lens to test your idea with the basics of life and nature and make your idea healthier, resilient and sustainable.

### 2. Storytelling

While telling your story to your client, how can that enrich your project?

### 3. Concept generation

Use the SCAMPER tool to test your idea.

### 4. Think through some alternatives

Use the SYNECTICS tool to stretch your idea.

### 5. Feel free to go further

Use any other ideation technique you feel useful (Delft Design Guide)





## LIFE'S PRINCIPLES

### Biomimicry DesignLens

Biomimicry.net | AskNature.org

# Biomimicry Principles

**Adapt to changing conditions:** incorporate diversity, integrity and self renewal, resilience

**Be locally attuned and responsive:** circularity, feed back loops, cultivate cooperative relationships

**Use life-friendly chemistry**

**Be resource efficient** (energy and materials) low energy processes, multi-functional design, recycle materials

**Integrate development with growth:** self-organization, build bottom-up, community development

**Evolve to survive:** replicate strategies that work, integrate the unexpected, reshuffle information

# Synectics

- Analyze the problem as it stands now: what is strong, poor, original,...
- Restate it: what else could it be useful for?
- Rapidly come up with any ideas related to the restated purpose.
- Come up with a metaphor (analogy) summarizing these ideas.  
Explore the metaphor/analogy: what issues/problems contains the metaphor?
- What quick-fit solutions can you come up with for those problems?
- Which ideas might be interesting for your original project?
- Develop those ideas into concepts.
- Enrich your original problem with those concepts.

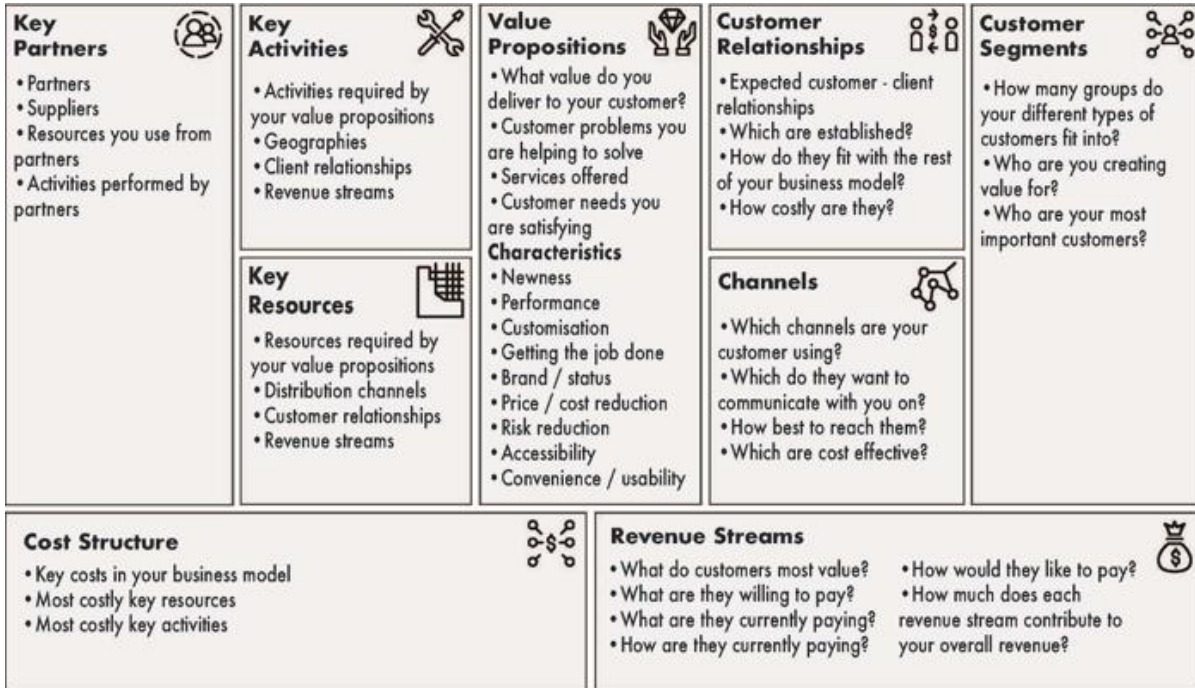
# Assignment 5

Ideate your scenarios, based on the biomimicry principles

Adapt, if necessary, your scenarios

Ideate your PTJ influence diagram with biomimicry – see roadbook

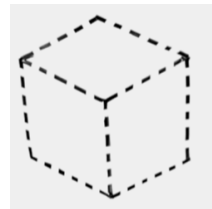
# Business Model Canvas



# How

## Prototype

*It's time now to prototype. Indeed, use a method of your choice to do so. However, start with a usability evaluation.*



### 1. Usability evaluation

Critically test the usability of your idea before moving into your physical prototyping. (Prototyping and learning)

### 2. Structure the business model of your prototype

Use the Business Model Canvas.

### 3. Prototyping

Create a physical prototype for testing.

# Assignment 6

Complete a Business Model Canvas for your scenarios

Define your personal transformation journey using SMART – see roadbook

Write a short reflection paper on what you learned about yourself

Write a short reflection paper on what you learned from the approach and the work on the project

Now, time for a first pilot