

my view

CHALLENGES IN

SUSTAINABLE ECOSYSTEMS
SIMILAR TO SOCIAL IMPACT.

SUSTAINABILITY FOR PEOPLE.
UNNATURAL SUSTAINABILITY?

ABOUT CLASS

- ENVIRONMENT (not just)
- SOCIAL IMPACT
- CULTURAL IMPACT.

- PRODUCT EVALUATION
- TEAM PROJECT

eg. Biketopia
Rental ducard
small steps
sustainability game

PRODUCTS
products in infrastructure services

THINK FROM A SYSTEMS THINKING APPROACH.

how to apply leverage points to effect change.

water system
energy system.
social system
Food system

IN SYSTEMS WORLD WE MIGHT NEED REDUCTIONIST thinking.

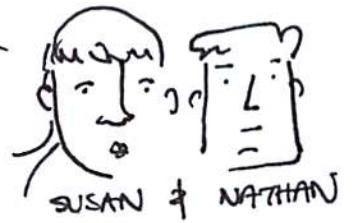


SYSTEM IN BALANCE.



THINK BATHTUB.

product management & tech. & activism.



world view.

health

Sustainable behavior.

religion.

social justice

being aware of motivations is key to making change.



innovation from constraints.

"what resonates with you"

make a group from point A to B.
A → B → C

Hotwheels.

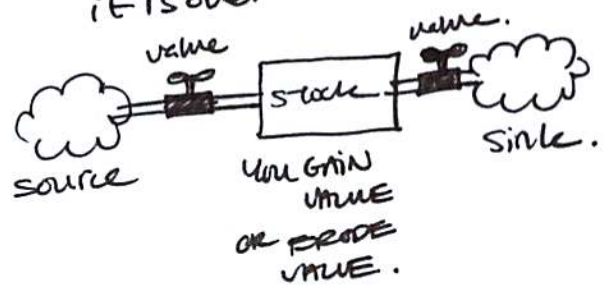
SYSTEMS STRUCTURE DETERMINES SYSTEMS BEHAVIOR.

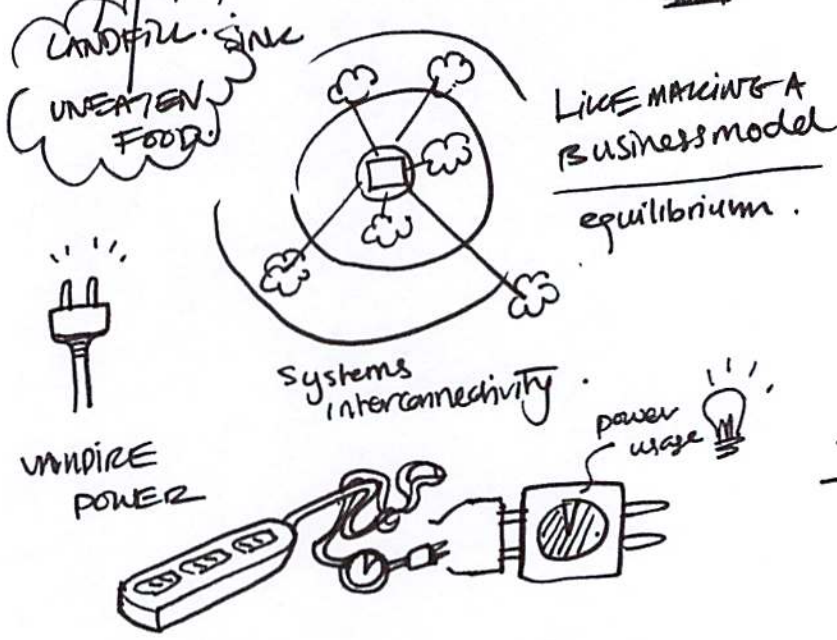
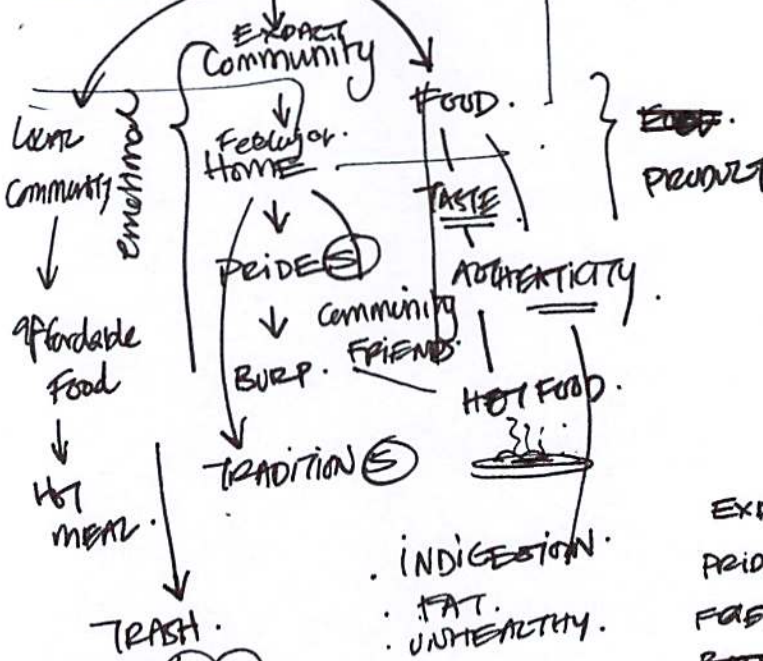
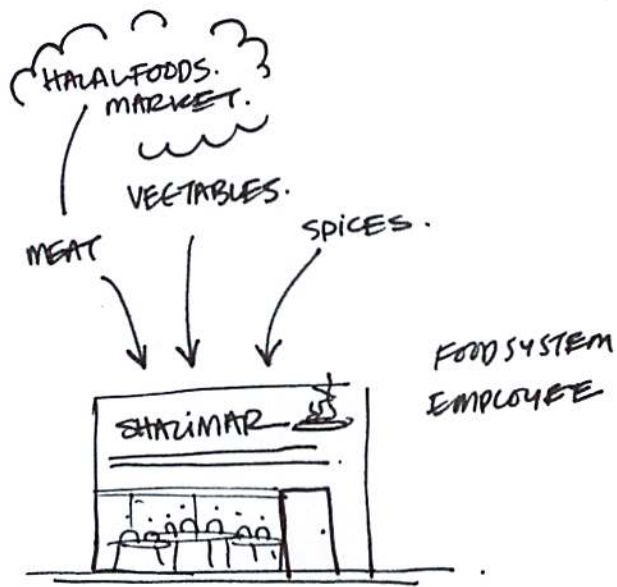
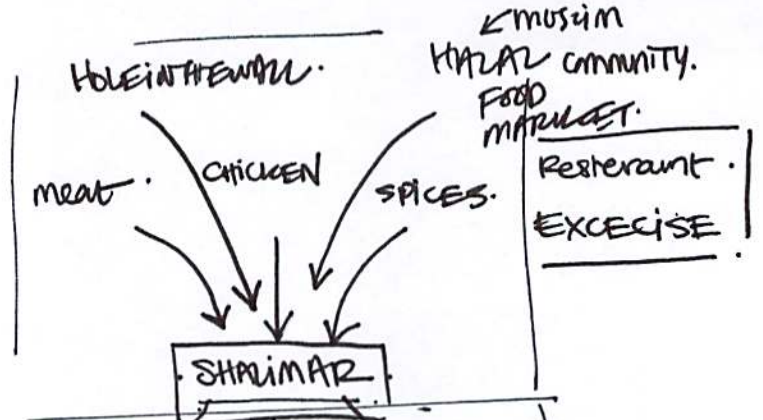


change track changes behavior

SYSTEM MADE UP OF ELEMENTS · PURPOSE · INTER-CONNECTIONS

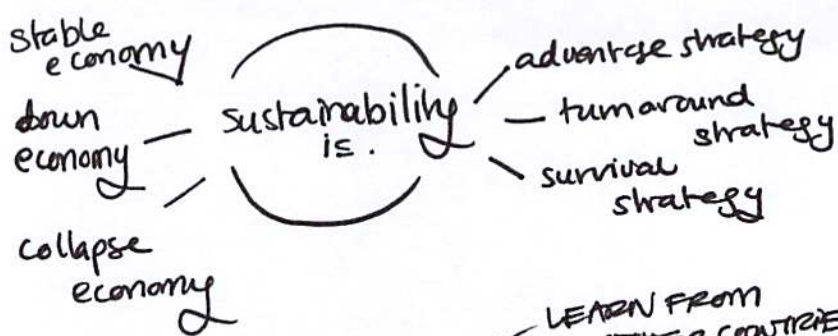
system is not system unless it is over time.





SUSTAINABILITY.
 use and development that meets
 today's needs
 DON'T DO TODAY THAT
 MAKE TOMORROW WORSE.

... For your kids.
 ... For grandkids.



WHAT DOES A MORE SUSTAINABLE WORLD LOOK LIKE.



WHAT DOES SEXY SUSTAINABILITY LOOK LIKE?

visions of what sustainable world looks like...

LEARN FROM OTHER COUNTRIES
ARCHITECT AS MAYOR. CERICIBA?

design cities & cultures.
walkable street.
BRASIL

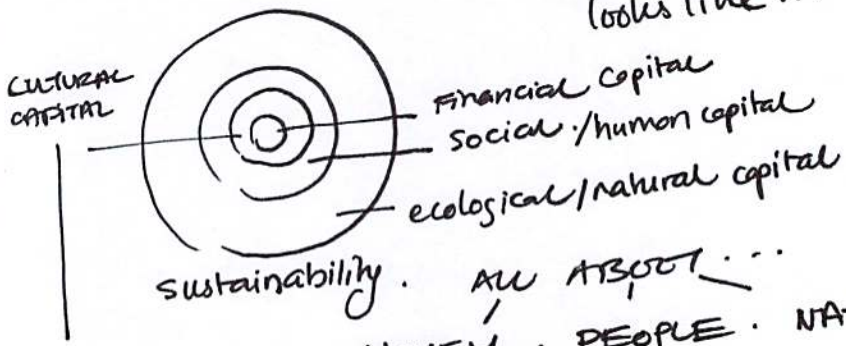
MOST SUSTAINABLE BEHAVIOR IN INDIA.

KNOW ZERO OF budget / creative Solution
KNOW TWO ZEROS / sustainable Solution.

LIFECYCLE.

- MANUFACTURING
- TRANSPORTATION
- USE
- DISPOSAL
- LIFE TIME.

environmental impact.



- CHANGE COST
- ORG INTERNAL
- EXTERNALITIES.

social impact

ALL ABOUT...
MONEY . PEOPLE . NATURE.
Don't call it green...

COMPETITION & COOPERATION...
cooperating leads to good competition

human
institutional
knowledge
technical

PRINCIPLES

- SYSTEMS THINKING
- MULTIDISCIPLINARY TEAM WORK.
- SERVICES
- MULTI STAKEHOLDER ENGAGEMENT.

resiliency.
Diversity
centralized & vs.
decentralized.

BALANCE.

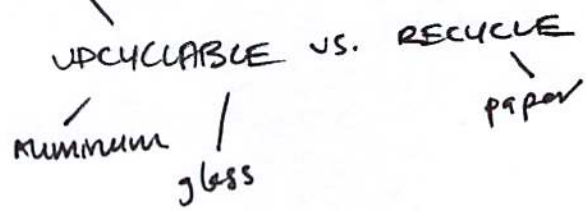
STAKEHOLDER analysis.
influences players

3 FRAMEWORKS.
5 TOOLS.

- Radical Resource Productivity
- Ecological Resilience
- Service & Flow

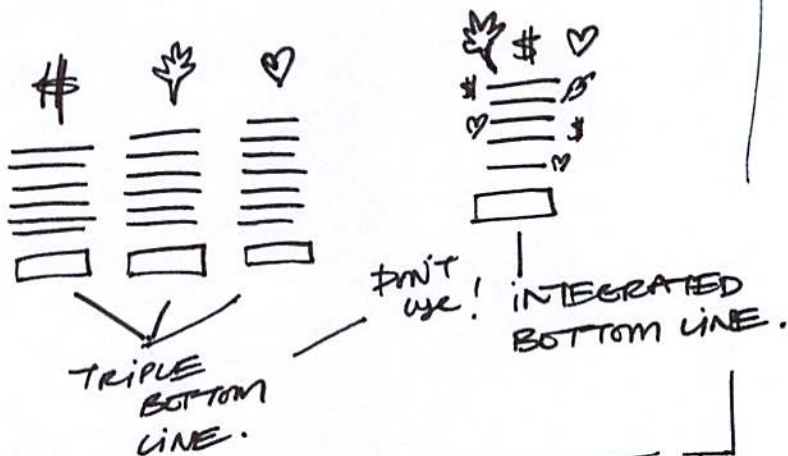
- NATURAL CAPITAL
- NATURAL STEP-M.
- CRADLE TO CRADLE

some plastics.



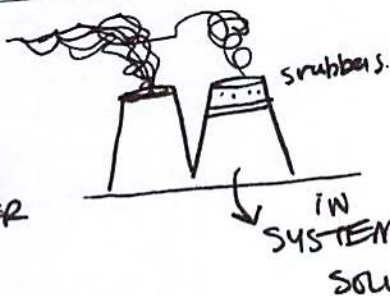
TOOLS

- LIFE CYCLE ANALYSIS
- TOTAL BEAUTY
- BIOMIMICRY
- BROI
- SUSTAINABILITY HELIX.



SCIENCE PRINCIPLES

- MATTER & ENERGY CANNOT DISAPPEAR (conservation law)
- matter and energy tends to spread spontaneously (law of entropy) (2nd law of Thermodynamics)
- Biological and economic value is in concentration and structure of matter (what we consume)
- GREEN CELLS ONLY NET PRODUCER OF concentration and structure (PHOTOSYNTHESIS).



we used to think of end of life solution. NOW IN SYSTEM SOLUTION

NATURAL STEP

OPPORTUNITY TO PROFIT & BUILD BETTER WORLD.
how to do business without tradeoff.



GIL FRIEND
president & CEO
NaturalLogic
natlogic.com

DEPT OF CAN'T BE DONE SOLUTION BUILDERS

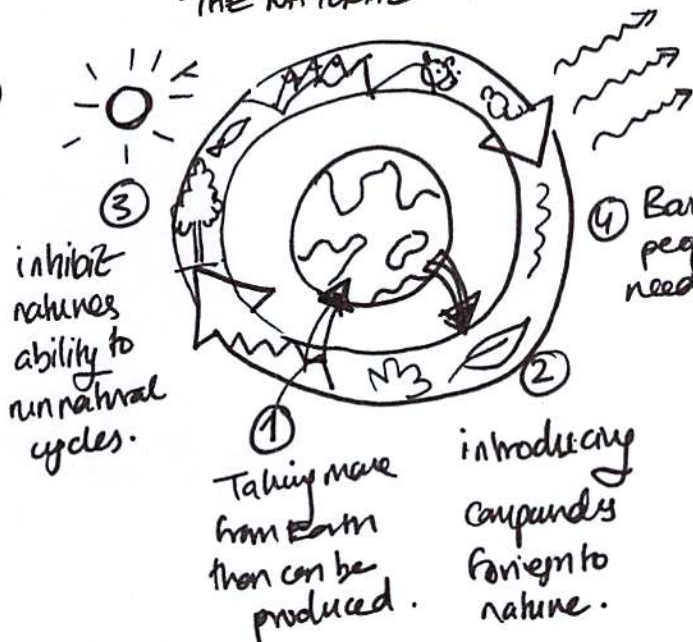
patience, commitment never give up.

How DO YOU DEFINE SUSTAINABILITY?
WHAT IS TRULY SUSTAINABLE?

- PRINCIPLES VS. DETAILS.
- SHARED MENTAL MODEL
- COMPAS. you need a framework
- SIMPLE
- USEFUL
- POWERFUL

Technical design
Business design
Human centered design.

THE NATURAL CYCLE



World works for 100% of humanity

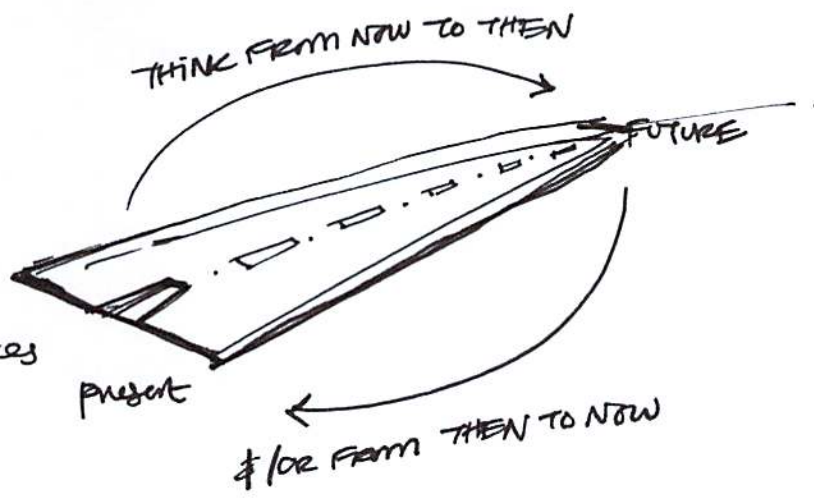
* ecosystem globe.

* THE NATURE OF SERVICE

we is me can't do it → okay we will comply → look for business opportunity there

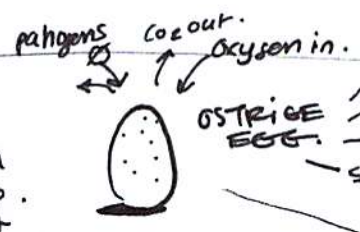
System Conditions

1. reduce dependence on mined materials
2. reduce dependence on synthetic materials
3. reduce impact on nature's services
4. Meet basic human needs more completely and more
5. Be profitable.



BIONIMICRY!
 BIO DREAM MACHINE
 - TEACH AT BERKELEY.

Using nature as a inspiration for design or problem solving.



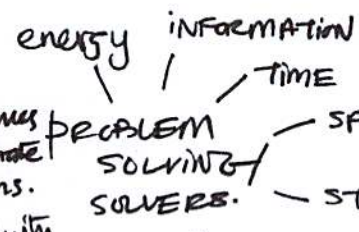
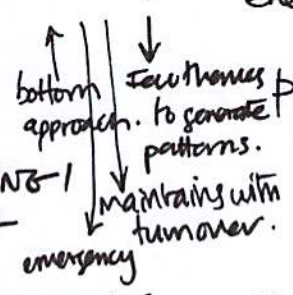
Smallest in comparison to largest birds egg bird.
 - elemental shape
 - solve contradiction.
 - stay intact vs. break open.
 Shape is doing work of being self homing device.

NATURE HAS 3.8 BILLION YEARS OF R&D UNDER IT'S BELT.

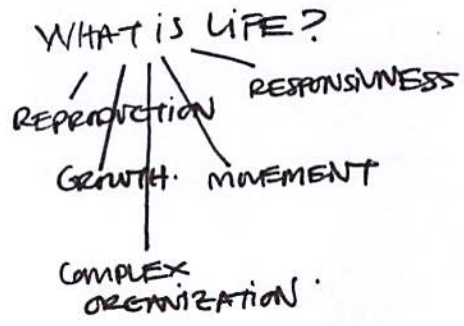
TECHNOLOGY	NATURE
REVOLUTION	→ EVOLUTION
RIGIDITY	→ FLEXIBILITY
STABILITY	→ ADAPTABILITY.
METALS	→ NO METALS.
WHEELS	→ SLIDING / BENDING / CONTRACTING
HEAT. BEAT TREAT	→ SHAPE FOR STRENGTH / AFFORDANCE

BUSINESS AS A LIVING THING!

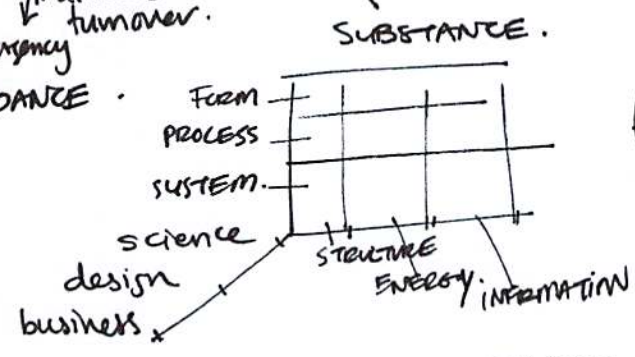
PATTERNS IN BIOLOGY.



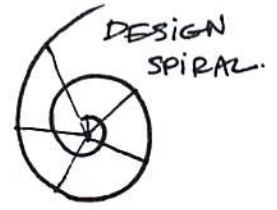
Physics / chemistry in creation of form.
 Business as a ecosystem of copy life.



RULES THE WORLD.



THE BREADTH OF LIFE & THE DEPTH OF LIFE.



95% of animals are invertebrates.

* GREAT BARRIER REEF.

* BLUE WHALE WATCHING



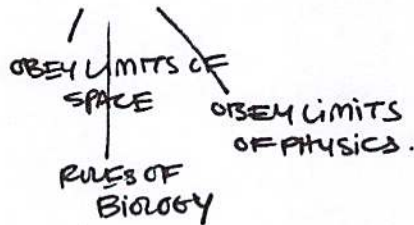
SCALES.

SCALE MATTERS. things that work at a small scale work

SURFING FOR FREE.

* micro cosm. movie

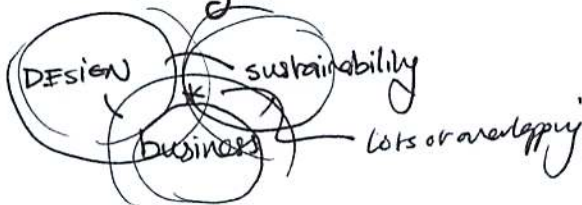
FORMS IN NATURE



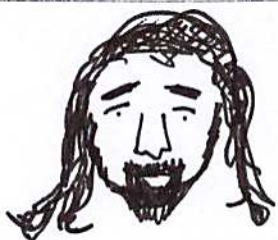
- DIATOMS
- CATHAHOIDS.
- AUTONIA HEXAGONA.
- GEODESIC DOMES.
- DIATOMS
- BASALT COLUMNS.
- TURTLE SHELLS.
- HEINZ ISLER
- ANTONI GAUDI

TEACHER AT CCA...

tmckeag@cca.edu.



* ALGORITHMIC / CODE DESIGN FOLLOWING NATURE



JEREMY FALUDI

LIFECYCLE ANALYSIS

- GREEN PRODUCT DESIGN
- PROJECT FROG GREEN SCHOOLS.

- How FAR DO YOU WANT TO GO? where do you stop in the analysis
- WHAT WILL MAKE BIGGEST IMPACT FOR SMALLEST AMOUNT OF CHANGE.

YOU CAN MODEL PROTOTYPES IN THEORY.

- if you have the skill
- if you believe your assumption.

TRUST OTHER PEOPLES LC ANALYSIS?

- YOU MAY NEED TO MEASURE THINGS YOURSELF.

IDENTIFY BIGGEST IMPACTS

- energy efficient hair dryer might be better than all manufacturing cost.
- You can set quantitative goals to set for your company.

look for — electricity.
— transportation
— manufacturing

WHAT GET MEASURED.



WE NEED TO QUANTIFY IN ORDER TO MAKE DECISIONS

also because we don't have good intuition.

okala slide easy by hand.

STEPS FOR LCA

- BOUNDARIES
- PRODUCT LIFE / FUNCTIONAL UNIT
- GATHERING PRODUCT DATA
 - materials
 - process
 - transport

SOFTWARE / ONLINE

- . GREENFLY
- . SUSTAINABLE * MINDS.

Look for materials per use & design.

- 2. COMPUTE, COMPARE IMPACTS.
- ANALYSIS



single column. or Sankey diagram.

TCW @ faludidesign.com.

- INTERPRET RESULTS
 - single score for each thing

- Scenario modeling.
 - worldchanging.com.
 - Faludidesign.com
 - projectfrog.com.

DIVERSITY
↓
CREATIVITY

* THE CREATIVE CLASS.

* STUFF. THE SECRET LIVES OF EVERYDAY THINGS.