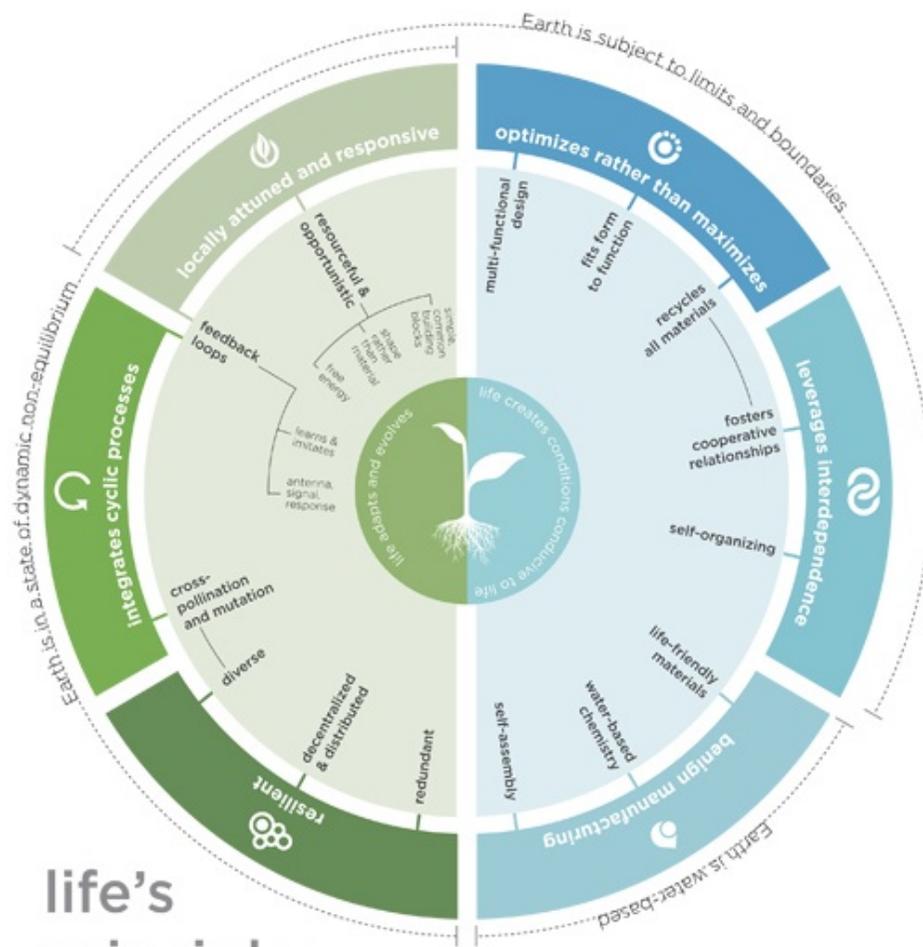# CEMUS WORKSHOP ASSIGNMENT – SPRING 2015: ANNA MARIA ORRU

OUR DESIGN CHALLENGE   Look into Nature's solutions relative to your project design challenge:
For example: clusters / systems / networks / fractals / self organization / swarms / swarm behavior / intelligence

STEP 1: Identify	STEP 2: Develop and Interpret	STEP 3: Apply / define the Design Criteria
- Please look into this step prior to the lecture. Determine your challenge before in regards to your projects this semester.	- You may practice this part of the assignment also prior to the lecture. To begin, use www.asknature.org as a resource	- The lecture will help you with this step. **Apply to the project brief you have been working on.**
Identify your challenge What do you want to design? To solve? etc. What do you want your 'design' to do? (use mostly verbs to answer this question) Understand the environment in which your design takes place. This means being climate specific. Does it take place in Sweden, or elsewhere in the world? Understand the place to climate condition. Design in appropriateness	**Biologize the challenge question** (form, process, system) *Ask – how does nature do the function?* *how does nature not do the function?* *What are other solutions found in nature to the challenge?* **Define the operating parameters needed to solve the challenge?** *climate conditions (wet? dry?)* *nutrients (available resources)* *social (coordinative? competitive?)* *temporal (growing? Static?)* *testing for resilience (seasonal)*	*What implications do these findings have for sustainable human design? For built environments? For cities?* *What would an appropriate technology/building/city/strategy look like?* *How do we design in planetary boundaries into urban systems?* ** Look at 3 levels; individual, communal, societal*
Some ideas of possible challenges to use: MICRO LEVEL MACRO LEVEL Air transfer behaviour logic Light exchange cellular logic Moisture transfer branching logic Heat transfer evolution logic Creating strength Sensing Colour creation Resources / regenerate Protection	**Biologizing step:** macro and micro levels **Zoom in to Micro**: organism what living factors are observed? (biotic – predation, cooperation) what non-living factors are observed? (abiotic – sun, wind, water) **Zoom out to Macro: ecosystem** is the organism unique in its approach? Are there other organisms that are similar? how does the system, where your organism lives, respond to environmental factors? what patterns/principles can you observe?	*** THREE LEVELS OF FEEDBACK LOOPS:** 1. Organism (as Individual) 2. Species to Species (Communal) 3. Ecosystem (Societal)

life's
principles
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BIOMIMICRY GUILD CHECKLIST: Lifes Principles (© Biomimicry Guild)

Create conditions conducive to further life:
☐ optimise rather than maximise
☐ leverage interdependence
☐ use benign manufacturing

Adapt and Evolve:
☐ locally attuned & responsive
☐ integrate cyclic processes
☐ build in resilience

BIOMIMICRY CHECKLIST: (© Janine Benyus)
During all stages of the design process, ask yourself the following questions :
☐ Does it run on sunlight? (a solar economy)
☐ Does it use only the energy it needs?
☐ Does it fit form to function?
☐ Does it recycle everything wisely?
☐ Does it reward cooperation? (a community enhancer)
☐ Does it rely on diversity, not mono-cultures?
☐ Does it demands local expertise and support?
☐ Does it understand the power of limits? (lives within its carrying capacity)
☐ Is it beautiful?