

Regenerative Systems in Urban Sustainable Development

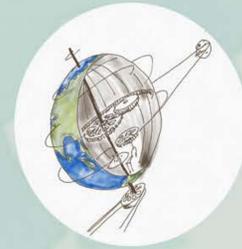
The importance of place in a regenerative project of a house

what if it is possible to achieve an healthy and sustainable world by balancing the urban (human) and natural systems?

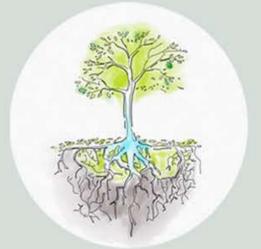
Sustainability is the ability to cultivate the fertile conditions for life to thrive (Mang; Haggard 2016).

A sustainable human community is design in such way that their living do not interfere with nature's inherent capacity to sustain life (Capra 2014):

- 1° - We need to understand the organizational principles that natural ecosystems have developed to sustain the web of life, which are characteristic of each specific place;
- 2° - Apply the ecological knowledge to the redesign of our physical, social and economic structures and organizations.



author's drawing based on: https://www.drkurtgrimm.com/empirical_synthesis/machine_world/machine_world.html



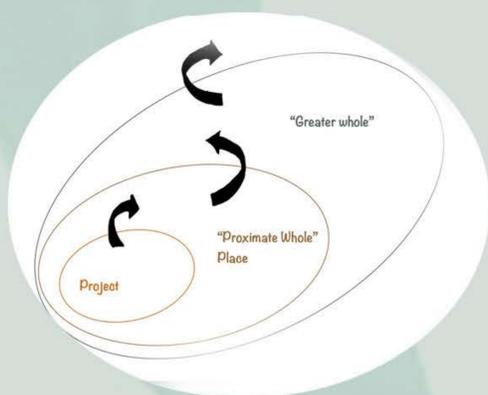
author's drawing based on: <https://source2source.ca/living-systems-lid/>

we can, by changing our minds and the way we see the world!

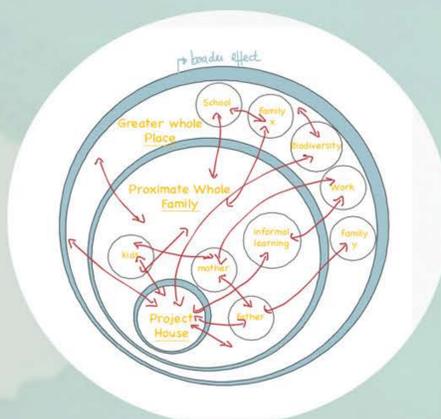
A house as a, and in a ecosystem: How life organizes itself in a specific place, considering that a living system and its environment cannot be thought in isolation and are mutually dependent and influential (Benne; Mang, 2015).

Three key interconnected principles of Living Systems:

- 1° - All living systems are holarchies
 - . Open Systems inseparable from their environment and that interact with it through feedback loops;
 - . Interaction at multiple scales through energy flows;
 - . the whole does not equal the parts;
- 2° - Every living system is constanly evolving as part of its self-generating and self-regulating capacity in an ever changing enviroment.
 - . it depends on the capacity of each part of the system to contribute to the greater system - its uniqueness;
 - . each part or holon, by playing their role in the holarchy contributes for their individual vitality and viability, as well as to the vitality and viability of the whole;
- 3° - wherever there is life there is networks - networks are the basic pattern of organization of living systems
 - . this networks allow the continuous flow of matter, energy and information - metabolism;
 - . the essencial characteristic of these networks are the nodes where the flows intersect;
 - . the importance of a node comes from the quantity and nature of its conections - border effect = diversity



Holarchy



Connections between Holons



Border effect

The central element of a regenerative project is the performance, not of the design itself but of its living context, in which the building | physical structure is just one of many interdependent, interactive and dynamic elements. It's a shift in focus from the structure we want to create to the dynamic process that this stucture must support.

A house has the creative potential to establish relationships between the family that inhabits it and the ecosystem (natura, socioal, cultural) that support it, to shape behaviors and incorporate learning. In the end the solutions must incorporate three type of factors:

- . Biological factors - How nature works in that place
- . Technological factors - chosen and enhanced based on ecological principlals of the place
- . Cognitive factors - what we learn through the living experience of the relation we establish with the house, the place, the community and all their natural flows and cycles.

The regenerative potential of a project must, therefore, be generated by its socio-ecological context.

Referências: BENNE, Beatrice; MANG, Pamela. (2015) Working regeneratively across scales - insights from nature applied to the built enviroment. Journal of Cleaner Production. 109, 42-52
CAPRA, F., The web of life: a New Scientific Understanding of Living Systems. Anchor Books, Doubleday, New York. 2014
MANG, Pamela; HAGGARD, Ben; - Regenerative Development and Design - a Framework for evolving Sustainability. [S.l.] : Jonh Wiley & Sons, Inc., 2016. ISBN 978- 1118972861