HANDLING CHANGES THROUGH DIAGRAMS.

Frame, Grain and Scale in visualizing Complex System.

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Handling changes in a sustainable perspective.

Time constraints & collaborative learning process.

An increasing regard in system thinking and Complexity.

The complexity of sustainable development.

Complex systems as LEARNING ORGANIZATIONS.

Sustainable development as LEARNING PROCESS.

To cope with DENSE situations and the complexity of COLLABORATIVE LEARNING PROCESS.
Design for Complexity.
A crude look at the whole.

The designer's task is to select results from heterogeneous disciplinary fields activating a trans-disciplinary circulation of concepts.

Designer's key competences:
* To see - understand frameworks;
* TO SHOW - visualize information;
* To fore-see - anticipate critically.
The design ability of describing worlds emerges as an answer to **THE NEED OF ORIENTATION**.
To visualize.
Making the complex accessible.
Power: They Rule - theyrule.net

Relationships.
Mark Lombardi - World finance corporation and associates.
Feelings.
Judith Donath - smc.media.mit.edu/projects/loom2/

Time(s).
Jim Bumgardner - Time Graphs
Conversations.

Martin Dittus - IRC ARCS
Density design.
A platform for the spaces of actions.

The Complexity science findings, combined with researches in information aesthetics.

To explore the relationships among communication design, information visualization and complex systems.
Evolution in multi-organizational and multi-actorial contexts and complex systems Vs. analytic logic rules.

To build-up tools to share common perspectives and intentions.

Diagrams are able to cope with the conversational nature of decision making processes in social complex systems.
How could diagrams be created, studied and interpreted to generate new meta-data and to find opportunities?

Synthesizing information in a goal-oriented way, PRODUCING NEW KNOWLEDGE ABOUT THE SYSTEM IN WHICH INTERVENE.

The RESPONSIBILITY of design.
Tools.

Knowledge objectives & communicative goals.

* **Framing** – the definition of the complex system *extension domain*;

* **Graining** – the definition of the threshold *accuracy and deepness* of the information;

* **Scaling** – the definition of the *viewpoint*.
Where do we expect starting patterns of interactions change?

Framing & Wideness.

Complex systems are usually open and interact with the environment they live in.

It is difficult to clearly define the space where information should be gathered.

Framing should be related, also, to the temporal dimension of the system.
Where is it expected to find regularities or irregularities?

Graining & Deepness.

To set a **RESOLUTION LEVEL** is fundamental considering the amount of sensible data much greater than the available, perceptible and intelligible one.

To avoid the **information overload**.
A conceptual tool. Fine Vs. Coarse.

Fine-grained observations, a near sighted way to perceive rendering detailed impressions.

Coarse-grained observation, a far sighted observation rendering rough impressions.

A sort of **threshold operator** acting on the data gathering deepness.

The process of graining narrows the amount of data should be managed by a diagram.
What is the scene to be depicted?
Scaling and viewpoint.

A cartographic based approach.

It affect the visualization of the system in terms of generalization:
* Amount of details included
* Simplification and selection.
Exploring relevant socio-political issues in order to produce a diagram able to identify some possible evolutions of the system.

* the Italian cinematographic system;
* the fashion system;
* the contemporary art system;
* the hospital - patient system;
* the Italian transportation infrastructure system;
* the Italian media landscape system.
The hospital system framing it to the **physical bound** of an ideal hospital.

Framing seems to be reasonably **attuned to the purpose** of the system description.
In general, framing process has been determined by **SPATIAL LIMITS**.
In cinematographic systems, the frame should be extended not only to the production chain.
Framing... and some considerations.

The fashion system case introduced **time variable** into framing process.
Framing...
and some considerations.

In the infrastructure system the frame seems to be well defined.
Frames, not attuned to the purpose, easily affect graining process too.

The result is an huge quantity of single data NOT RELATED each other.
The relationship between framing and graining is very close.

To understand which is the role of the patient in the hospital a very coarse level of grain has been required.
A finer graining level would have **compromised** the disclosure of the purpose.
In order to control the information graining some parameters have been set:
* the number of people involved;
* the percentage of project progress;
* the costs.
A general bias to visualize the system as it was known:
* TOO MUCH DETAILS,
* NOT ALIGNING THE DISTANCE from the observed systems to the communicative goals pursued.
In the case of cinematographic system has been not provided any kind of scaling.
Some information has **not** been **aggregate** to clearly shown some of the analysis phase findings.
The experiments provided students a clear reference to approach complex systems.

The expected data availability affected too much the use of the tools, influencing both the effectiveness and the awareness in their use.

Some difficulties have to be noticed in the communication of the parameters setting to external actors.
Any use of the tools is related to who is attempting to describe the system and affected by biases, interests and vision.

The aim and the meaning have to be made explicit in order to achieve a successful representation.

Every representation has a cost function of the density.
Further works.

To design proper system to label visualization.

A testing phase extended also to non academic contexts.
Thank You.

www.densitydesign.org