TOC

Semantic terms

12. "Process-Guidelines"

_**12.1.** ScienceOfQualitiesResearchPrinciple

13. "Problem-Factors"

_**13.1.** Motivator
_**13.2.** IllDefinedGoal

14. "Order-Archetypes"

_**14.1.** TragedyOfTheCommonsArchetype

15. "Toys-Brainstorming"

_**15.1.** Brainstorming
_**15.2.** BrainstormingIdeaCategory

16. "Order"

_**16.1.** Generalization

17. "Problem-Business"

_**17.1.** DesignStrategy

18. "Problem-Context"

_**18.1.** ReuseAsArgumentationSituation
_**18.2.** Field
_**18.3.** ProductDevelopmentContext
_**18.4.** Reality
_**18.5.** ReuseInPlanningSituation
_**18.6.** ReuseSituation
_**18.7.** CreativeIndustry

19. "Person"

_**19.1.** Team

20. "Qualities"

Labels

Author: **Altshuller**
Author: **Barry A**
Author: **Boden**
Author: **Bohm**
Author: **Bourdieu**
Author: **Cezanne**
Author: **Csikszentmihalyi**
Author: **Deleuze**
Author: **Dreyfus**
Author: **Escher**
Author: **Flores**
Author: **Freire**
Author: **Hubert**
Author: **Lakatos**
Author: **Laudan**
Author: **Mitch Resnick**
Author: **Norman**
Author: **Osborn**
Author: **Peat**
Author: **Star & Griesemer**
Author: **Ursula Wolz**
Author: **Weber**
Author: **Wenger**
Author: **Winograd**
Bibliography: **Fischer, Gerhard and Jonathan Ostwald. (2003). Knowledge communication in design communities. In R. Bromme, F. Hesse and H. Spada (Eds.), Barriers and Biases in Computer-Mediated Knowledge Communication (1-32). Amsterdam: Kluwer Academic Publishers.**
Bibliography: **Report of a Workshop of Pedagogical Aspects of Computational Thinking. Committee for the Workshops on Computational Thinking; National Research Council**
Bibliography: **Turner G. Supportive Methodology and Technology for Creating Interactive Art**
Domain Specific:
Domain Specific: **(**
Domain Specific: **CTS)**
Domain Specific: **Paradigm**
Domain Specific: **Reality**

Domain Specific: **Tradition and transcendence, that is the dialectical foundation of design**
Domain Specific: **to understand the human genome, individuals need to Combine computational thinking and concepts in genetics**

Example: **How to start a Bohm dialogue**
Idea: **Rheomode**
Note: **Inventive work**
Note: **creativity as doctrine**
Note: **inertia**
Quote: **an issue that boundary object theory did not directly include**
Quote: **Merleau-Ponty on Cézanne: "What we call his work was, for him, only an attempt, an Approach at painting".**
Quote: **black box of creativity**
Quote: **creativity has actually become a form of capital in its own right**

ConceptualDesign

Inherit from DesignProcess
"Design-Process"

Effective Conceptual *Design* begins with the commitment to *Innovation*. In StructuredPlanningProcess it continues with a systematic identification of all *Function*s that can be identified for the Product in all of its *OperationModes*, and a Search for the *Insight*s (*CreativeIntuitionSearch*) that will lead to better *Understand*ing and better *Idea*s. Organized so that they can be optimally seen together for potential synergistic effect, the Functions and associated *DesignFactor*s constitute an Information Structure well-matched to the Requirements of design for *ProductIntegrity*

Notas de lectura:

Conceptual design is a *DaliProcess* of creating functions, forms and behavior. It is essentially a CreativeProcess. It is the creation of *Function*s to fulfill customer *Need*s, and the creation of *DaliForm*s and *DesignBehaviour*s to realize (*Apply*) those functions. If many ideas are created during ConceptualDesign, there can be plenty of *Alternative*s to choose from, and consequently it is more likely that a good *Design* can be attained

As companies have responded to the Need for better quality control, the idea of quality has broadened to include better detail design -- in appearance, performance and human factors. Growing awareness of the competitive advantages of well detailed products has led to greater in-depth participation by Designers in generating Product Ideas and in making DecisionActions regarding their production. The Trends continues, and another level of quality is now emerging as the touchstone for competitive advantage: Concept

Consists in *Collect*, study, and *Visualize* user information proactively before product development proper is begun
· This results in a layered design model where different life-cycle *Stage*s are relatively independent
· Need many *Discipline*s
· => Transparency and *PointOfView* Integration become *Issue*s
· => *Method*s + Information management

ConceptDesignStages:
1. *ConceptGenerationDesignStep*
2. *ServiceDesignStep*
3. *ValidationDesignStep*

*Future Challenge*s

· Concept design *Method*s
'Particularly rapid methods that allow 2-week design *Cycle*s (now 2 months), yet do not sacrifice *Quality*

· Design information management, group work methods
'Models (*Schema*) and notations (formal, semi-formal, informal)
'Usability of usability

· *Integration* of deep Knowledge from various *Discipline*s
'*PointOfView* integration

· Concept *Reuse*: Generalisation (*Generalize*), knowledge *Transfer* to new *Context*s

DesignProcess

Inherit from DevelopmentProcess
"Design-Process"

Design as a process can take many forms depending on the object being designed and the individual or individuals participating. Designing normally requires a Designer considering aesthetic, functional, and many other aspects of an object or process, which usually requires considerable research, *Thought*, *Modelling*, interactive adjustment, and re-design (*DesignStage*)

But it is clear that effective design at the firm level will involve a much broader range of people and inputs: a number of other contributions can be made to help *Understand* User Needs and link these with inputs on development of form and function: 'integrated design' (ConceptualDesign)

During the design process, a Designer is engaged in a *Cycle* of producing a DesignRepresentation (such as *Sketch*es, mockups and memos), and Reflecting on them. The externalized representations serve as a '*Situation*' that talks back to the designer (*RepresentationalTalkback*). During the process, the designer has a *Conversation* with a material asking *DesignReflectionQuestion*s. The design process requires both generating parts and structuring them (solution synthesis) while exploring what to design (problem analysis). One cannot *Understand* a *Problem* without having started solving it (*Solve*). A partially constructed solution helps uncover problems. In design, problems and *Solution*s co-evolve

Design *Thinking* is a process for practical, creative resolution of problems or issues. The stages of this process are suggested as:

Define
- Decide what issue you are trying to resolve.
- Agree on who the *Audience* is.
- Prioritize (*Priority*) this *DaliProject* in terms of urgency.
- Determine what will make this project successful.
- Establish a *Glossary* of terms.

Research
- Review the history of the issue; *Remember* any existing *Obstacle*s.
- *Collect Example*s of other attempts to *Solve* the same issue.
- Note the project supporters, investors, and *Critic*s.
- Talk to your end-users, that brings you the most fruitful ideas for later design
- Take into account thought leaders opinion

Ideate
- Identify the needs and *Motivation*s of your end-users. (Requirements)
- Generate as many ideas as possible to serve these identified needs
- Log your Brainstorming session.
- Do not *Judge* or debate ideas.
- During brainstorming, have one *Conversation* at a time

Prototype
- *Combine*, *Expand*, and Refine *Idea*s.
- Create multiple drafts.
- Seek *Feedback* from a diverse group of people (*TeamDiversity*), include your end users.
- Present a *Select*ion of ideas to the *Client*.
- Reserve judgment and maintain neutrality.

Choose
- Review the objective.
- Set aside emotion and ownership of ideas.
- Remember: the most practical solution isn't always the best.
- Select the powerful ideas.

Implement
- Assign *Task*s.

- Execute.
- Deliver to client.

Learn
- Gather feedback from the *Consumer*.
- Determine if the *Solution* met its *Goal*s.
- Discuss what could be improved (*Conversation*).
- Measure success; collect data.
- *Document*.

In the process of design (CreativeProcess), *Idea*s are generally developed into conceptual *ConceptModel*s, then *PrototypeModel*s, then *Product*s which are then accepted, or rejected, by the consumer/society (*Client*/Field).

Notas de lectura:

D.Norman: Design ' and for that matter, most *Problem* solving ' requires *CreativeThinking* followed by a considerable period of concentrated, focused effort. In te first case, creativity, it is good for the designer to be *Relax*ed, in a good mood. Thus, in Brainstorming sessions, it is common to warm up by telling jokes and playing games. No criticism is allowed because it would raise the level of anxiety among the participants. Good brainstorming and unusual, creative thinking require the relaxed state induced by *Positive* affect. Once the *Creative Stage* is completed, the *Idea*s that have been generated have to be transformed into real *Product*s. Now the design team must exert considerable attention to detail. Here, *Focus* is essential. One way to do this is through Deadlines just slightly shorter than feel comfortable. Here is the time for the concentrated focus that *Negative* affect produces. This is one reason people often impose artificial deadlines on themselves, and then announce those deadlines to others so as to make them real. Their anxiety helps them get the work done. The problem is not to overdo it: too much anxiety produces a phenomenon known as 'tunnel vision': the people become so focused that may fail to see otherwise obvious *Alternative*s. It is tricky to design things that must accommodate both creative thinking and focus

DesignApproach
Design is dynamically structured and depends on *Context*. English lacks the non-Cartesian term we need here. Consider,for example, **Détienne**'s struggle: "*The overall process is cyclical rather than strictly linear.... [Design involves] phases of planning, translation, revision, implementing*". To cope with this conceptual/terminological problem, Détienne relies on Jens **Rasmussen** and Morten **Lind**'s notion of levels of control. *Level*s of control undergo multiple shifts, between activities that involve high-level knowledge to activities based on *Rule*s (for example, the execution of *Procedure*s such as trial-and-error). memory. According to a DesignProcess view, designers rely on *Heuristic*s such as recognition priming and ravenous opportunism, and DesignBySurvivalApproach is still the norm. The Imposed Category View is that design is a *Category* humans have imposed, not a category of the things-in-themselves. It seeks design guidance, not design formulas. The human-centered design approach embraces the richness of human cognition so that it might be leveraged and extended by technologies that amplify. Human-centered design involves integrating technological novelty into the world of *Practice* in a way that lets practitioners *Adapt* to *Innovation*. Design isn't a process: only rarely does designing have clear-cut beginnings and endings. While *Stage*s or cycles might be imposed, designing is never divorced from other ongoing mental activities (*MindActivity*)

Françoise Détienne - A collective process. The most common conception of **design problems** considers them as *IllDefinedProblem*s. Team design can be characterised as cycles of *DistributedDesignStage* and *CoDesignStage*. These two design phases involve distinct co-operation processes:
· Operative synchronisation and co-ordination in distributed design;
· Cognitive synchronisation and confrontation/integration of *PointOfView* in co-design:
· To ensure that they share knowledge about the state of the *Situation*: e.g., *Problem* data, *State* of the *Solution*.
· To ensure that they share the same general knowledge about the *Domain*: e.g., technical *Rule*s, domain objects, solving *Procedure*s.
In design, we can identify cycles of planning and translating. One of the most influential cognitive models of text production is that proposed by Hayes and Flower. Hayes and Flower have defined three major phases in the writing process: *Planning* of the text structure as a function of *Domain* knowledge (organizing) and *Communication* purposes (*Goal* setting); *Translate* the text plan into a linguistic representation; and reviewing the text as a function of the writer's evaluation. One important feature of this model is that the overall process is cyclical rather than strictly linear. Design also includes phases of planning, translation and revision, usually called problem solving or design, implementing, revising. Planning involves both retrieving problem-relevant knowledge and building up an *Abstract* solution. Translating is equivalent to implementing the solution in a particular *DaliLanguage*. Finally, revising may include either modifying the implementation, the abstract solution, or even one's understanding of the problem structure.

A good *Outcome* of a design process most often is a mix of Tradition (*Ways*) and transcendence. One reason for bringing in Designers is to transcend the tradition. At least someone in the *Organization* has considered some of the old ways of doing

things have lost their *Rationale*, or found that new technological *Opportunity* are worthwhile investigating. We have experienced managers as well as employees in that role. However, designers need to respect traditions in an organization, both as a way of maintaining (or establishing!) credibility but also because there often is a rationale behind phenomena perceived odd by a newcomer. Designers thus have to be careful in reading the meaning attached to mundane activities, modes of cooperation, or *Artifact*s used in the work processes.

Critica a diversos CreativeProcess y *CreativityMethods* como modelos de *Creative* DesignProcess (CreativeDesigning)

- *Geneplore*
Through this model, creativity (*CreativeAct*) may be seen as a good way to *identify* different *Idea*s but not to *Create Innovative Solution*s that can be implemented. There are problems in applying this model and Geneplore research findings to research in *Design*:
1. this experimental construction has little to do with a Design *Situation* (ver *SituatedCreativeDesignProcess*) in which the Designer is faced with a *wicked Problem* where an infinite number of shapes (*Solutions*) can be produced. Furthermore, in design it is the moment of facing the problem from a particular *PointOfView* that lends *Original*ity to the *CreativeOutcome*. The solution is not generated in a vacuum but in a constrained Reality; with what is possible given the *Constraints* of a particular moment (*DaliTime*)
2. the establishment of a *Domain* of allowed *Outcome*s brings some reality to the task but does not provide a plausible *Goal* in which to design. So, the *Problem* of *Representation* remains *Abstract*
3. after one *DaliForm Combination* is achieved the *CreativePerson* builds the *Meaning* around it to justify why it fits the domain attempted. It is not to *Create* the right *Artifact* from felt *Need*; it is just constructing meaning through the combination of forms. It is *accidental* and ungrounded form building where everything may be *Imagine*d afterwards, the *Solution*, the *Constraints*, the *Use*, the manufacturing process but nothing is tested (*Evaluate*) in a real *Situation* and the usefulness (Valuable) remains unproven Ver DesignProblem.
A more sophisticated model is proposed by **Dorst** and Dijkhuis **[1]** who conducted design experiments to identify a *Rational* problem-solving paradigm and a *Reflection*-in-action paradigm. Dorst and Dijkhuis classified design activities into five categories which were: Designer, DesignProblem, DesignProcess, *Design* Knowledge and *Example* model (*Schema*).

- DeBonoCreativityMethod, Brainstorming, *SynecticsMethod*
Nagasundaram and **Bostrom:** consider that some groups may naturally outperform these techniques when using the right *Communication Tool*s. The lack of further evaluation of *CreativityMethods* in *Design Practice* is an evident fault. Such "idea generation" techniques might be useful to certain activities where the deliverable is a report, but in design the CreativeProcess (DesignProcess) does not end with a Concept; the Designer is *Search*ing for a *Concrete DaliForm*, for a *Representation* of a future Reality

We are starting to accept the **emergence** of forms from enacted Reality (**Purcell** and **Gero**) previously created in imagery (*MentalImage*). But the need to search for a better explanation of the role of *Meaning* in design creation remains. *Artifact*s may exist without conceptual meaning but it is impossible to *Create* them without any perceptual meaning. Furthermore, this notion of perceptual meaning helps to establish the design process as *Heuristic* with the notion of *Reflection* in *Practice* (**Schön** - *SituatedCreativeDesignProcess*) because it is a thinking feature that allows speed and practicality in action. However, both conceptual and perceptual meaning seem to have a utility in the CreativeDesigning, but their specific roles have yet to be defined

Referencia
[1] Dorst K and **Dijkhuis** J. *Comparing paradigms for describing design activity*, Design Studies Vol.16, no.2,261-274 (1995)

Scrapbook

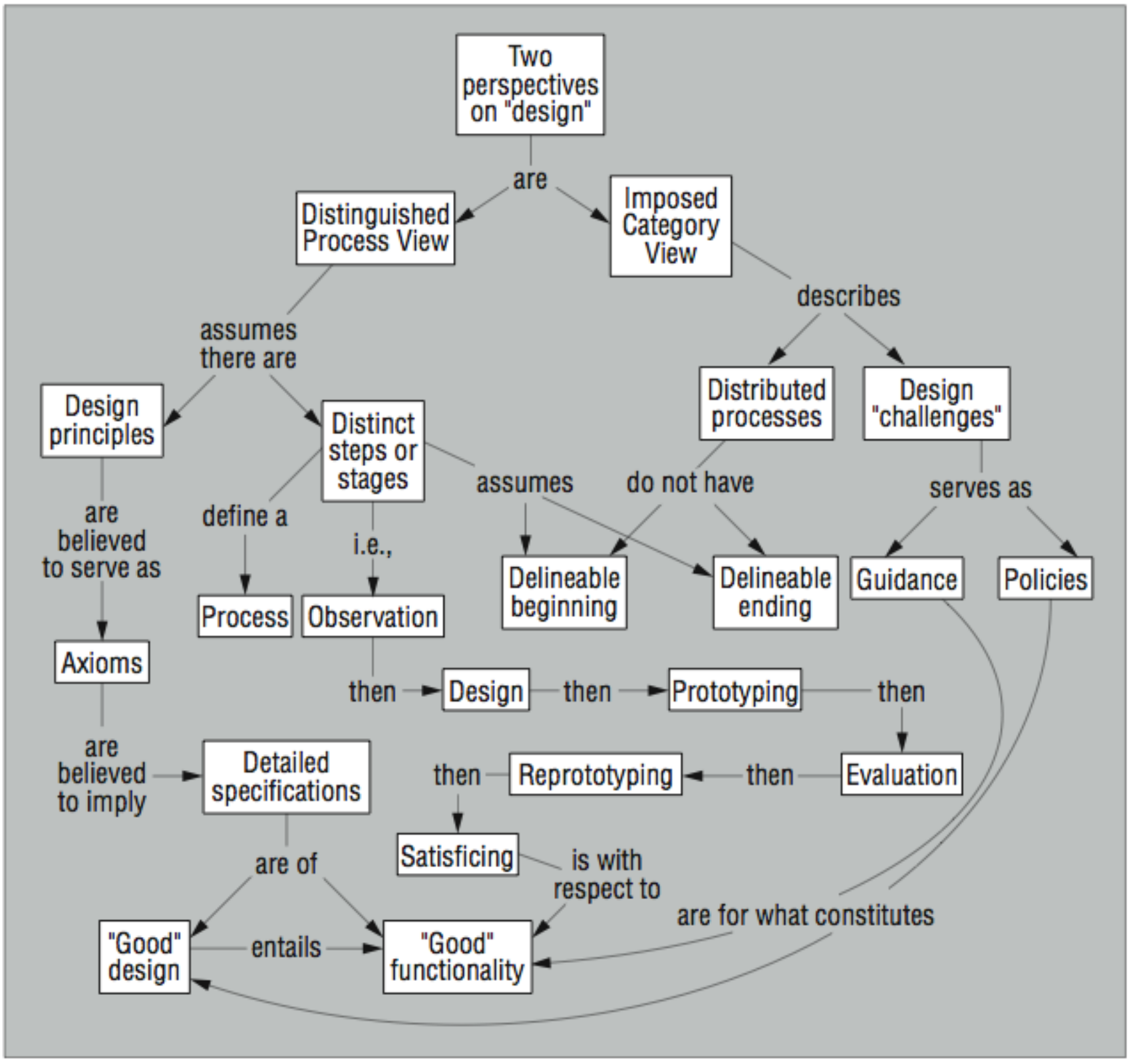

Figure 1. A Concept Map describing two views of design.

Fig. 1-DesignProcess1

1. "Practices-Games"

1.1. PracticeField

Inherit from Field
"Practices-Games"

are interactive *Simulation*s (*Game*) that take either a physical or electronic form and provide a *Risk*-free environment for users to *Learn* the *SystemStructure*

Effective practice fields also create *Opportunity* to build new habits and decisions *Rule*s and must be tied to some concrete *DaliAction*s that Participants can go out and apply.To challenge old MentalModels, we need a *Tool* that allows people to experience the structure for them to see the ramifications of their actions and to *Practice* new decision *Rule*s and *Conducts*

Underlying practice fields are a combination of quantified causal *Loop* diagrams similar to the *SystemArchetypes*. Participants self-discover the structure of the system (i.e., why it works the way it does), and the leverage points for Change (i.e., where a small *Change* in input causes a large change in performance-*Capability*). This self-discovery *DaliProcess* inspires (*Motivation*) people to *Change* by demonstrating the *Gap* between current and potential performance

PracticeFieldConstraints

To foster *Practice*, it is important to have an open system that does not force or exclude any one *Method* or *Approach*. Team

members would benefit from multiple attempts at one scenario to see how different approaches can function with the same initial *Condition*s. Participants could also benefit from multiple *Scenario*s that highlight the need for different approaches given different initial conditions. For example participants could experience the difference between a project with strong sponsor support and one with weak *Sponsor* support (*ProjectSystemSponsorFluctuation*). Building teamwork requires that all of the relevant Stakeholders (*Party*) are around the table. A practice field could be used as a new *DaliProject* kick-off or as a Tool for a project in the early *Stage*s of development. If Users, sponsors and Team members can all see how their *DecisionAction*s and *Interaction*s interrelate, everyone will have a better *Understand*ing of how their decisions and *Conducts* impact overall performance and how they can help ensure overall *Success*. Consequently, the team will have a much easier time on the real project keeping numerous groups with different *Need*s, *PointOfView* and *Priority* aligned. Ver *PracticeFieldForProjectManagementGoodPractice*

Nota

Peter **Senge**'s book *The Fifth Discipline*, promotes the use of 'micro*Worlds*' or '*Practice* fields' as agents of *Change*

Example

A practice field that was developed for **Georgia Pacific**'s packaging division helped them to significantly increase market share and profitability. This practice field showed managers in the division how to Coordinate their sales, pricing and production *Strategy* to profitably grow their business. By *Understand*ing the interrelated dynamics of cost, volume and profit, participants were able to create an *Integrate*d strategy across *Function*s

1.2. GO

Inherit from Game
"Practices-Games"

The standard Go game is played by two players alternately placing black and white stones on the vacant intersections of a 19 x 19 line grid. A stone or a group of stones is captured and removed if it is tightly surrounded by stones of the opposing color. The objective is to control a larger territory than the opponent's by placing one's stones tactically, so that as few stones as possible could be captured by one's opponent. The game ends and the score is counted when both players consecutively pass on a turn, indicating that neither side can increase its territory or reduce its opponent's

Its large board and lack of restrictions allow great scope in strategy and Expression of players' individuality. Decisions in one part of the board may be influenced by an apparently unrelated *Situation* in a distant part of the board.

To play GO one needs single-minded *Focus*, with time to study, and even more to *Play*. As *Experience* is gained and knowledge grows, one learns to take every detail of the board into account "to *Think* underneath the stones" as one of GO's many *Proverb*s proclaims. Many more abilities become natural: to trust *Intuition*, to recognize the *DaliPattern*s; thrive on *Change*s; take the initiative; anticipate, plan, think ahead; evolve strategies; veil and unveil moves; make life-and-death decisions. To be patient and coexist with your opponent (with just a little bit more of the territory in your possession), guided by the intention to always make the best move at exactly the right time. In game theory terms, Go is a zero-sum, perfect information, deterministic strategy game, putting it in the same class as chess, checkers (draughts), and reversi (othello), although it is not similar in its play to these. Although the game rules are very simple, the practical strategy is extremely complex. It is *Intuition* that gives the GO player the flashes of insight to "just know" the best move to make

Familiarity with the board shows first the tactical importance of the edges, and then the efficiency of developing in the corners first, then sides, then centre. The more advanced beginner understands that territory and influence are somewhat interchangeable ' but there needs to be a balance. It is best to develop more or less at the same pace as the opponent in both territory and influence. This intricate struggle of power and control makes the game highly dynamic

Basic Strategic and tactics aspects include the following:

- *Connection*: Keeping one's own stones connected means that fewer groups need defense.
- Cut: Keeping opposing stones disconnected means that the opponent needs to defend more groups.
- Life: This is the ability of stones to permanently avoid capture. The simplest way is for the group to surround two "eyes" (separate empty areas), so that filling one eye will not kill the group and therefore be suicidal.
- Death: The absence of life coupled with the inability to create it, resulting in the eventual removal of a group.
- Invasion: Setting up a new living position inside an area where the opponent has greater influence, as a means of balancing territory.
- Reduction: Placing a stone far enough into the opponent's area of influence to reduce the amount of territory he/she will eventually get, but not so far in that it is cut off from friendly stones outside.

The *Strategy* involved can become very abstract and complex. High-level players spend years improving their understanding of strategy

DaliPatterns and Games: GoPatterns

Notas de lecturas

Doesn't the GameOfGo serve are a better example that Chess for this sort of thing? Go has many fewer rules than Chesse, but much richer behaviour. Almost all of good Go playing relies on recognising *DaliPatterns*, both structural (e.g. TwoEyesLive?) and dynamic (e.g. SnapBack?)

OBSERVACION:
se podra hacer con el GO algo como el *Panajedrez* hizo con el Ajedrez. G. Guardincerri. es un jugador de GO: aprender a jugar con él, tentarlo de hacer un GO en Squeak

Scrapbook

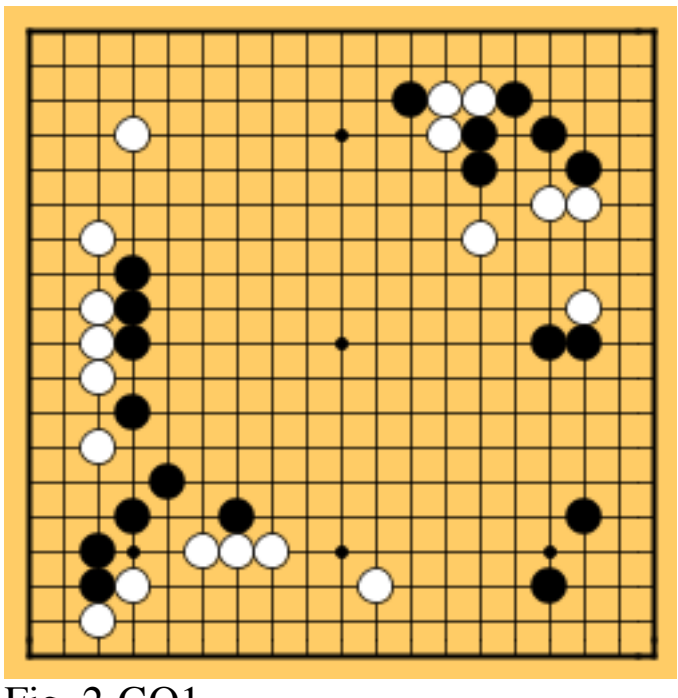

Fig. 2-GO1

2. "Design-Patterns"

2.1. DesignPatternProcess

Inherit from DesignProcess
"Design-Patterns"

a process of *Creative* DesignProcess using *DesignPattern*

3. "Process-Methods"

3.1. LateralThinkingMethod

Inherit from DeBonoCreativityMethod
"Process-Methods"

without explicit steps, suppored by *LateralThinking*. The medthod looks for Person to adopt more generative vs selective mindset to solving Problems and creating new Ideas. In order for the Lateral Thinking to function properly, several things need to happen; 1) subscribe to the mindset that unconventional thinking techniques enable us to cut across patterns in the mind in search of establishing new Concepts, *DaliPatterns* and *Perceptions*; 2) understand that only deliberate and constant use of these tools will allow us to think differently; and 3) adopt an *Attitude* of the mind that says 'provoking thought and continuously moving forward are the underpinnings to help me change perceptions and directions in any situation.'

Nota de lectura:
Limitations on what can be known are *not always innocent*. There are clear reasons why **management** would endorse and encourage the cognitive and psychological approaches to creativity implicit in the use of the **lateral-thinking** tool. They range from widely shared understandings (the cultural myth of the lone genius, our cultural individualism, the reductionism of social-science methodology) to the unwillingness to explore the link between creativity in the workplace and the social, political, and economic *Factor*s that determine how organizations are structured. A more wideranging inquiry into creativity might well require a rethinking of such staples of the present *Business* environment as *Hierarchy*, control and reward systems, the bureaucratic propensity for *Order* versus disorder, and the social and *Market* forces that encourage a stress on predictability

3.2. DeBonoCreativityMethod

Inherit from CreativityMethod
"Process-Methods"

Dr. de Bono's philosophical approach to creativity is supported by numerous tools and techniques. Some of these tools may act as actual methods/processes yet function primarily as tools or techniques that contain subtools and subtechniques. Edward de Bono's entire body of work is supported by three pillars ' Lateral Thinking, Parallel Thinking and DATT (Direct Attention Thinking Tools)

Note: The techniques that de Bono has designed in order for us to think laterally, really don't have much substance in that they do not provide us with a structured flow or organized framework that generates, evaluates, refines and helps to implement solutions. There is much overlap between the Lateral Thinking techniques and the Direct Attention Thinking Tools (DATT). Many of the DATT and Lateral Thinking techniques share similar purposes and it seems unnecessary to have more than one tool or technique for the exact same purpose: The process is missing and without a process one is left with sporadic array of techniques. It is necessary to combine Lateral Thinking, Six Thinking Hats and DATT in order to create a creative problem solving method that can flow within a structured framework. Six Thinking Hats, in and of itself, functions well as a creative thinking process because of the five modes of thinking (creative, positive, critical, emotional, informational) that are triggered and explored through the use of the Blue hat (facilitator)

4. "Analysis"

4.1. CreativeCycleConstraints

Inherit from Constraints
"Analysis"

different kinds of constraints on the generation of simulated *Variation*s in the *CreativeCycle*

simulated variations are generated by recombining represented events and entities in novel ways through **Simulator**s. Such a view implies a vast *Space* of subjectively represented *Possibles* and *Impossibles* ' a space that is 'sampled through generation'. There are obviously an incredible amount of constraints operating on the generation of variations in the *EcologicalCreativeProcess*

All these different kinds of constraints on simulated variations help *Limit* the number of pointless simulated variations: the point is that a priori the *CreativePerson* did not see the pointlessness of the variation. The extension of the 'possibility and impossibility *Space*' is so large, that the subject needs all the constraints he can get, to narrow it down (to an *infinity* of smaller cardinality).

Simulated variations in creativity are always uncertain in outcome before they are produced. This is no different for experts than for novices. As such, creativity is both blind, and highly constrained at the same time.

4.2. Requirement

Inherit from Need
"Analysis"

is a singular documented Need of what a particular *Product* or *Service* should be or do.

Requirements are written in such a way that they direct the creation/modification of a system according to the business rules appropriate to the *Domain* in which the *System* will be used. Systems should normally conform to the *Business* domain of operation. The general form of a requirement looks like.. "who shall what". Example: "The contractor shall deliver the product no later than xyz date."

Good requirements should be:

- Necessary ' Something that must be included or an important element of the system will be missing for which other system components will not be able to compensate.
- Unambiguous ' Susceptible to only one interpretation.
- Concise ' Stated in language that is brief and easy to read, yet conveys the essence of what is required.
- Consistent ' Does not contradict other stated requirements nor is it contradicted by other requirements. In addition, uses terms and language that means the same from one requirements statement to the next.
- Complete ' Stated entirely in one place and in a manner that does not force the reader to look at additional text to know what the requirement means.
- Reachable ' A realistic capability that can be implemented for the available money, with the available resources, in the available time.
- Verifiable ' Must be able to determine that the requirement has been met through one of four possible methods: inspection, analysis, demonstration, or test.

Nota de lecturas:

Information needed by developers may be *TacitKnowledge: "Can you tell your child how to ride a bike?"*. A lot of information is often needed by developers: "*You didn't tell me you were going to use the product that way!*".

5. "Process-Steps"

5.1. EcologicalCreativeProcessStage

Inherit from CreativeProcessStage
"Process-Steps"

Like *Perception*, creativity is also an active process involving the acquisition of structured information from the *Surroundings*. It involves various kinds of CreativeSearchs, which involves anticipation, exploration and acquisition of information through modification of mental structures. Thus, like perception, creativity is a cyclical process (*CreativeCycle*).

At a general level **Wallas**' description of the CreativeProcess (ver *CreativeProcessStage*) and the creative cycle seems to have the same structure. Both emphasize the importance of preparation (*PreparationStage*) and knowledge of a Field and *Domain*; both acknowledges the difficulty and problematic aspects of *Search*ing for novelty; both acknowledge sudden and surprising affect as a key element; and both emphasize the Reality testing nature of the process in that simulated variations are elaborated, evaluated and actualized. Although the creative cycle is circular (as opposed to Wallas' linear descriptive process), that does not mean that no progress is taking place ' on the contrary. The creative cycle is a movement from the actual, into the world of the *Possible* and *Impossible*, and back to the actual, resulting in a novel and useful product. However, there are also key differences, such as the fact that Wallas emphasized *Unconscious* idea recombination as a key element in the model, in order to explain the function of incubation (*IncubationStage*). *Randomly* unconscious *Idea* generation is not part of the explanation put forth in the creative cycle. Instead, the creative cycle emphasizes that CreativeSearch takes place in the real-world, through *CreativeImagination*

5.2. AnalogyRetrievalPhase

Inherit from AnalogicalThinkingPhase
"Process-Steps"

Retrieval is similar to *IncubationStage* in that we await suitable inspiration by Consciousness and sub-conscious processes, or as prompted by external events. Finding a new interpretation of a given *Domain* will require a great deal of *Search*ing, and

searching will have a definite impact upon the mapping and validation stages. We need to examine *Structure*-based searching before proceeding to the latter stages... These domains are then assessed for structural *Similarity* (*Order*) to the target Domain. The best domain identified is *Select*ed as the favoured source for the given target *Analogy*. Creative reasoning however often relies on between-domains mappings, lying beyond the scope of identicality and similarity constraints. Creativity would be better served by a retrieval operation which traverses memory seeking out successively more distant domains until a suitable source is found. Any creativity model similarly, must expect to retrieve a great many source domains before a useful one is discovered. The problem then becomes an effort to reduce the potential *Search Space* to more manageable proportions. Thus we must
rely on at least some domain knowledge to constrain the search space. Creativity requires finding new interpretations of old data, and accordingly old interpretations should play no part in this process. Creative search should use as '*Inspiration*' pure target domain information and not our current interpretation of it, thereby de-Conceptualising the target domain. Determining domain boundaries and eliminating the
current interpretation of the problem may prove a difficult task in scientific creativity, and
perhaps an impossible one for models of artistic creativity. Because of the diversity of inspiration which can usefully serve the purpose of creativity, almost any retrieval mechanism could be usefully employed

5.3. CPSMethodStage

Inherit from CreativeProcessStage
"Process-Steps"

exist six specific CPSMethodStages that contain both a divergent and convergent phase. *Understanding the Challenge* contains three stages including, Mess-Finding, Data-Finding, and Problem-Finding. The *CPSMethod* component *Generating Ideas* includes the stage of Idea-Finding. Preparing for Action includes the stages of Solution-Finding and Acceptance-Finding. Each stage in the three process components has two phases, that when engaged accordingly, maintains the "dynamic balance" mentioned earlier. These two phases include Divergence, where we generate many, varied and unusual *Alternative*s, while the other phase is Convergence, where we *Analyze*, develop and refine options

ProblemFindingStage and *IdeaFindingStage* clearly require novel, *CreativeThinking*; while other steps require traditional skills and *AnalyticalThinking*.

5.4. ProjectDefinitionPhase

Inherit from Stage
"Process-Steps"

Working with a preliminary *ProjectCharter* and an initial set of *Issue*s selected as relevant by the project initiators (*Metaplanning*), a planning team works to investigate the issues, develop arguable *PointOfViews* and, through *Dialogue* and follow-up *Research*, converge (*ConvergentThinking*) upon *PointOfViews* that optimize *DaliProject Goal*s. The phase concludes with a set of *Document*s (Defining Statements) that effectively define the project.

5.5. SelectionPhase

Inherit from ExplorativePhase
"Process-Steps"

Selection processes are higher level processes that determine what information will be used and how it will be incorporated to meet the *Goal*s of the *Task*. One mechanism of selection processes is choosing a subset (*DaliSet*) of information from generation processes (GenerativePhase) that will be retained or discarded (elemental *Representation*s as well as *Combination*s that have been generated during *Synthesis*). The selection process appears to be somewhat more fragile and more prone to errors than is the generation process. As an example of how selection processes work, consider the task of designing a novel toy (e.g., Smith et al., 1993). One may briefly consider the *Category* of gemstones and decide to design new plastic "jewelry" for young girls whose pieces are interchangeable and can be strung together to make bracelets or necklaces. In the generation process, other categories may have been considered (e.g., tools) but rejected by selection processes as ill suited or not amenable to the generative task at hand. Selection processes can also reject novel (*Original*) *Combination*s of *Idea*s, such as the plastic jewelry, as either not novel (which the jewelry is not) or an *Unsuitable Solution* (because it does not fit the *Constraints* and goals of the task at hand; e.g., perhaps the novel toy should be suitable for both young boys and young girls)

The *Geneplore* model *ExplorativePhase* is the relevant component of that theory to selection mechanism. For example, if the task is to create a new shape for an automobile, the designer might first generate a *MentalImage* of a novel shape for the vehicle. Then, during the exploratory process, the designer would *Select* the properties (*Attribute*s) of this preinventive form

that make the shape more aerodynamic, allow for the maximum amount of passenger space, or involve some other attribute that is viewed as a novel (*Original*) contribution (i.e., an improvement over previous designs). These *Goal*s may require the generation of new shapes, further exploration, and so on. In short, efficient selection requires the additional process of *NoveltyMonitoring* the evolving knowledge structures or Mental representations (*MentalImage*).

Interaction of Generation and Selection
*Task Goal*s and the *Domain* of *Activity* comprise the cues for an initial search of relevant information for solving (*Solve*) the creative *Problem* at hand. These processes best correspond to the object level in this metacognitive description. As relevant information is retrieved and synthesized into interim *Combination*s, these components (*DaliComponent*) constitute the memorial cues for the iterative *Search* of additional relevant pieces of information to move toward a goal or end *State*. By contrast, at the meta level, these pieces of information and their interim combinations are evaluated and selected as useful or not useful for creating a *Product*. Once decisions concerning their retention (or especially their *Rejection*) have been made, these decisions change the working components at the object level and alter further generation and *Synthesis* processes. As argued earlier, the influence of meta-level selection processes will depend wholly on the mental agenda (*CreativeAgenda*) of the *CreativePerson*, the *Domain* and expertise in that domain, and the ultimate *Goal* of the *Activity*. The influence of processes at the basic level will be determined by the efficiency of retrieval processes, the degree to which information comes to mind *explicitly* and *implicitly*, and the way that synthesized pieces of information serve as iterative retrieval cues at this level.

Ver *Select*, *Reject*

5.6. GenerativePhase

Inherit from CreativeProcessStage
"Process-Steps"

an individual constructs mental representations (*MentalImage*) called preinventive structures, which have properties promoting creative discoveries

Ver *Geneplore*

Notas de lectura:

the cognitive or generative processes (GenerativePhase) through which a creative *Product* is generated have been viewed as less important to its birth than is the ultimate impact (*Effect*) it may have, but our central argument is that creative processes involve many of the same underlying cognitive processes that are present in more mundane, everyday *Activity*

Generation processes are largely analogous to memory retrieval processes in noncreative cognition. Also begin to *Synthesize* that information. The use of direct information in creative tasks results from retrieving specific information related to the *Domain* in question or relevant to the *Explicit Constraints* of the *Task* (i.e., *Goal*s). For example, in reasoning by *Analogy*, knowledge acquired in a particular *Context* is applied more or less directly in a new context; may also take the form of generalizing from a particular *Category*: structured *Imagination*, in which people sometimes consciously base their novel creations on existing category knowledge (e.g., using Earth animals as a basis for novel space creatures). Indirect uses of knowledge in creative tasks are governed by the mechanisms of *Implicit* memory (information from prior experience is retrieved and used in the *Solution* to a *Task*). The final form of a creative *Product* may represent the interaction between information familiar to the individual and specific task demands. *Synthesis* involves combining pieces of information that have not hitherto been associated with one another to yield a separate piece of new information. Processes that *Synthesize*, or bring together, novel entities often instill in the *Combination*s properties (Attributes) that the elemental entities individually do not possess. The melding and combining processes associated with synthesis bring together novel features that combine to form a *Product* greater than the sum of its *Part*s (a *Whole*)

Generation continues until the task *Goal*s are completed or at least partially met.

6. "Design-Context"

6.1. DesignProblem

Inherit from IllDefinedProblem
"Design-Context"

The Designer is faced with a problem based on real *Constraints* that he/she ought to identify during the DesignProcess, usually starting with ill-defined *Goal*s but real *Need*s to fulfil (*IllDefinedProblem*). The designer takes on the problem as a *Situation* of *Use* and puts him/herself in the situation of the needed User, Enacting the use and the Manufacture with the help of *Sketch*es and *Representation*s to apprehend the *Wholeness* of the *Experience*. We can say that *Representation*s in *Design* may have a role, not only as a working *Memory* aid, but also as Experience *Understand*ing, and *Synthesis*.

The Designer might work more in a perceptual sphere (*SenseSpace*) and less in a conceptual one (ConceptualSpace) because his/her aim is a perceivable, felt, manageable *Artifac* See also ConceptualDesign

Where Do Bad Products and Where Do Bad *Product*s and Services Come From?

· Designers do not really know the Users: *Stereotype*s, design for self
· Designers do not *Understand What* users really want to achieve with the product or service, or *Why*
· Designers do not understand the *Values* and value hierarchies of the users
· Designers find the information available on the users difficult to use
· Designers cannot Assess (*Assessment*) the Quality of their *Design*
· During a conventional product development *DaliProject* designers have little opportunity to really study users and their *Need*s

6.2. RealisticScenario

Inherit from Scenario
"Design-Context"

Realistic scenarios appear to be a perfect tool for *Design*: They depict the work *Practice*s one hopes to support. Their weakness is that they are not engaging. Scenarios are often difficult to
reconstruct and hard to extend with confidence. Engagement is important. That is why **Bødker** argued for caricatures, unrealistic extremes that are more engaging, more memorable.

These Scenarios can be constructed around *FictionalUser*s (persona): are a method for enhancing engagement *and* reality. We are finding them to be a powerful design tool in practice. Adding FictionalUsers does not require eliminating scenarios or any other method: It is a foundation on which to build scenarios and data collection. It is an infrastructure for engagement. It is a means for communicating data that is collected using other user research methods

Persona use needs to be complemented with a strong, ongoing effort to obtain as much quantitative and qualitative information about users as possible, to improve the selection, enrichment, and evolution of sets of personas. Persona creation begins with quantitative market segmentation. The highest priority segments get fleshed out with user *Research* including field studies, focus groups, interviews and further *Market* research

Relacionado: ScandinavianApproach, *ScenarioBasedApproach*

Nota de CREATE
Alex Blanch. Story Telling narrativo: se crea una "novela" a partir de *Storys* para cada driver, a partir de la cual se vuelve hacia atrás (deconstrucción de la historia) definiendo saltos de *Conduct*. En estas transiciones se proponen las *Opportunity* de intervención

7. "Interaction"

7.1. MeaningNegotiation

Inherit from Negotiation
"Interaction"
labels: Author: **Wenger**

Wenger describes the 'negotiation of meaning' as how we *Experience* the *Worlds* and our engagement in it as meaningful. If

all *Change* involves a process of Learning, then effective change processes consciously facilitate negotiation of meaning. In his model, that negotiation consists of two interrelated components:

· **Reification:** He describes this process as central to every *Practice*. It involves taking that which is abstract and turning it into a 'congealed' form, represented for example in *Document*s and *DaliSymbol*s. Reification is essential for preventing fluid and informal *PersonGroup Activity* from getting in the way of co-ordination and mutual *Understand*ing.

· **Participation:** Participation, the second element in the negotiation of meaning, requires active involvement in social processes (*SocialCreativeAct*). It involves *Participant*s not just in translating the reified *Description*/prescription into embodied *Experience*, but in recontextualising its *Meaning*. Wenger describes participation as essential for getting around the potential stiffness (or, alternatively, the ambiguity) of reification.

Wenger describes the relationship between reification and participation as a DialecticThinking one: neither element can be considered in isolation if the learning/change process is to be helpfully understood

7.2. FreireDialogue

Inherit from Dialogue
"Interaction"

Celebrated Brazilian educationalist Paulo Freire, who is known for developing popular education, advanced dialogue as a type of classroom pedagogy. Freire held that dialogic *Communication* allowed students and teachers to learn from one another in an environment characterized by respect and equality. A great advocate for oppressed peoples, Freire was concerned with praxis'action (*Practice*) that is informed and linked to people's *Values*. Dialogic pedagogy was not only about deepening understanding; it was also about making *Positive Change*s in the world (*Surroundings*)

Notas de lectura:

se opone a "transmisión y extensión, sistemática, de un saber". Por el contrario, es comunicación y diálogo, "un encuentro de sujeto interlocutores, que buscan la significación de los *Meaning*"... No se reduce al acto de depositar *Ideas*, ni siquiera a un intercambio de ideas preexistentes, ni a una polémica entre sujetos sólo interesados en la imposición de su verdad, sino que es un "*CreativeAct*", es producción de conocimiento, es diálogo. La relación sujeto-sujeto implica que no se trata de la incidencia del educador sobre el educando, sino de ambos sobre el *Worlds*; la producción de conocimiento implica entonces una relación dialógica. La producción de conocimiento no es tal si no está compuesta también por una parte de acción, que es transformación del mundo. La producción de conocimiento es praxis, en el sentido de que es acción-reflexión en un movimiento dialéctico (DialecticThinking)

...engaged the participants in discussions about what were the most critical issues for them before engaging in any teaching or learning activity. Once the critical issues were identified, *Connection*s were made through these issues to many bodies of knowledge.

The use of technology is important on two fronts:
1. aiding *discussion*, *Reflection*, and Brainstorming about the *Issue*s, and
2. designing and *implementing* the actions

Scrapbook

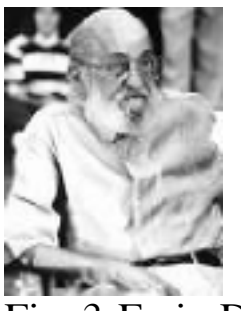
Fig. 3-FreireDialogue1

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The use of technology is important on two fronts:
1. aiding *discussion*, Reflection, and Brainstorming about the Issues, and
2. designing and *implementing* the actions

7.3. MetamodelingInterpersonalCommunication

Inherit from InterpersonalCommunication
"Interaction"

The basic postulate is that having to formulate one's *Thought*s through a computer-interpreted medium helps in clarifying them, in removing unexpressed *Assumption*s etc. This is the cornerstone of the so-called "**metamodelization**" technique that is developing at **LAFORIA.** The propose here is to apply this approach to *InterpersonalCommunication*:

The basis of the approach is to provide two different *Schema* of the application, one on the User's side (call it UM), the other on the implementor's (*Manufacturer*) side (IM), together with a *Transformation* mechanism (TM) that maps the first onto the second. Model UM is supposed to be easily *Understand*able by the user - actually, it should be produced by the user herself. Transformation TM, of course, should operate in a way that ensures adequacy between the meaning of model UM as intended by the user and that of model IM. The name metamodelization is justified by the nature of the link between the model and its metamodel, which parallels the link between an *Instance* and its class (*Classification*), and a class and its meta-class. Before creating our two models UM and IM, it must build the two metamodels UMM and IMM. For a UM-to-IM Translation between models to be possible, there must be some sort of relationship between the metamodels UMM and IMM. This very relationship is materialized by the set of rules that define transformation TM. If the correspondence between UMM and IMM is close, the rules will be simple, if not they will need the elicitation of a good deal of knowledge. The complexity of the rule base somehow measures the distance between UMM and IMM. One way to use the technique is to define an *interpretable* IMM that is close enough to the UMM so as to preserve some of its graphic properties and to endow it with an mechanism that *Visualize*s the *Interpretation* process. By running the process on several *Example*s the User can thus "verify" that the behavior (*DesignBehaviour*) of her model actually conforms to her expectations.

If two *Person*s P1 and P2 (Figure MetamodelingInterpersonalCommunication) are to Communicate at all, there must be some correspondence between the "*DaliLanguage*s" they *Use* (i.e. the metamodels UMM1 and UMM2). This correspondence should be exhibited by one common interpretable IMM and two *Transformation Rule*s:

1. T1 : UMM1 -> IMM
2. T2 : UMM2 -> IMM.

Suppose that what P1 has in mind is described by a *Schema* UM1 (in formalism UMM1) - resp P2, UM2, UMM2. The transformed models T1(UM1) and T2(UM2) - both in IMM - are certainly different, but some comparison of their *Meaning* can be obtained by concurrently *Visualize*ing their *Interpretation*

Scrapbook

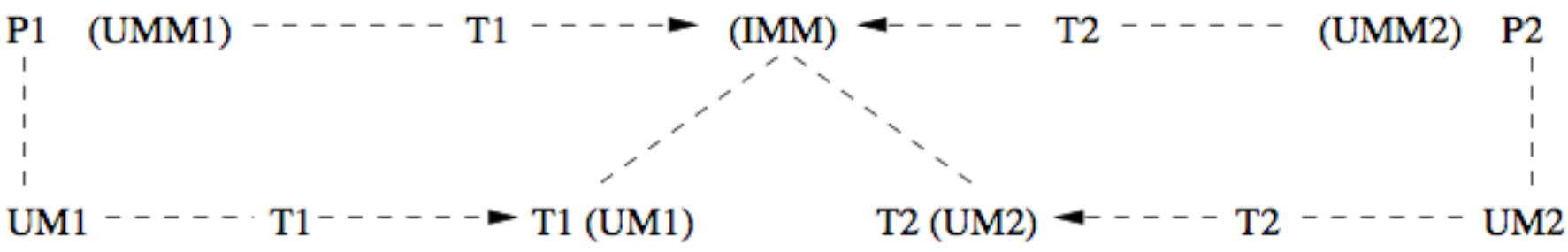


Fig. 4-MetamodelingInterpersonalCommunication1

7.4. InteractionCategory

Inherit from Category
"Interaction"

Categories of *Interaction*:

Static: the art object does not change and is viewed by a person. There is no *Interaction* between the two that can be observed by someone else, although the viewer may be experiencing personal psychological or Emotional reactions. The artwork itself does not respond to its context. This is familiar ground in art galleries and museums where art consumers look at a painting or print, listen to tape recordings and talk to one another about the art on the walls and, generally speaking, obey the command not to touch.

Dynamic-Passive: the art object has an internal mechanism that enables it to change or it may be modified by an environmental factor such as temperature, sound or light. The generative mechanism is specified by the artist and any changes that take place are entirely predictable. Sculptures, such as George Rickey's kinetic pieces that move according to internal mechanisms and also in response to atmospheric changes in the environment fall into this category (Rickey, 1979) The viewer is a passive observer of this activity performed by the artwork in response to the physical environment.

Dynamic-Interactive: all of the conditions of the dynamic passive category apply with the added factor that the human 'viewer' has an active role in influencing the changes in the art object. For example, by walking over a mat that contains sensors attached to lights operating in variable sequences, the viewer becomes a participant that influences the process of the work. Motion and sound capture and analysis techniques can be used to incorporate human activity into the way visual images and sounds are presented. The work 'performs' differently according to what the person does or says. There may be more than one participant and more than one art object. An example of this work is the 'Iamascope', a work which includes a camera looking at the viewers and is connected to a controlling computer. The work reacts to human movement in front of it by changing a kaleidoscope-like image and making music at the same time in direct response to the viewer's movements

Dynamic-Interactive (Varying): the conditions for both 2 and 3 above apply, with the addition of a modifying agent that changes the original specification of the art object. The agent could be a human or it could be a software program. Because of this, the process that takes place, or rather, the performance of the art system cannot be predictable. It will depend on the history of interactions with the work. In this case, either the artist from time to time updates the specification of the art object or a software agent that is learning from the experiences of interaction automatically modifies the specification. In this case, the performance of the art object varies, in addition to case 3, according to the history of its *Experience*s

7.5. BohmDialogue

Inherit from Dialogue
"Interaction"
labels: Author: **Bohm** Idea: **Rheomode** Example: **How to start a Bohm dialogue**

a primarily a means of exploring the field of *Thought*, is a form of *FreeAssociationThinking* conducted in groups, with no predefined purpose in mind besides mutual understanding and exploration of human though. Is conducted in groups of 10 to 40 people, who sit in a single circle, for a few hours during regular meetings or for a few days in a workshop environment. Participants "suspend" their thoughts, motives, impulses and judgements ' exploring and attempting to "*Think* together" collectively. According to the proposal, Dialogue should not be confused with discussion, lecture, discourse or debate, which, says **Bohm**, all suggest working towards a *Goal* rather than simply exploring. Meeting without an objective or agenda is done to create a "free space" for something new to happen.

Dialogue is really aimed at going into the whole thought process and changing the way the *Thought* process occurs collectively. Each *Person* does not attempt to MAKE COMMON certain *Idea*s or items of information that are already know to him. Rather, it may be said that two people are making something IN COMMON, i.e., creating something new together (*Original*). It seems then that the main trouble is that the other person is the one who is prejudiced and not *Listen*ing. After all, it is easy for each one of us to see that other people are 'blocked' about certain questions, so that without being aware of it, they are avoiding the confrontation of contradictions in certain ideas that may be extremely dear to them. The very nature of such a 'CreativeBlock' is, however, that it is a kind of insensitivity or 'anesthesia' about ones own contradictions. Evidently then, what is crucial is to be aware of the nature of ones own 'blocks'

Dialogue is a way of observing, collectively, how hidden *Values* and intentions can control our *Conduct*, and how unnoticed cultural differences can clash without our realizing what is occurring. It can therefore be seen as an **arena** in which collective

Learning takes place and out of which a sense of increased *Harmony*, fellowship and creativity can arise.Because the nature of Dialogue is **exploratory**, its meaning and its methods continue to unfold. No firm rules can be laid down for conducting a Dialogue because its essence is learning - not as the result of consuming a body of information or doctrine imparted by an authority, nor as a means of examining or criticizing a particular theory or programme, but rather as part of an *UnfoldingProcess* of *Creative* participation between peers. It creates the opportunity for each *Participant* to examine the preconceptions, prejudices and the characteristic *DaliPattern*s that lie behind his or her thoughts, opinions, *Belief*s and feelings, along with the PersonRoles he or she tends habitually to play. And it offers an *Opportunity* to share these *Insight*s. As a microcosm of the large *Culture*, Dialogue allows a wide spectrum of possible *Relationship*s to be revealed. A *PersonGroup* invited to give their time and serious *Attention* to a task that has no apparent *Goal* and is not being led in any detectable direction may quickly find itself experiencing a great deal of anxiety or annoyance. This can lead to the desire on the part of some, either to break up the group or to attempt to take control and give it a direction. This is all part of the process. It is what sustains the Dialogue and keeps it constantly extending creatively into new domains. In fact, they can become the central focus of the exploration in what might be understood as a kind of "**meta-dialogue**", aimed at clarifying the process of Dialogue itself. As sensitivity and experience increase, a perception of shared meaning emerges in which people find that they are neither opposing one another, nor are they simply interacting. Increasing trust between members of the group - and *Trust* in the process itself - leads to the expression of the sorts of thoughts and feelings that are usually **kept hidden**. There is **no imposed consensus**, nor is there any attempt to avoid *Conflict*. No single individual or sub-group is able to achieve dominance because every single *Subject*, including domination and submission, is always available to be considered. Participants find that they are involved in an ever changing and developing pool of common *Meaning*. A shared content of Consciousness emerges which allows a level of creativity and *Insight* that is not generally available to individuals or to groups that interact in more familiar way

How to start a Bohm dialogue

Suspension. Suspension of thoughts, impulses, judgments, etc., lies at the very heart of Dialogue
Numbers. A Dialogue works best with between twenty and forty people seated facing one another in a single circle. Smaller groups, on the other hand, lack the requisite diversity needed to reveal these tendencies and will generally emphasize more familiar personal and family roles and relationships.
Duration. A Dialogue needs some time to get going. It is important to point out that perseverance is required. In setting up Dialogues it is useful at the start to agree the length of the session and for someone to take responsibility for calling time at the end. We have found that about two hours is optimum
Leadership. A Dialogue is essentially a conversation between equals. At least one or, preferably two, experienced facilitators are essential
Subject matter. The Dialogue can begin with any topic of interest to the participants. No content should be excluded. In an existing organization the Dialogue will very probably have to begin with an exploration of all the *Doubt*s and *Fear*s that participation will certainly raise. Members may have to begin with a fairly specific *Agenda* from which they eventually can be encouraged to diverge

Referencia: http://www.david-bohm.net/dialogue/

Notas:

In a *Dialogue*, each person does not attempt to MAKE COMMON certain ideas or items of information that are already know to him. Rather, it may be said that two people are making something IN COMMON, i.e., creating something new together

In dialogue, participants give serious consideration to *PointOfViews* that may differ substantially from their own, and they are willing to hold many conflicting possibilities in their minds simultaneously and to accept what is, however uncomfortable. By this means, people in dialogue can together create the possibility for new *Insight*s and creativity (*CreativeAct*) to emerge, which would not be possible by merely thinking on their own

Rheomode: **Bohm** argues that *language* plays a big role in causing this fragmentation, especially the subject-verb-object construction that sometimes creates artificial and unneeded divisions in the description of a phenomenon. To remedy this situation, he introduces the Rheomode which is a new mode of English language in which one generates *Verbal* forms from root verbs. The verbs that he introduces are derived from Latin, like 'to vidate' from 'videre', meaning 'to perceive' as in 'seeing, feeling, understanding' all rolled into one. Transforming this verb using prefixes and suffixes yields meanings derived from the root meaning without the need to invent new verbs (The Arabic language is in fact built on this principle)

8. "Design-Approaches"

8.1. WittgensteinianDesignApproach

Inherit from DesignApproach
"Design-Approaches"
labels: Author: **Flores** Domain Specific: **Tradition and transcendence, that is the dialectical foundation of design** Author: **Hubert** Author: **Dreyfus** Author: **Winograd**

In this DesignApproach, the origin of *Design* is in involved practical *Use* and *Understand*ing, not *detached Reflection*, and design is seen as an *Interaction* between understanding and *Create:* shift in design from *DaliLanguage* as *Description* towards language as action (*Practice*). Are we as designers of new tools for *chairmaking* helped by this labeling of tools, materials, and activities (*Modelling*, *ToName*) ? In a WittgensteinianDesignApproach the answer would be; only if we *Understand* the *Practice* in which these names make sense. The activity of labeling has to be learned. Language is not private but social. The labels we create are part of a practice that constitutes social meaning. We cannot learn without learning something specific. To understand and to be able to use is one and the same. To master the professional language of *chairmaking* means to be able to act in an effective way together with other people who know chairmaking. To "know" does not mean *Explicit*ly *Knowing* the *Rule*s you have learned, but rather recognizing when something is *done in a correct or incorrect* way. To have a Concept is to have *Learn*ed to follow *Rule*s as part of a given *Practice*.

In a Wittgensteinian approach, the focus is not on the "correctness" of *Systems Description*s in *Design*, on how well they mirror the desires in the mind of the Users, or on how correctly they describe existing and future systems and their *Use*. Systems descriptions are *Design Artifact*s. In a Wittgensteinian approach, the crucial question is how we *Use* them, that is, what role they play in the DesignProcess. The reason for this rejection is the fundamental role of practical knowledge (*TacitKnowledge*) and *Creative Rule* following in *LanguageGame*s. Nevertheless, we know that systems descriptions are useful in the language-game of design. The new orientation suggested in a Wittgensteinian approach is that we see such descriptions as a special kind of artifact that we use as "typical examples" or "paradigm cases." They are not models in the sense of Cartesian mirror *MentalImage*s of Reality. In the language-game of design, we use these tools as reminders (*Remember*) for our *Reflection* on *Future* [*computer]* applications and their use. By using such design artifacts, we bring earlier *Experience*s to mind, and they bend our way of *Thinking* of the *Past* and the future. If they are good design artifacts, they will support good moves within a specific design language-game. The meaning of a design artifact is its use in a design language-game, not how it "mirrors reality." Its ability to support such use depends on the kinds of *Experience* it evokes, its family resemblance to tools that the participants use in their everyday work activity (me recuerda al Agile Method *Planning Game*).

The design artifacts could be experienced through the practical use of a prototype or mockup. This experience could be further reflected upon in the language-game of design, either in ordinary language orin an artificial one. *Understand* as triggers for our *Imagination* rather than as mirror MentalImages of Reality. Design artifacts are very effective when they *Challenge* us to tell *Storys* that make sense to all *Participant*s. If design is rule-following Conduct, is it also creative transcendence of traditional behavior. Mastery of the *Rule*s puts us in a position to invent new *Ways* of proceeding. How are tradition and transcendence united in a Wittgensteinian approach? It could mean utilizing something like *Verfremdungseffekt* to highlight transcendental untried *Possibilitys* in the everyday Practice by presenting a well-known practice in a new light: "the aspects of things that are most important to us are hidden because of their simplicity and familiarity" (Wittgenstein). However, as Peter Winchput it, in a Wittgensteinian approach: "the only legitimate use of such a *Verfremdungseffekt* is to draw *Attention* to the familiar and Obvious, not to show that it is dispensable from our *Understand*ing.". Design artifacts, linguistic or not, may in a Wittgensteinian approach certainly be used to break down traditional understanding, but they must make sense in the users' ordinary language-games. If the design tools are effective, it is because they help users and designers to see new aspects of an already well-known practice, not because they convey such new ideas. It is I think fair to say that this focus on traditional skill in interplay with design skill may be a hindrance to really revolutionary designs. The development of radically new designs might require leveraging other skills and involving other potential users. Few designs, however, are really revolutionary, and for normal everyday design situations, the participation of traditionally skilled users is critical to the quality of the resulting product. **Tradition and transcendence, that is the dialectical foundation of design** (DialecticThinking). If designers and users share the same form of life, it should be possible to overcome the gap between the different language-games. It should, at least in principle, be possible to develop the practice of design to the point where there is enough family resemblance between a specific language-game of the users and the language-games in which the designers of the [*computer*] application are intervening. A mediation should be possible. To develop the competence required to participate in a language-game requires a lot of *Learn*ing within that practice. But, in the beginning, all one can understand is what one has already understood in another language-game. If we understand anything at all, it is because of the family resemblance between the two language-games. However, paradoxical as it sounds, users and designers do not have to understand each other fully in playing language-games of design-by-doing together. As long as the language-game of design is not a nonsense activity to any participant but a shared activity for better understanding and good design, mutual understanding may be desired but not really required.

As designers, our practical understanding will mainly be expressed in the ability to construct specific *LanguageGame*s of design in such a way that the users can develop their understanding of future use by participating in DesignProcesses. We make up the rules as we go along. A skilled designer should be able to assist in such transcendental rule-breaking activities (*Rupture*). Less radical but perhaps more practical would be for designers to concentrate design activity on just a few language-games of use, and for us to develop a practical understanding (*TacitKnowledge*) of useful specific language-games of design. Really participatory design requires a shared form of life--a shared social and cultural background and a shared language. Hence, participatory design means not only users participating in design but also designers participating in use. The professional designer will try to share practice with the users. In fact, the experiences from the work-oriented design projects indicates that most users **find design work boring**, sometimes to the point where they stop participating. The **design work should be playful**. In our own later projects, we have tried to take this challenge seriously and have integrated the use of future workshops, *MetaphoricalDesignProcess*, role playing and organizational games into work-oriented design

Nota para Software Design

Floyd sees a new *DaliProcess*-oriented Paradigm in software engineering with a focus on human *Learn*ing and *Communication* in both the use and development of the software. She views the *Outcomes* of this process as *Tool*s or working environments for people and not as pieces code or an abstract software *System*. Hence, the quality of the product (*BetterProductQuality*) depends on its **relevance**, **suitability**, or **adequacy** in practical *Use*. Quality cannot be reduced to features of the product such as reliability and efficiency. From this perspective, *PrototypeModel*ing can be seen as an alternative or complement to traditional, more formalized, and detached *Description*s. New Trends in the Design of computer-based systems is the development of a new philosophical foundation in the tradition of *Hermeneutic*s and phenomenology proposed by **Hubert** and Stuart **Dreyfus** (1986) and Terry **Winograd** and Fernando **Flores**. This philosophical endeavor focuses on the differences between human activity and computer performance. In doing so, it departs from other traditions by *Focus*ing on what *People* do with computers, how in cooperation with one another they use computers, and what they might do better with computers. Working with the End Users of the Design, the graphics workers, some design *Method*s failed while others succeeded. Requirement *Specification*s and systems descriptions based on information from interviews were not very successful;when we started to use **design-by-doing** methods and descriptions such as *Mockup*s and work *Organization Game*s; and when we started to *Understand* and use traditional *Tool*s as a design ideal for computer-based systems. Design tools such as *Schema*, *PrototypeModel*s, mockups, *Description*s, and *Representation*s act as reminders and paradigm cases for our contemplation of future computer-based systems and their use. Such design tools are effective because they recall earlier *Experience*s to mind: use of more **action-oriented design artifacts**. This kind of design becomes a language-game in which the users learn about *Possibility* and *Constraints* of new computer tools that may become part of their ordinary language-games. The Designers become the teachers that teach the users how to participate in this particular language-game of design. However, to set up these kind of language-games, the designers have to learn from the users.

8.2. DesignBySurvivalApproach

Inherit from DesignApproach
"Design-Approaches"

Many designs reflect the survival of previous designs. This can be **design by reuse** (which includes theft)**, design by adaptation, design by circumstance,** or **design by fitness**.

François Détienne has provided a **taxonomy of** ReuseSituations based on the processes that seem to be involved, such as **prospection** (thinking ahead about how a design Solution might be used in the future) and **retrospection** (realizing that a previous design might be adopted or adapted to a new problem) (ver paper **Memory of past designs**). Design by adaptation is when good and sometimes bad designs are adapted,diversified,and improved. Survival can also be a matter of *Circumstance*. The history of the typewriter is a good example: The qwerty keyboard. Finally,design by survival can involve survival of the fit. An example would be the menu interface

8.3. EthnographicIterativeDesignApproach

Inherit from DesignApproach
"Design-Approaches"

a combination of intervention and ethnographic techniques in our overall iterative approach to Design. Is the responsibility of Designers to set up *Activitys* applying *Tool*s and *Technique*s that will allow themselves and Users to develop knowledge at two levels, *Abstract* and *Concrete*, within three areas:

1. Users' present work (work *Practice*, *Organization* of work, *Product*s/*Service*s, relations to customers, *Client*s, suppliers, history of recent major *Change*s, management *Strategy* and *Style*, etc.).
2. New *System*s
3. Technological options (*Technology Alternatives*)

This in order for the design to reflect - in a realistic way - the traditions (*Ways*) of the organization. Realistic in the sense that the design reflects an appreciation of the *Rationale* given by *Member*s of the organization, and in the sense that the organization is geared to meet the *Challenge* of the envisioned design. Thus, by detailed studies of the present *Situation* (*Now*) it try to "measure" the organizations *Need*s and readiness for change. The intentions are to facilitate *Reflection*s upon current practice, to generate *Idea*s, and to further develop the "technological *Fantasy*" of users and designers. It strive to select carefully the area and the mode of intervention based upon what it have learned by the ethnographic techniques. It found that spending time on *Analysis*, paid back in relation to single out areas of the work relevant for prototyping and in relation to generating realistic design proposals. Also it found that detailed knowledge of users' current work allows to discard by 'mental testing' design ideas that turned out not to be worth prototyping (*PrototypeModel*). Ethnography and intervention are contradictory in terms of basic approach and intended results. However to us at a practical level, the two approaches in *Combination* have been an effective way to learn about the organization and also a main resource for generating realistic visions of future use of technology. Organizations are (also) political battle fields - *People* are fighting for their jobs, for preserving/getting an interesting job, for preserving/increasing their power base etc. And since the introduction of new technologies often affect such issues, designers cannot avoid playing a role and sometimes taking a stand in these battles. Choosing an approach that might get you into close relations with users, you had better be prepared to defend your observations and design ideas - not all designers may be ready for that, nor may their employers give them the opportunity.

The overall approach is iterative in two ways:
1. Iterate between analysis of the present and generating and eventually prototyping design ideas. This is not at all a new idea. What might be new is our hesitation to start prototyping before developing a thorough *Understand*ing of the organization in question
2. Iterate between the two levels of knowledge: *Abstract and Concrete:* designers have to put themselves in Situations where they experience users while they are performing their every day activities (*Routine*)

Techniques: observation, interviewing, and prototyping

*Representation*s: tend to postpone formal *Tool*s and techniques introducing Concepts and *DaliSymbol*s not common to the users until detailed *Analysis* and implementation of the visions. At that time designers cannot do without them, but still when users are involved in this part of *Design*, some kind of Translation might be appropriate. It Judge the relevance of a *Description* on how it facilitate discussions (*Conversation*) among us as designers and among us and users and their managers.

8.4. DesignApproach

Inherit from Approach
"Design-Approaches"

Each of these strategies hand-waves to creativity,in one way or another. Discussions of these strategies and stages typically acknowledge that they do not necessarily apply to creative design. The importance of the CreativeProcess for designing has fostered criticism of systematic design *Method*s (Ver figura **Two Views of Design**). Design qualifies as a phenomenon of macrocognition. Design (like essay writing) has been cited as an example of problems that can't be represented entirely in terms of *ProblemSpace*s and *Stage*s of operations (DesignProcess)

Notas de lecturas:

In modern times the design process has been studied as an academic field since the early 1960s. The development of design approaches can be described in three generations corresponding to each of our three design worlds (the *Objective*, the Social and the *Subjective*). The "first generation" design approach focused on engineering. It addressed our "objective world" and the answer had to do with control - with the correct *Representation* and manipulation of objects, facts and data. The second one focused on participation . It addressed our "social world" and the answer had to do with *Ethics* - with democracy and appropriate *SocialInteraction*. The third one focused on *Design* ability. It addressed our "subjective world" and may be described as having to do with *AestheticFactor*s - with the expressive and *Creative* competence of Designers

Bonsiepe: On the one side, we have the concern for the User, and on the other side we have aesthetic quality. It is the focus on the user and her/his concerns from an integrative perspective that characterizes the design approach. In that aspect it differs from other disciplines (including ergonomics and cognitive sciences); furthermore a comprehensive design approach

does not put aesthetics into quarantine, but explicitly addresses the concern for aesthetic quality, including the dimension of play

The goal of **moral** design is to produce a software [product] that effectively complements the user's current physical and virtual environments thereby allowing the User to *Experience* a *Sense* of *Wholeness*

8.5. DesignByDeliberativeRecognitionPrimingApproach

Inherit from DesignApproach
"Design-Approaches"

Designers can recognize *DesignPatterns*. They capitalize on their extensive conceptual knowledge of previous designs and design problems. Designers will opportunistically 'take immediate advantage of *Solution Opportunity*.'. Indeed, one technique that designers apply is that they constantly surround themselves with *Sketches*. Often an entire wall is covered. The designer wants to be prepared for accidental discovery of a design solution that might already be present. In **Alexander**'s pattern-based design technique, complex designs are approached by recombining and orchestrating smaller and manageable modules that have proven appropriate for earlier, similar *Situations*. This strategy is reminiscent of recognition-primed decision making, which characterizes the decision making of experts in diverse fields other than design. It can also be regarded as a form of reasoning by *Analogy*

9. "Design-Process"

9.1. DialogicalDesignProcess

Inherit from DialogicalProcess
"Design-Process"

In the *Design Situation* the participants carry on anargumentative *Dialogue*. Concepts or *Schemas* are suggested, brought into *Question*, assessed (*Assessment*) and *Evaluated*, and counter proposals are made. The Norwegian sociologist **Stein Bråten** (1) demonstrated the role of models in *Communication DaliProcesses*. If dialogue partner A possesses a sound model of the domain under consideration he is the **model'strong** actor. The **model'weak** partner B has no elements of this *Domain* that are not a subset of A's model. With his model, A has pre'defined the domain under consideration. Bråten calls this situation **asymmetric dialogue**. Example: A group member brings a prepared design ' the model ' to the *DaliProject Meeting*. The other group members have not worked out any definite *Ideas* because they expected to draw up the design collaboratively (*CollaborativeProcess*). The model'weak members of the group find that they must examine the predefined model, which they must first *Understand*. This understanding means the adoption of the model. All further argumentation for or against the model can only be expressed in terms of the model with the result that the model becomes more established. When the dialogue partners intersubjectively cross their *PointOfView*, this is **symmetric** *Dialogue***.** While perspective is always implied in our *Thinking*, we can attempt to make them *Explicit*, allow them to Interact and gain deeper *Insight* from their *Interrelationship*. Thus, I see in **multiperspectivity** a prerequisite for dialogical design.

A desirable system design is distinguished by straightforward orientation towards the design achieved at any given time, i.e. the design decisions are characterized by Coherence, Conceptual Integrity and ' finally ' by their completeness with respect to the *Task* assigned. If this standard of quality is to be met even after a module (*DaliComponent*)'oriented division of labour, then all subsequent module'local design decisions and revisions of the *System* design must satisfy the conceptual integrity. Ideally, this requiresa *holistic Understanding of the system design* which is best acquired by participation in the design process itself. This **emerges** when the system is dialogically designed through the *Intersubjective* crossing of PointOfView and when the group comes to an understanding through a common perspective in respect to the theory of the System. The overall understanding obtained during dialogical design cannot be disseminated in *Documents*. It is therefore clearly preferable that the same people participate in the design and realization activities.

The Team can negotiate a consensual definition of the *Situation* of the outset (*StartingPoint*). During the design process they developed techniques of mutual considerations and *Contradictions*. This is a group'specific ever'recurring *Dialogue DaliPattern*, called **ostinato**. The musical term ostinato means a persistant recurring bass. In dialogical design it means a persistant recurring dialogue pattern. The definition of the situation entails intersubjectively valid group **Consensus** on working *Practices*, group *Meetings*, PersonRoles, *Thought*', speech', and participating schemata, acceptable and unacceptable behavior and the **ostinato** to be developed. The definition of the *Situation* is of primary importance for dialogical design. The rivalry generated by mutual contradiction proved to be a positive and vital *Force* in the group dynamic (*Conflict*). Suggested

*Idea*s are exhaustively discussed, further developed or refuted according to their usefulness (Valuable).

Social processes cannot be formalized or controlled but influenced. *DaliProcesses* need to be tailored to the needs of the communicative processes at hand, so as to show **multiperspectivity**. Methods do not determine the *Quality* of *Product*s (*BetterProductQuality*), but *People* involved in the design processes allow quality to **emerge**

(1) **Bråten**, S.: *Asymmetric Discourse and Cognitive Autonomy: Resolving Model Monopoly through boundary shifts*. In: Pedretti, A. (Hrsg.): Problems of Levels and Boundaries; Princelet Editions: London Zürich, 1983; S. 7-28.

9.2. MetaDesignProcess

Inherit from MetaProcess
"Design-Process"
labels: Author: **Norman**

Across a variety of *Domain*s, *Consumer*s often *Choose* to act as the designer of their own *Solution*, sourcing the necessary *DaliComponent*s and assembling the parts to meet their specific *Goal*s.

Meta-design = how to create new *Media* that allow users to act as Designers and be *Creative*

Why meta-design?
- design as a process is tightly coupled to use and continues during the use of systems
- address and overcome problems of closed *System*s
- transcend a '*Consumer* mindset'

socio-technical environments supporting meta-design must
- support emerging, unintended, and subversive uses, not just anticipated ones
- not only build new *Technology* but seed new *Practice*s, new genres, new *Community*s
- avoid that most of the design intelligence is forced to the earliest part of the DesignProcess, when everyone knows the least about what is really needed

Nota de lectura:

D.Norman. *The best that the designer can do is put the tools into their hand*. The best kind of design isn't necessarily an object, a space, or a structure: it's a *DaliProcess* -- dynamic and adaptable. The best designs are the ones we create for ourselves. And this is the most appropriate kind of design -- functional and aesthetic. It is design that's in *Harmony* with our individual *LifeStyle*s. Manufactured design, on the other hand, often misses the mark: Objects are configured and made according to particular *Specification*s that many Users find irrelevant. Ready-made, purchased items seldom fit our precise *Need*s, although they might may close enough to be satisfactory. We are all designers ' and have to be. Professional designers can make things that are attractive and that work well. They can make beauty, create products we fall in love with at first sight. They can create products that fulfill our needs, that are easy to understand, easy to use, and that work just the way we want them to. Pleasurable to behold, pleasurable to use. But they cannot make something personal, make something we bond to. Nobody can do that for us: we must do it for ourselves

Ver *MetaDesign*

9.3. StructuredPlanningProcess

Inherit from DevelopmentProcess
"Design-Process"

Structured Planning provides tools for the *Planning* stage of DevelopmentProcess. From its inception as a response to general inadequacies in the DesignProcess, it has evolved to offer specific remedies for deficiencies of planning

Structured Planning supports *Planning* and Concept development in two major ways:
1. it provides a philosophy, framework and information handling formats for discovering what needs to be done' with *Insight* for *Why*
2. it organizes this information in the best way for *Planner*s and Designers to use it

In its most general formulation, it progresses through five phases.

1. ProjectDefinitionPhase
2. ActionAnalysisPhase
3. *StructuringPhase*
4. *Synthesis*
5. *Communication*

Embeds concepts of preparation (*PreparationMethod*, *PreparationStage*) and manipulation (*Manipulate*) from the classic creativity model in its systematic scheme. Place the different styles of lateral (*LateralThinking*) and vertical thinking together in a process (*DaliProcess*) that takes best advantage of both at appropriate times : The result, an *information Structure specialized for inventive design*, defies the natural tendency to a priori categorization. After years of experimentation, our experience at the **Institute of Design** suggests that *the way that information is assembled and Organized in a project* is absolutely *Critical* to the *Creative* quality of the *Result*. A *Flexible*, fluid, conjectural/evaluative Paradigm for creativity is naturally supported

1. ActionAnalysisPhase
2. *ManipulativePreparationStage*
3. *StructuringPhase*

Referencia: *Context for Creativity* paper

Conceptual Design: Structured Planning is a design planning tool for operations at the conceptual level. Two characteristics of the process directly support the achievement of *ProductIntegrity*:
1. the capacity of the process to incorporate and use a wealth of information in both breadth and depth,
2. the ability of the process to *Juxtapose* information in the right place and time to encourage the evolution of organic, Holistic (*Whole*) concepts

Notas de lecturas

Basically is a two-step development process that adds a *Planning* stage before the designing stage (*DesignStage*), separating formally the process of Concept formation from the process of turning into a *Specification*. A third stage should precede planning: *Metaplanning* is planning the planning and designing processes

Implements a model to produce Concepts that are superior by *Design* (*ProductIntegrity*)

Structured Planning organizes the information produced by ActionAnalysisPhase using two computer programs, RELATN and VTCON, created for the purpose. At the heart of the RELATN program is a special "measure of *Interaction*", a mechanism that finds and links (*DaliLink*) *Function*s in the information base that have a strong likelihood of being fulfilled by the same *DaliComponent* or components of a *Design Solution*. This approach to information *ItemOrganization* is unique and deals directly with the design problem inherent in the *ProductIntegrity* goal of holism. To achieve holistic *Solution*s, components need to have "**organic**" *DaliAssociation*s with each other, working in concert to achieve the purposes of the *System*. The best way for this to come about is for the design team to see the right Functions together in the design process. Conventional data bases associate data items by their common membership in classes (*Classification*), frequently marked by *Keyword*s. The RELATN program *Associate*s them, instead, by their potential for being fulfilled by the same design *Idea*s. The Information *Structure* then created by the VTCON program provides the *ItemOrganization* to reveal *Cluster*s of related Functions and how they relate to others.

Development effort typically lingers little more than momentarily on the issue of what the product should be. The concept to be developed, far too frequently, is already determined before development begins! In today's world, it is as important to know *What* to make as it is to know *How* to make it. And, as technological know-how proliferates, *Knowing* what to make becomes more important every year! (*RevolutionaryChange*). The **development process** must be changed from a one-step process, in which an already determined Concept is turned into a *Specification*, to a two-step process wherein a distinct development Stage is devoted to *exploration and determining the* Concept. The *Outcome* of the new planning stage of development is the concept; it becomes the "project statement" or "design *Brief*" for the designing stage that follows.

9.4. SituatedCreativeDesignReformulationType1Step

Inherit from SituatedCreativeDesignStep
"Design-Process"

Reformulation type 1 modifies the *StructureSpace*. In the situated FBS framework, this design step is activity 9, Figure SituatedCreativeDesignProcess. This design step is based on CreativeProcesses that may produce new *Structure* variables

(*Parameters*). Any of three classes of input is needed for these processes:

1. External Requirements on *Structure* (*StructureExternalRequirement*)
2. *ExternalDesignStructure* of existing *Design* Structure
3. *InterpretedStructure* representations

Relation with the *CreativeAct*:
The *CreativeDesigningInterpretation* of *StructureExternalRequirement* (activity 3) can bring about new structure variables in two cases. In the first case, modified *DesignExternalRequirements* are given to the Designer after commencement of the *SituatedCreativeDesignProcess*. Here, the creativity is located in the *Surroundings* in which the design process is carried out rather than in the design process itself. In the second case, the same external requirements as given at the *Outcome* of the design process are interpreted differently by the designer. This locates the creativity in the process of interpretation. The interpretation of *ExternalDesignStructure* (activity 13) can involve CreativeProcesses that generate new Structure variables. One example is the process of emergence that has also been described as a location of creativity in Analysis step. Another wellknown example is the process of analogy (*AnalogicalProcess*). Here, an external structure is a source design exhibiting identical *DesignBehaviour* as the current (target) design. The matching and then mapping of the source structure onto the target structure is the creative element of interpretation. *CreativeDesigningReflection* on *InterpretedStructure* (activity 6) constructs new structure variables without the use of any *ExternalRepresentation*s

9.5. ActionAnalysisPhase

Inherit from CreationDesignStage
"Design-Process"

an extensive information collection phase. The purpose of this phase of the process is to establish what the product, system, service or other entity under *Design* must do (*Function*s), and to gain *Insight* about what may take place when this is done (*DesignFactor*s)

Expressly designed to seek out all Users of a product and to gain insight about their *Need*s from their *Conduct*.

Exhaustively catalogs the *Function*s necessary for a successful design while, at the time of identification, uncovering *Insight*s and capturing *Idea*s for creative ways to perform the functions. *Collect* detailed information for a *DaliProject* . The design Team undertakes a top-down *Analysis*, establishing for the system a FunctionStructure . Careful preparation of a Function Structure produces the foundation we need for a creative, Holistic *Approach* to Concept development. If the system is to perform well, it must fulfill all of the *Function*s. When *Insight*s are obtained, it is crucial to capture the ideas that may follow naturally. As Activities are described and functions specified in the Action Analysis process, *Insight*s are also sought in the immediacy of the moment. On the Action Analysis form used to *Analyze* Activities (and develop the information for the Function Structure), there is a *Section* for what are called *DesignFactor*s *Juxtaposed* to the list of Functions. The failure of conventional planning to seek out all users and consider their *Problem*s in depth is addressed in this phase. Is a top-down technique for establishing the *Function*s that must be performed by the *Product* and its users considered as a *System*

Ver Figura ActionAnalysis

Notas de lectura:

At a similar stage in most product development processes, information collecting consists of the examination of competitive products, *Market* studies on existing products and the elicitation of *Need*s and/or *Idea*s from potential Users. The focus is almost always on *existing* products, their purchasers or users. Two things are **wrong** with this approach:

1. there is usually no serious attempt to develop a new Concept. The effort in this product development model almost always goes into Refinement of an *existing* concept. An idea already exists (the current product to be improved) or is obtained with little effort (a product fortuitously conceived by someone with enough influence to have it considered). Market research is often suggested as a tool at this stage, but it is not a good choice. Contrary to conventional wisdom, market research can do very little here
2. the search for information usually reaches only the *primary* users of the product: those who operate it for its intended use. Those it misses are the very users who could reveal many of the needs that should be considered in its design. They are the many *SecondaryUser*s of the product. Through the eyes of each of these "users", a product looks radically different. Each user sees it in terms of the functions he has to perform with it, and each can contribute to the development of a better concept

StructuredPlanningProcess addresses the first problem as a matter of principle. It formalizes a split between concept design and detail design with the goal of developing a concept of design quality high enough to attain *ProductIntegrity*. Action Analysis, as the primary information collecting (*Collect*) phase of Structured Planning, addresses the second problem.

Guiding the Search is a FunctionStructure created to assure good coverage of all Functions'most especially those not normally recognized in conventional product development.

9.6. SituatedCreativeDesignStep

Inherit from DesignStage
"Design-Process"

Gero and **Kannengiesser** have presented a framework of CreativeDesigning termed the situated FBS framework ' that is based on the three *DesignWorld*s. The situated FBS framework specifies a set of 20 *Activity*. Their numbering in Figure SituatedCreativeDesignProcess does not prescribe a fixed order of execution. All 20 activities can be mapped onto a set of eight fundamental SituatedCreativeDesignSteps

9.7. IntegratedDesignProcess

Inherit from DesignProcess
"Design-Process"

There is strong evidence that obtaining the benefits of design depends on managing the process in a structured and systematic fashion. This is not to say that there is no scope for *FreeAssociationThinking* 'out of the box' but rather that the divergent aspects of creativity need to be balanced with the *ConvergentThinking*

In essence there are three broad phases of activity:

· A *Planning* phase ' initial idea picked up/ generated and developed, analysis of potential technical and market issues, feasibility assessment, and preparation of a design brief.
· A development phase ' detailed market and technical specification, concept design, prototype development and testing, detailed design and production engineering.
· A production and sales phase ' production and marketing planning, tooling, test manufacturing, trial marketing, full-scale production, market launch, follow up.

Although this has a manufacturing orientation the basic principles apply equally to *Service*s. There will also be considerable variation amongst *DaliProject*s ' in terms of timescale, complexity, etc. Typical key *IntegratedDesignStages* in the process are:

1. IntegratedDesignStimulusStage - 2. IntegratedDesignConceptFeasibilityStage
3. IntegratedDesignProjectPlanningStage - 4. IntegratedDesignSourcingDesignSkillsStage
5. IntegratedDesignConceptDesignStage - 6. IntegratedDesignConceptDevelopmentStage
7. IntegratedDesignPrototypeAndTestingStage - 8. IntegratedDesignMarketDevelopmentStage
9. IntegratedDesignTechnicalDevelopmentStage - 10. IntegratedDesignLaunchingStage
11. IntegratedDesignEvaluationStage - 12. IntegratedDesignSupportAndExtensionStage
13. IntegratedDesignReInnovationStage

Effective management of design needs an integrated approach, which links the specific contribution of design specialists with those of others throughout the organisation. Similarly the danger in a *Stage* model of the *DaliProcess* is that it implies separation of involvement. When a particular stage is finished those involved can thropicked up (hopefully) by the next group, and so on. If design is about a process over time requiring different *PointOfView* it makes sense to organise it in a much more integrated fashion. Instead of sequentially involving people, there is a case for bringing the whole set of PointOfView together at the outset and building a shared and clear Concept around which everyone can contribute. Concurrent working involves the shared working of all these different sets of people together, at the same time, and it can play an important role in the organisation and management of the DesignProcess

9.8. UserKnowledgeIdentificationStage

Inherit from MassCustomizationDesignProcessStage
"Design-Process"

how to find the *UserKnowledge* by using *Product* and UserProcess as a means to trigger the user knowledge at the end. A method based on participatory *Design* and applied User observation is proposed as a way to capture user knowledge that helps design teams develop clear *Insight* into user *Need*s and *UseContext*

The *Representation* of objects is used as a triggering mechanism for users to externalize their knowledge from objects and *UserProcess* that would otherwise remain inaccessible. The *Photo*graphic image of *Artifact*s is a conceptual representation of a real artifact. It leaves the users enough space to discuss what the characteristic (*Feature*) is and how it is used. The second triggering mechanism is a typical process ' well understood among users. Users were asked to describe what parts of the process presented in the *Video* clips were alike or different from their processes. The process helps users describe the actual experience through a given *Example*

9.9. SituatedCreativeDesignReformulationType2Step

Inherit from SituatedCreativeDesignStep
"Design-Process"

Reformulation type 2 modifies the behaviour state space. In the situated FBS framework, this design step is activity 8, Figure SituatedCreativeDesignProcess. This design step is based on CreativeProcesses that produce new *DesignBehaviour* variables (*Parameters*). Any of four classes of input is needed for these processes:

1. external requirements on behaviour (*DesignBehaviourExternalRequirement*)
2. external representations of existing design behaviour (*ExternalDesignBehaviour*)
3. *InterpretedDesignBehaviour* representations
4. *InterpretedStructure* representations

Relation with the *CreativeAct*:
The *CreativeDesigningInterpretation* of external requirements on behaviour (activity 2) can produce new *DesignBehaviour* variables in an analogous way as in reformulation type 1. Creativity is located either outside the system via modified requirements or inside the system via modified interpretation. The interpretation of external design behaviour (activity 19) can produce new behaviours to alter the *DesignBehaviourSpace*. This activity often uses emergence to reconceptualise current behaviours. *CreativeDesigningReflection* on interpreted behaviour (activity 5) constructs new behaviour variables without the use of any external representations. It reconceptualises current behaviours in a similar way as interpretation. Its underlying mechanism can be assumed to be **emergence**. The derivation of additional behaviour from *Structure* (activity 14) can drive reformulation type 2 in the same way as described for the Analysis step. Creativity here is fostered by the *Interaction* between Designers and computational *Tool*s. Another way to derive new behaviour from structure is via *Analogy*

10. "Software"

10.1. EarlyDesignStagesSupportingToolPrinciple

Inherit from Principle
"Software"

Design Principle for a Tool that supports early DesignStages (Problem oriented), particularly supporting *RepresentationalTalkback* and *DesignReflectionRepresentation*

- designers must be able to easily create objects in a two dimensional space at any level of granularity as they like. The presentations (or labels) of objects must be automatically done by the system but designers should be able to overwrite them;
- designers must be able to easily identify objects in the two-dimensional space;
- designers must be able to search for objects in terms of the whole design and in terms of other objects;
- designers must be able to examine details of an object of interest;
- designers must be able to operate on objects displayed in the two dimensional space in a direct manipulation style;
- use a mapping between domain constructs and physical properties of two-dimensional space to automatically process displayed objects if and only if the mapping is 'natural,' for example, first is at the top and last is at the bottom. Designers must be allowed to overwrite these mappings when necessary.

10.2. SoftwareProductPlan

Inherit from SoftwareProductLinePlan
"Software"

A marketing plan includes a market analysis with an assessment of the market, and a marketing strategy with a plan for realizing the *Business Opportunity* with products that meets the business *Need*s. Fig. SoftwareProductMarketingPlan shows

elements of a marketing plan

11. "Narrative"

11.1. StrategyNarrativeMateriality

Inherit from StrategyCredibilityDimension
"Narrative"

refers to a story's physicality, either literally (e.g., long accounts take up more space than shorter accounts) or figuratively (e.g., narratives that focus on touchable phenomena instead of abstract concepts). Strategists are able to associate their stories with film and television, media that possess high currency and credibility in our society

To be effective, verbal narrators need to consider meter and *Rhythm*. Repetitive motifs which would be considered redundant in written works are often used in spoken accounts to group action *DaliPattern*s, facilitate **recall**, and create emphasis. Good verbal narratives are easily telescoped; that is, they can be expanded or shortened into 'terse tellings' and still retain their essential character.

This suggests that strategists and strategy researchers might attend more to differences between *Verbal* and written strategy formulation. With respect to narrative *Contents*, credibility can be obtained through reference to material, here-and-now phenomena. Thus, authors who concoct unusual stories often take pains to create characters who embody familiar values, outlooks, and mannerisms

11.2. StrategyNarrativeReadership

Inherit from StrategyCredibilityDimension
"Narrative"

From the perspective of reader/response theory (cf. Iser, 1989), the meaning of a text resides not just 'in the text itself' nor in the 'author's intent' but also in the 'backgrounds and *Experience*s' that readers bring to the text and how 'these color their *Interpretation*s of the text'

For executive strategists trying to create homogeneous 'designer cultures' or 'monolithic identities', this interplay and dynamism among text, author, and reader presents a problem. We suspect that much of the 'professionalization' of today's managers works to standardize readers' *Response*s; 'model readers' are created who can interpret text as the authors intend it

The model reader presumes the existence of model languaging and authorship. Regardless of content, narratives couched in a model *Style* are automatically conferred a level of legitimacy not given other texts-they gain credibility by recognition. In particular, texts derived from and offering *Expert Recipe*s-e.g., Andrew's (1971) relatively simple **SWOT** model, or the more elaborate models of Ansoff (1965), Hofer & Schendel (1978), and **Porter** (1980)-are conferred a halo of authority, the strategic equivalent of Good Housekeeping's Seal of Approval. Whole nations have swallowed strategic tales on this basis

12. "Process-Guidelines"

12.1. ScienceOfQualitiesResearchPrinciple

Inherit from Guidelines
"Process-Guidelines"

ScienceOfQualitiesApproach principles identified might be used as design principles to create the conditions for high quality Creative *Research*. A significant *Outcome* of a science of qualities *Cooperate* inquiry can be seen as "living *Theory*" which guides and illuminates (*Insight*) action. Such theory provides understanding in terms of a dynamic *DaliPattern* of *Relationship*s which connects *Aspect*s of *Practice*, rather than a hierarchical *Cause* and *Effect* explanation.

Team with rich *InterpersonalCommunication*

The touchstone of a *ScienceOfQualitiesApproach* is experiential, participative *Knowing*, While this can be approached through observation, interviews and other forms of qualitative data gathering, rich interconnections are most fully developed through participative inquiry in which the object of inquiry is experience and action within one's own life world in Collaboration with one's peers. This inquiry process brings about an intimate and critical encounter with the phenomena being *Explore*d, producing a rich senexperiential knowing: what *Gestalt* practitioners would describe as good contact. The group can provide a living container for the new *EmergentOrder*, new *Idea*s and new *Practice*. For a dynamic *Culture* of inquiry, with *Diversity* of *PointOfView* and complex internal communication, can be seen as having the *EmergentQuality*. An inquiry group exhibiting the qualities of an excitable medium will find new *DaliPattern*s emerging from its own dynamics, which will involve a mixture of order and chaos of the type which is described as '*EdgeOfChaos*'. In our view, it is not possible to conduct a science of qualities except from a place a rich mutual engagement, a place which opens the inquiry community to experiential, *TacitKnowledge* knowing. This invites Imaginative *Representation* (*MentalImage*), if possible through multiple *Media*, so that the richness of experiential contact is articulated and its potential *Meaning*s explored. It invites creative and challenging *Use* of ideas

ComplexIterationCycle **in Teams**

Each actual group unfolds these processes in its own particular fashion (*UnfoldingProcess*). Every group becomes a unique product of human *Interaction* which is impossible to fully describe, not simply because the map is not the territory, but because the territory is in a continual process of emergence. Each group evolves a rich originality while conforming in principle to the same pattern, analogous to a Mandelbrot set (*FractalStructure*) . The inquiry process cycles through phases of *DaliAction* and *Reflection* or more accurately between phases of experiential, presentational, propositional and practical forms of knowing in which the same realm of experience is visited on several occasions. The group may choose *Convergent* cycling, in which one aspect of experience is explored in increasing depth over several cycles; or Divergent cycling so that different aspects of experience are explored and the group can see particular experience in a wider context; or both. Through convergent cycling the co-researchers are checking and rechecking their discoveries with more and closer attention to detail.Through divergent cycling they affirm the values of heterogeneity and creativity that come with taking many different *PointOfView*, and they acquire a *System*ic view of the phenomena. The iterative process of research cycling moves people away from linear cause- and-effect thinking into a cyclical, ecological mode (*EcologicalCreativeProcess*). Our understanding of the world becomes more *Complex*, Interconnected and holistic: poetic (*PoeticsOfRelationships*), as Shotter might describe it, rather than systematic.

EmergentOrder **from interactive *DaliProcess* with rich *interonnection*s and deep engagement**

The order of a complex system is not predictable from the characteristics of the interconnected components nor from any design blueprint, but can be discovered only by operating the iterative cycle, despite the fact that the emergent whole is in some sense contained within the dynamic relationships of the generating parts. In a science of qualities, the interactive process, given rich interconnections and deep engagement, will lead to *EmergentOrder*. A science of qualities, as a form of bounded instability, is radically unpredictable. Just as the *Rhythm* of the ant colony emerges through the interaction of its members, and the pattern of a Madelbrot set emerges through iteration with divergence and converge, so the process of co-operative inquiry emerges over time. The knowing is in the active, iterative process of co-creating a world through aware *DaliAction*, not in a goal or outside purpose... It also appears from experience that the precise *Focus* of inquiry can only emerge through the process of iterative inquiry cycles. An inquiry may be launched with a particular set of concerns and interests (*Curiosity*, *Attention*) that the *Participant*s wish to *Explore*, but the actual *Outcome* arises from the unpredictable emergent process of the group and of the inquiry cycles. It is not possible to set up a co-operative inquiry group with a specified goal; it is only possible to facilitate its emergence. This means establishing an iterative process, nurturing a deep experiential engagement with the issues to be explored and allowing the pattern of inquiry activity to emerge.

Holism

Almost all theories of practice have this kind of quality: they draw attention and elaborate key issues of practice and show some of the ways these may be related. But the models are not reductionist: none of the *Part*s determine the *Whole*. They provide a window through which each unique *Situation* may be seen rather than predetermined *Template*s; and of course the experience of each situation, novel in its own right, further elaborates the model. ... **Bateson** has suggested that human interaction can be seen as taking complementary and symmetrical forms. In complementary interaction a stable pattern is formed from contrasting forms of *Conduct* (if I am dominant, you must be submissive; if you win, I must lose; patriarchy in agricultural and industrial societies is a good example); in symmetrical interaction the pattern is formed from *Similar* behaviour (I threaten you, so you threaten me, so I increase the stakes....; as for example in the arms race between superpowers). Bateson showed that complementary relations tended toward stagnant stability while symmetrical forms to runaway inflation, and that stability in cultures arose with appropriate *Integration* of complementary and symmetrical forms of *Organization*. Similarly one might follow Wilhelm **Reich** in wondering if the orgasmic response cycle foreplay,

excitement, discharge, relaxation is a stable pattern of energy stimulation and release which applies not only to sexual activity but to all cycles of creativity

Fluctuations

we have also seen from complexity theory that iterative processes are rarely regular, but are more usually characterised by fluctuations. **Heron** probably gets the closest to an understanding of the importance of fluctuations in his proposal that inquiry groups need to draw on both *Apollonian* and *Dionysian* qualities in their research cycling. **Apollonian** inquiry is planned, ordered and *Rational*, seeking quality through systematic *Search*: *Schemas* are developed and put in to practice; experiences are systematically recorded; different forms of presentation are regularly used. **Dionysian** inquiry is passionate and spontaneous, seeking quality through *Imagination* and *Synchronicity*: the group engages in the *Activity* that emerges in the moment; rather than *Planning* action; space is cleared for the unexpected to emerge; more attention is paid to *Dream*s and imagery (*DaliImagery*) than to careful theory building; and so on. Apollonian inquiry carries the benefits of systematic order, while Dionysian the possibility of stretching the *Limit*s through *Play*. To the extent that co-inquirers can embrace both Apollo and Dionysus in their inquiry cycling they are able to develop diverse and rich connections with each other and with their experience. But while Apollonian inquiry is relatively safe "indeed, one can imagine an inquiry so ordered and tram-like in its travelling the circuits of the inquiry cycle that no risks of new discovery were possible" in contrast the Dionysian mode hovers continually on the edge of catastrophe...some groups appears to exhibit a sophisticated capacity not only to move between periods of chaotic and ordered interaction, but to have become aware of this process. This proposal that creative groups move consciously between Apollonian and Dionysian phases requires further observation and exploration (*JanusianThinking*?).

13. "Problem-Factors"

13.1. Motivator

Inherit from Factor
"Problem-Factors"

provider of a motive for doing something with *Motivation*.

Abraham Maslow's hierarchy of human needs theory is the most widely discussed theory of motivation. (ver http://en.wikipedia.org/wiki/Maslow%27s_hierarchy_of_needs)

The theory can be summarized as thus:

- Human beings have wants and desires which influence their behaviour, only unsatisfied needs can influence behaviour, satisfied needs cannot.
- Since needs are many, they are arranged in order of importance, from the basic to the complex.
- The person advances to the next level of needs only after the lower level need is at least minimally satisfied.
- The further the progress up the hierarchy, the more individuality, humanness and psychological health a person will show.

The needs, listed from basic (lowest, earliest) to most complex (highest, latest) are as follows:

- Physiological
- Safety and security
- Social
- Self esteem
- Self actualization

13.2. IllDefinedGoal

Inherit from Goal
"Problem-Factors"

Goal que no está bien estructurado

The Designer is faced with a problem based on real *Constraints* that he/she ought to identify during the DesignProcess, usually starting with IllDefinedGoals but real *Need*s to fulfil (*IllDefinedProblem*)

14. "Order-Archetypes"

14.1. TragedyOfTheCommonsArchetype

Inherit from UnderachievementArchetype
"Order-Archetypes"

Dynamic Theory
This archetype identifies the Causal *Connection*s between individual actions and the collective Results (in a closed system). It hypothesizes that if the total usage of a common resource (*SharedResource*) becomes too great for the system to support, the commons will become overloaded or depleted and everyone will experience diminished benefits.

Behavior Over Time
Any time a declining trend is seen in the overall performance of each part of the system even as it increases its demand on common resources, there is a good possibility that a Tragedy of the Commons is taking place. This is often accompanied by puzzlement, as each party placing demands on the system cannot understand why their demands are not being met, which typically results in the party increasing its demands yet further. This may continue until the commons collapses.

Application - Resource Allocation
In this archetype situation, the complex interaction of individual actions produces an undesirable effect, such as the depletion of a common resource. The archetype can be used to help connect the long-term effects of individual actions to the collective *Outcome*, and develop measures for managing the common resource more effectively.

Example
IT resources are typically organized into a 'commons' department, with each part of the organization seeking their support on an as-needed basis. Since separate parts of the organization typically do not keep track of the IT problems in other parts of the organization, it is fairy common for each part of the organization to see the IT department as 'its own'. When the IT department is crushed under the weight of all the demands placed upon it, its performance for every department begins to erode or fail.

Prescriptive Action
· Establish methods for making the cumulative effects of using the common resource more real and immediate to the individual players.
· Re-evaluate the nature of the commons to determine if there are ways to replace or renew (or substitute) the resource before it becomes depleted.
· Create a final arbiter who manages the use of the common resource from a whole-system level.

Seven Action Steps
· Identify the 'commons'. What is the common resource that is being shared?
· Determine incentives. What are the reinforcing processes that are driving individual use of the resource?
· Determine the time frame for reaping benefits.
· Determine the time frame for experiencing cumulative effects of the collective action.
· Make the long-term effects more present. How can the long-term loss or degradation of the commons be more real and present to the individual users?
· Reevaluate the nature of the commons. Are there other resources or alternatives that can be used to remove the constraint upon the commons?
· Limit access to resources. Determine a central focal point - a shared vision, measurement system, or final arbiter - that allocates resources based on the needs of the whole system.

Sustainability has applications within organizations, with respect to their structure and *Practice*s, with an eye on the long-term future. Structures that create commons and policies and practices that govern them (leading to depletion or replenishment) are critical success factors. Ultimately, firms may conclude that structures that include a commons are ineffective means of distributing and allocating resources. Alternately, they may gain insight into how commons have to be governed, and recognize that structures and policies, other than the commons itself, all interact and have a pronounced effect upon the utility the commons bring to organizations

Scrapbook

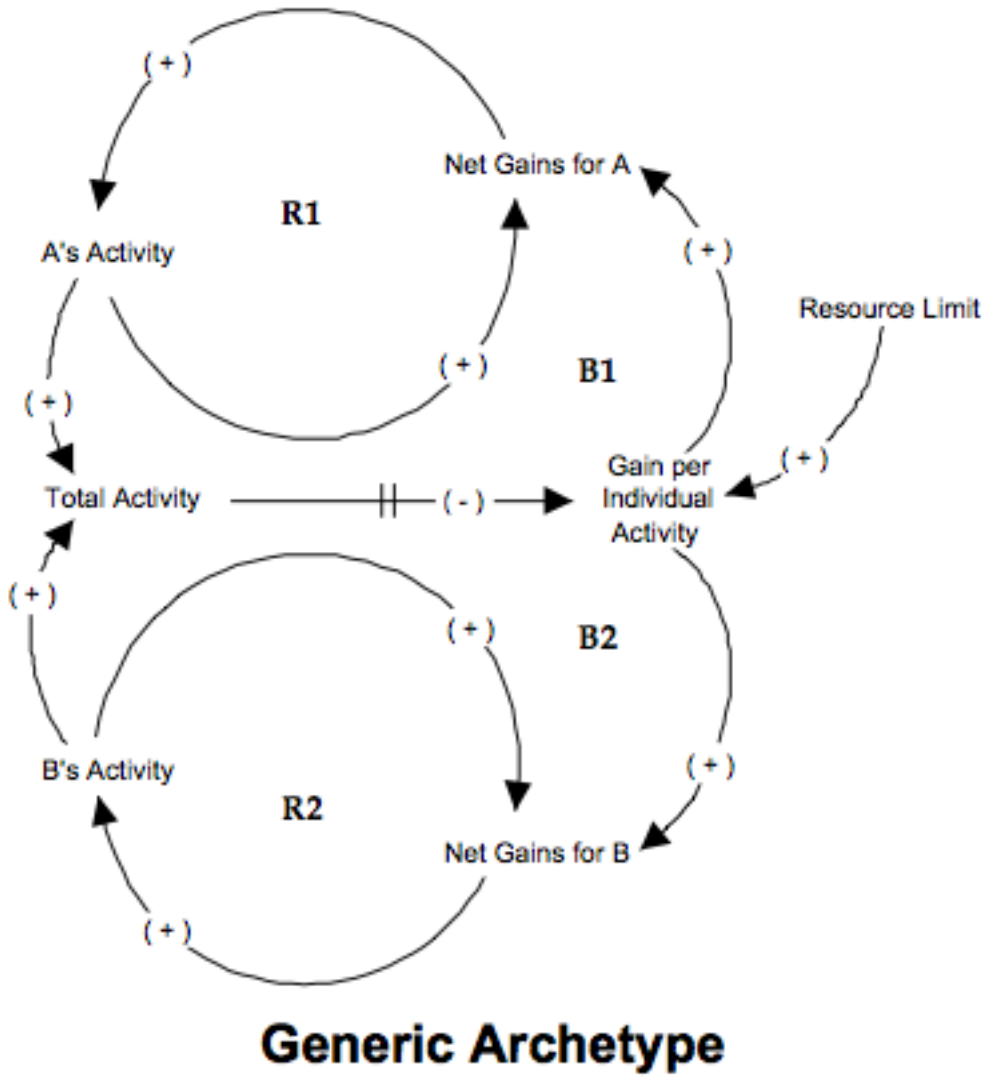


Fig. 5-TragedyOfTheCommonsArchetype1

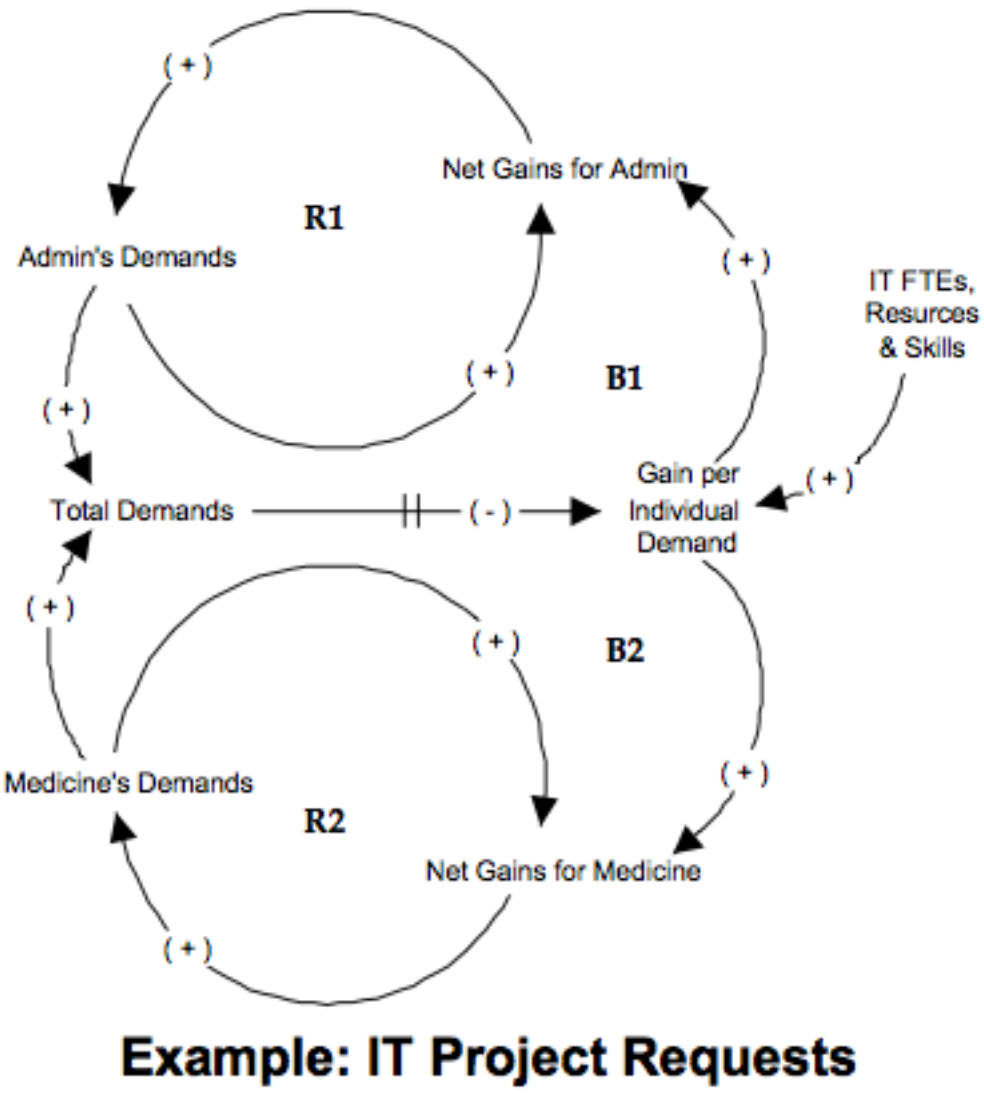


Fig. 6-TragedyOfTheCommonsArchetype2

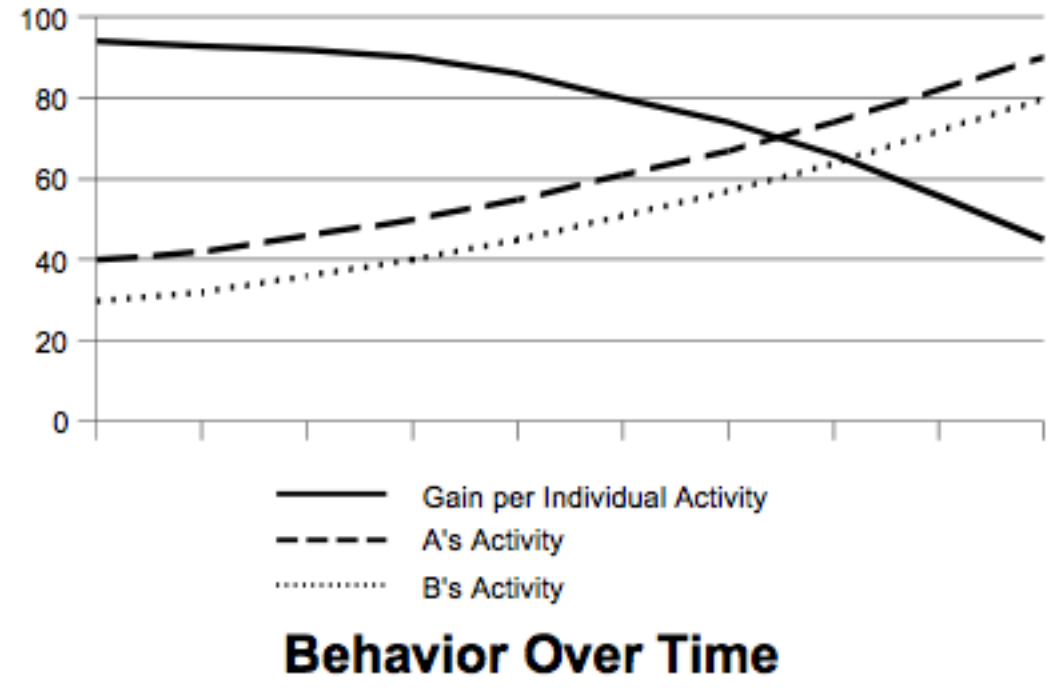


Fig. 7-TragedyOfTheCommonsArchetype3

15. "Toys-Brainstorming"

15.1. Brainstorming

Inherit from GroupToy
"Toys-Brainstorming"
labels: Author: **Osborn**

Objetivo
Establecer un entorno relajado en el que a los individuos se les aliente, recompense y no se los averguence por sugerir *Ideas*. Esta tecnica fue disenada para alentar a un *People* a que expresara varias ideas que se relacionan, y a diferir el *Judge*. Ayuda a reeducar a la gente para que piense positivamente en las ideas

Procedimiento
Principios basicos del brainstorming. 1. *Choose* su *Problem*, 2. Elegir a los *Participants*: idealmente de 6 a 12, con actitud mental positiva y ser pensadores fluidos y flexibles, con personalidades fuertes e independientes. Deberia estar presente alguien que tenga el poder de tomar desiciones y ponerlas en practica, 3. Elegir el *Habitat*, 4. Seleccionar a un lider del grupo: deberia tener habilidades interpersonales y ser capaz de parafrasear y de encontrar *Analogy* para las sugerencias. Tareas del lider de brainstorming, 5. Seleccionar a un registrador. Despues del brainstorming el lider *Sort* las ideas en grupos relacionados para priorizar y *Evaluate*. En la fase de evaluacion, algunas seran descartadas, algunas destacaran como valiosas, y otras se prestaran a una ulterior modificacion y *Manipulate*, 6. Seguimiento: inmediatamente despues de la *Meeting*, agradecer, y enviar a cada persona una *DaliList* por *Category* de las ideas que el grupo ha generado para que puedan seguir trabajando en esas ideas y mantener el impulso de la sesion, 7. Evaluacion: no evaluar hasta el final de la sesion. Al final, elaborar tres listas: i) ideas de utilidad inmediata, ii) areas para ulterior exploracion, iii) y nuevos enfoques al problema

Otros
Brainwriting - Blackboard - AloneBrainstorming - VisualBrainstorming

Principios basicos

1. La *Quantity* produce *Quality*
2. Diferir el juicio

Guias

· Un pensador *Negative* puede hacer descarrilar una propuesta al concentrarse en una de sus fracciones. Al mostrar que una parte del todo es absurdo, implica que el todo es igualmente absurdo. Al destruir una *Part*, una persona puede destruir *Whole* y tener una sensacion de logro sin dedicar tiempo y hacer el esfuerzo para crear nada.
· El exito de cualquier sesion de brainstorming depende de que los miembros comprendan la importancia de crear un *Positive Habitat* .
· Cuando alguien hace una lista de ideas, por similares que sean, alguien mas puede percibir algo nuevo y diferente
· Cada miembro del grupo deberia pensar en formas de mejorar las ideas o de *Combine* dos o mas ideas formando una

idea mejor. Es mucho mas facil ir elaborando sobre las ideas que seguir creando ideas nuevas

- Las reuniones se atascan porque los participantes estan demasiado concentrados en el problema o en maneras estructuradas de hacer las cosas. El lider del grupo ha de alejarlos de su manera disciplinada de contemplar los problemas, a veces haciendo *Abstract Questions*

Nota de Lectura:

Reverse brainstorming: Ideas are found by turning around the basic *Problem* and *Listing* in Reality what is really happening. (Davis, 1998)

Formulado por Alex F. **Osborn**, que tiene uno de sus antecedentes más claros en la escritura automática que practicaron con profusión los **surrealistas**

En lo fundamental el método consta de dos *Stages* y exige el riguroso respeto de algunos *BrainstormingPrinciples*. La primera fase es una etapa esencialmente productiva. Su objetivo es encontrar o proponer ideas que posteriormente puedan ser desarrolladas e implementadas. Este es el verdadero núcleo del método y el que proporciona la base para su desenvolvimiento. En la segunda fase se busca mejorar o desarrollar las ideas obtenidas en la anterior. Al mismo tiempo, se pueden agregar nuevas ideas. Por ejemplo usando *SCAMPER*. Es importante comprender que las dos fases mencionadas cumplen funciones diferentes y claramente complementarias. La primera de ellas privilegia la producción divergente (DivergentThinking), en tanto que la segunda, manteniendo la acción divergente, tiende a la convergencia (*ConvergentThinking*). Desde el punto de vista del tema el Brainstorming tiene dos *Rules* reconocidas:

1. Los problemas que admiten una única *Solution* no deben tratarse con este método.
2. Tratar varios problemas a la vez es contraproducente.

To use brainstorming, you must first gain agreement from the group to try brainstorming for a fixed interval (e.g. six minutes). Do not brainstorm for long periods. Ten minutes is usually sufficient

Critica
Brainstorming, the closest thing we have to a *SocialCreativeAct* 'technique,' involves keeping quiet while others are speaking, and not judging or critiquing their suggestions. The implication here is that in a group, we can be creative not through the *Interaction*, but if anything by eliminating interaction (*AloneBrainstorming*)

Segun un estudio, brainstorming is identified as a 'very inapplicable' technique when the idea generation process is under time constraint (*PressureContext*).

Nothing in Brainstorming is directed at changing the *Assumption*s or Paradigms that restrict the generation of new ideas. This is an excellent technique for strengthening *Fluency*, *Fantasy*, and *Communication* skills. However, this tool is not appropriated for broad and *Complex* problems demanding high-qualified *Expertise* and know-how. Some of the ideas produced may be of low quality or obvious generalities. Brainstorming is not a good idea for situations that require trail and error (*ExperimentationContext*) as opposed to judgement (*Judge*).

Otro estudio (agencias en Suecia).
The brainstorming technique is used in organizations repeatedly, however, we have noticed that companies do not look upon it as a *Technique*, it is more considered as something that is automatically related to the development of new ideas and working creatively. What we can conclude is that brainstorming is most suitable when the *Problem* is defined and clear for the employees, before the session begins, this will improve the results on the flow of ideas. Our research shows that communicating with more ideas provides possibilities to *Compare* and contrast ideas with each other. *Combine* ideas/'piggybacking', is something that *rarely occurs*, since ideas have a tendency to vary from each other. Conversely, we believe that 'piggybacking' can be considered very efficient since it gives an opportunity for making more *Innovative* and creative ideas.

Mis Notas

The closest thing we have to a social creativity "technique" (*SocialCreativeAct*, *DialogicalProcess*), involves keeping quiet while others are speaking, and not judging or critiquing their suggestions. The implication here is that in a *PersonGroup*, we can be *Creative* not through the *Interaction*, but if anything by eliminating interaction

Scrapbook

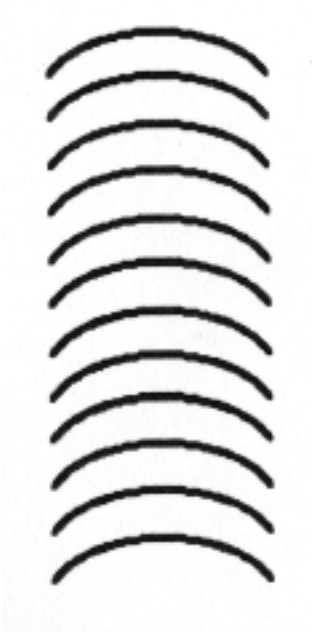


Fig. 8-Brainstorming1

En la figura hay una serie de arcos colocados uno encima del otro para formar una columna. Cada arco tiene exactamente el mismo tamaño, por lo que deberían formar una columna perfectamente recta. Sin embargo, la parte alta de la columna *parece* más ancha que la parte baja.

Al repetir un sencillo arco, hemos producido una Illusion, una distorsión en la Perception. Vemos algo diferente de lo que realmente está presente. Del mismo modo, cuando hace un Listing, por similares que sean, alguien puede precibir algo nuevo y diferente.

15.2. BrainstormingIdeaCategory

Inherit from Category
"Toys-Brainstorming"

i) ideas de utilidad inmediata, ii) areas para ulterior exploracion, iii) y nuevos enfoques al problema

Ver Brainstorming

16. "Order"

16.1. Generalization

Inherit from Category
"Order"

A general Statement or Concept obtained by inference from specific cases. Generalization posits the existence of a *Domain* or *DaliSet* of Elements, as well as one or more common *Quality* shared by those elements. For any two related Concepts, A and B; A is considered a generalization of concept B if and only if:

- every instance of concept B is also an instance of concept A; and
- there are instances of concept A which are not instances of concept B.

The process of verification (*VerificationStage*) is necessary to determine whether a generalization holds true for any given *Situation*.

Generic: means pertaining or appropriate to large classes or groups as opposed to **specific** members of the group

17. "Problem-Business"

17.1. DesignStrategy

Inherit from Strategy

"Problem-Business"

Design as *BusinessStrategy*

NOTA de CREATE
Christer Gustavson.
Las ideas suelen surgir en los tiempos intermedios (*Incubate*)

Pasos:
1) desarrollar una visión (*PointOfView*) clara. definir el *Scenario* y el qué se considerará un éxito
2) elegir el *DaliProject* con mayor retorno
3) que no tenga demasiada *Innovation*

Empirical Findings

Robinson, 1990 Archival research on 144 US firms finds that relative product advantage is the most important product *Innovation* characteristic, and that, surprisingly, incompatibility with customer's current way of doing things does not have a meaningful *Market* share impact.

Roy, 1990 Interviews in 100 firms across seven countries suggest that successful firms are combining & integrating new capabilities with existing strengths in traditional engineering design. Design management practices associated with financially success are: multiple sources of design ideas (*Variety*); attention to the design *Brief*; and viewing design as an investment justifying the best professionals the firm can afford.

Bharadwaji, & Menon, 1993 Archival data on 81 US firms suggest that *Service Quality* does not have a direct effect on a service provider's financial or market results, but does lower a firm's strategic or business *Risk*. This study shows that it is the firm's reputation and *Perception*s of service Image that ultimately drive performance.

Design Council, 2002 This survey of 1000 firms focuses on the importance & role of design; design practices; and design influences. It suggests that one of the greatest *Limit*s to increased use of design, innovation and creativity in firms' work is a perceived lack of relevance. Yet, four out of ten firms have developed or introduced new products or services over the last 3 years. 74% of firms rely on their customers (*Client*) as the main source of ideas to improve or Change their Businesses; goods & services.

Tether & Hipp, 2002 A survey of 2900 German service firms, suggests they derive competitiveness from *Focus*ing on Quality & *Flex*ibility in meeting different Users' *Need*s, rather than on *PriceAttribute*. Willingness to *Adapt* (or even *Create*) services for specific users is shown by the high proportion of income earned from customized and bespoke services.

Teknikforetag en & SVID. 2004 (Swedish Study) A study of 1308 managers in Sweden revealed *DesignMaturityClassification*. Companies with the greatest design maturity (design as innovation) were found to enjoy very strong growth.

Tether, 2005 A survey of 1304 European firms found that *Service* firms do innovate. Whilst it found no distinctively different, or unique, "services pattern of innovation" (*InnovationTemplate*), services tend to have an orientation to innovation that differs from that of manufacturers. In particular, many service firms have an organisational *Change* orientation to their innovation activities (InnovationProcess) whereas this appears to be relatively uncommon amongst *Manufacturer*s.

18. "Problem-Context"

18.1. ReuseAsArgumentationSituation

Inherit from ReuseSituation
"Problem-Context"

In multi-fields team design, design solutions are not only produced by individuals specialized in a given field. Due to the team nature of the design activity, solutions are negotiated. Different specialities are going to be present in a *Meeting*, and

they are going to have to justify their design choice so they are going to produce Arguments. The purpose of these arguments is to provide information to convince theother people of the pertinence and veracity of the information provided in order to tend towards a conclusion that pushes them towards accepting the proposal. When everyone has a joint will to reach agreement, we shall talk about *Negotiation*. Negotiation does *not* force a person to *Accept* a *Solution*. *Dialogue* makes it possible to go towards one conclusion rather than another

Linguists distinguish different kinds of arguments: argument by comparison (*Comparable*), argument by *Analogy*, argument of authority. Arguments by analogy served the analogical assessment of the current solution. In this case, there is a transfer of the result of the assessment of an analogical solution (source) developed in the past for the same design project or for a previous design project to the current proposal (target). In this case, the shared knowledge about the past design consists in:
· the *Attribute*s of the source solution;
· the *Result*s of its evaluation process;
· but, most importantly, the various field-dependent *Constraints* used to assess it, the *Combination* and the weighting of these constraints as it was negotiated in the past design: it is the "integrated *PointOfView*" reached by the Team in the *Past*.
When knowledge about the past design is not shared, either an argument by authority (relying on the expertise or the status of the person who enunciates it) is involved or traces of the past design process are sought, which takes generally much *DaliTime*.

In *CoDesignStage*, the shared knowledge of past designs plays an important role, particularly in the negotiation process. It means documenting the designs according to the various field-dependent constraints used to assess them as well as the combination and the weighting of these constraints as they are negotiated by the team.

18.2. Field

Inherit from Surroundings
"Problem-Context"
labels: Author: **Csikszentmihalyi** Author: **Bourdieu**

consisting of *People* who control or influence a *Domain*, *Evaluate*s and selects (*Choose*, *Collect*) new *Idea*s (**Csikszentmihalyi**) - Society

Nota de lectura:

a Field is a topic, *Subject*, or area of academic interest or specialization that contains experts who recognize and Validate innovation. Both information from the *Problem Domain* and interaction with the field is needed. The field provides *Motivation* and suggestions for the problem. The domain provides the information required by the user to be able to define the problem

includes all the individuals who act as gatekeepers to the domain. It is their job to decide whether a new idea, performance, or product should be included in the domain

Field: Designates an entire discipline or kind of behavior (*Conduct*). (Sternberg, 1999)

Gatekeepers: Have the right to add *Meme*s to a *Domain* which are collectively designated to a field. (Sternberg, 1999)

The succession of *Generation*s is actually a progressive phenomenon. This is demonstrated by the dynamics of what **Bourdieu** calls the "field of forces": all Fields of cultural production are Field of *Forces* (a field of battles) - (*Fashion*)**.** A new position (*Positioning*) for a *CreativePerson* can emerge only if the field modifies its *Structure*, because the designer must create a new pole in a rather complex process of differentiation. The search for distinction is dominated by the absence of a single *Principle* of cultural justification. The dynamics of the Field are endless, implying revisions, arrangements and permanent redefinitions, which are repeated and polarized upon the arrival of each new generation. Consequently, the *Rhythm* of *Change* in the field of **fashion** is marked by the succession of the different generations of *CreativePersons*. The reasons can be traced back to the definition of **fashion** in terms of being an idiosyncratic good, which makes reference to the space/time duality

The creativity system proposed by **Csikszentmihalyi** (*SystemApproach*) demonstrates that the field of fine art has more powerful effects than other domains because of its dispersed structure. This field will thus repeatedly *Evaluate* artists. As a result, artists will be recognized as having social creativity (*SocialCreativeAct*)...This group must make a determination if the creative end product (*CreativeOutcome*) is appropriate and novel. These intermediaries are made up of individuals who practice or support the *Domain*

18.3. ProductDevelopmentContext

Inherit from Context
"Problem-Context"

In most business organizations large enough to have specialized departments for development, the DevelopmentProcess has strong links to *Research* and Marketing as well as Manufacturing

Technological possibilities are investigated by Research; user interests are most commonly explored by Marketing. In a Three-step DevelopmentProcess, before *DaliProject* initiation, the relationship between Development and Research (at the metaplanning level) is one of technology assessment. The question is, "What impending technologies within or outside the company should be explored for implementation in new products?" The relationship with Marketing at this stage is similar: "What needs and interests are emerging in segments of society?" Neither of these *Question*s elicit product proposals; rather, they launch processes of scouting, exploring and trend spotting.

At the *Planning* stage of development, the relationships change to direct associations between a planning Team and the special *Expertise* of the functional group. Planning teams need suggestions and confirmations of technologies from Research as they propose ideas. They need criticism and field evaluations from Marketing as they develop prototypical Concepts.

When a project has reached the *DesignStage*, relationships between Development, Research and Marketing are more traditional. Technological problems and solutions are handled by Research (when they are not manufacturing related); detailed demonstrations and prototypes are field-tested by Marketing. At this stage, the members of the planning team will have returned to their functional groups as champions of the project.

See **Figure** ProductDevelopmentContext

Scrapbook

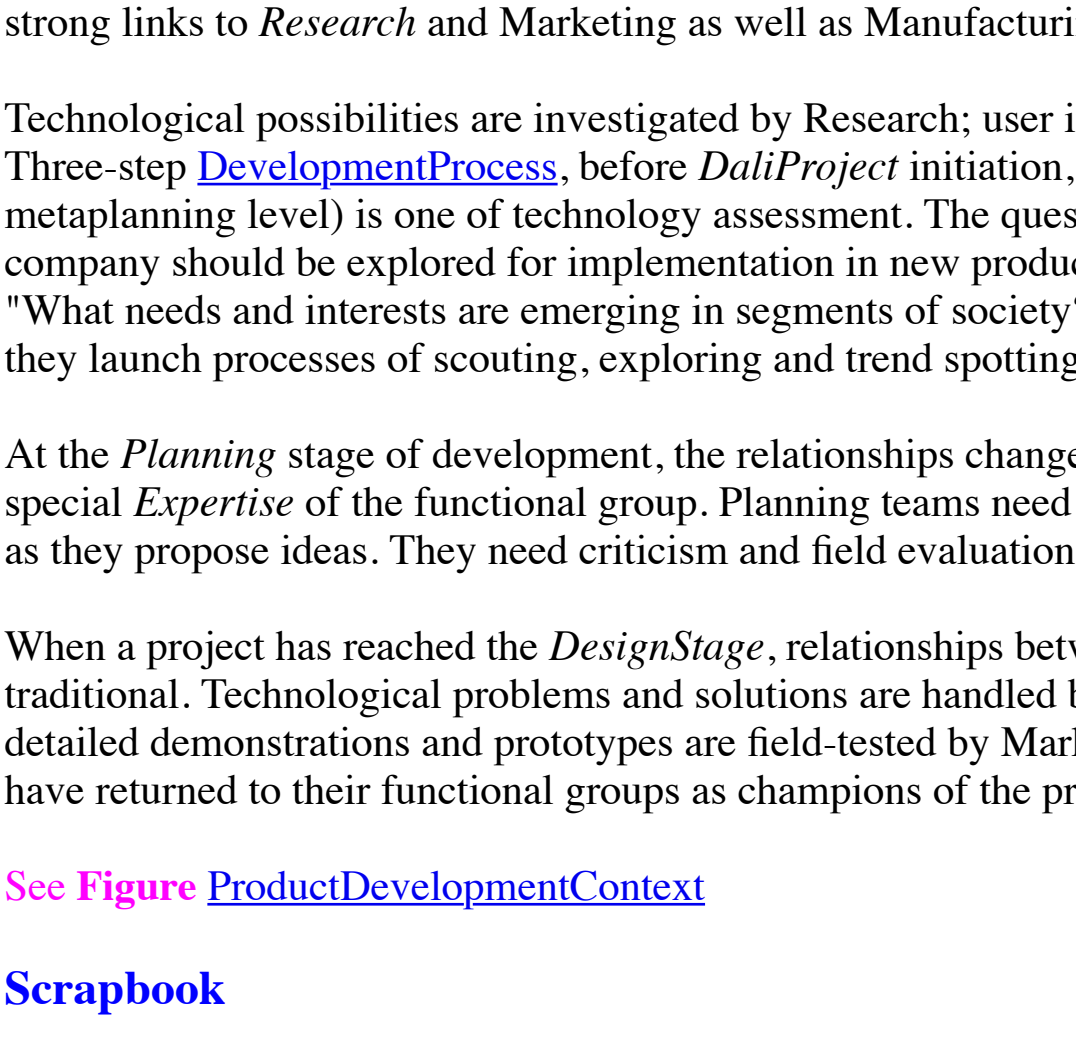


Figure 10. The business context: appropriate interactions at appropriate times.

Fig. 9-ProductDevelopmentContext1

18.4. Reality

Inherit from Worlds
"Problem-Context"
labels: Domain Specific: **CTS)** Domain Specific: **Reality** Domain Specific: **(**

the world or the state of things as they actually exist, as opposed to an idealistic or notional idea of them

According to the less realist trends in philosophy, such as postmodernism/post-structuralism, truth is *Subjective*. When two or more individuals agree upon the interpretation and experience of a particular *Event*, a consensus about an event and its experience begins to be formed. This being common to a few individuals or a larger group, then becomes the 'truth' as seen and agreed upon by a certain set of *People* ' the consensus reality. Thus one particular group may have a certain set of agreed truths, while another group might have a different set of consensual 'truths'. This lets different communities and societies have varied and extremely different *Notion*s of reality and truth of the external world

Ver *Subculture*

Notas de lectura:

-Se podría considerar un movimiento entre diferentes niveles o planos de Reality, como formas a partir de una más o menos intrincada arquitectura relacional de *Idea*s (*Relationship*), con su correspondiente correlato de significados (*Meaning*) intelectuales y emocionales (*Feeling*)

-se puede buscar en esos diferentes niveles de Reality una integración de formas más o menos complejas y sutiles. Desde las líneas con las que se representa la apariencia del espacio hasta las vivencias de un personaje con las que se representa un arquetipo (*Archetype*) social, pasando por los colores (*ColorQuality*) con los que se puede asociar un estado anímico (*Feeling*).

Frank **Barron** relaciona esta problemática con la *Perception* del mundo en términos de simpleza o *Complex*. En este último caso se enfatiza lo que es inestable, asimétrico, desequilibrado, aleatorio, resistente a la tradición, irracional, desordenado y caótico. La realidad aparece en forma compleja y deja mucho por hacer

Paul **Watzlawick**, por su parte, declara que los seres humanos tendemos a dar un *Order* a los *Facts*, que rápidamente se constituye en la única visión de la realidad. A continuación este orden se va auto confirmando mediante una *Attention Select*iva. Sostiene que la realidad no es en absoluto algo independiente a los hombres ni mucho menos anterior a su *Experience*, sino una construcción social. Se auto confirma continuamente con una cuidadosa selección e interpretación de los nuevos hechos

Reality (CTS):

Los científicos tienen similares puntos de vista, primando una determinada concepción ontológica de la realidad, con referencias del tipo de que la verdad habita en las profundidades, o *métaforas* platónicas como la de que todavía no se está en contacto con la realidad pues nos encontramos prisioneros en una caverna, de espaldas a la luz y pudiendo contemplar sólo las sombras contra el muro. Las ideas de una realidad unitaria, bella, *armónica* y *simple*, que puede aprehenderse y disfrutarse si se es capaz de adecuar los instrumentos conceptuales a estos *principios*, son los ejes que constituyen el discurso predominante, y que proporcionan una vigorosa fuente para orientar y dotar de sentido las *conductas de los científicos*

reality is both *Unknow*able and *generative*.

18.5. ReuseInPlanningSituation

Inherit from ReuseSituation
"Problem-Context"

Reuse in planning in individual reasoning
Reuse in planning has usually been described in individual design. The effect of the reuse processes may be an enrichment of the *Representation*s constructed during *Planning*. When a source is evoked or retrieved during planning (as opposed to translating), information about the source situation from which the source comes is *Search*ed or inferred, it seems that reusing a *DaliComponent* implies constructing a **situation model** of the source and allows the representation constructed for solving the problem on hand to be enriched and the search space to be enlarged

Reuse in planning in collective reasoning
Reuse in planning can also be involved in collective reasoning. In team design, *DistributedDesignStages* are particularly sensitive to dependencies between design. Coordination problems may occur in relation to at least two aspects:
· communication on the state of solutions produced by various fields can be delayed because some field designers do not update the *database* in which all solutions acceptable at a given time are stored.
· for task planning and, in particular, the breakdown of problems into *SubProblem*s (area of the designed *Artifact*), designers from different fields can attach different levels of priorities to particular sub-problems. This may entail some gap between the areas of the designed artefact, which are processed by the various field experts at a particular time

It would thus seem that justification for decisions taken during the design of the source would be useful for reuse in planning while knowledge about implementation details would be more useful for reuse in translating. One limitation of this approach, particularly with regard to design *Rational*,is the difficulty of predicting all the questions about the justification of the design that designers reusing a *DaliComponent* in the future might raise

18.6. ReuseSituation

Inherit from Situation
"Problem-Context"

A cognitive classification of reuse situations characterised by distinctive processes involved in reuse. This classification allows to suggest different reuse aids

There are cognitive invariants in the design activity whatever the application *Domain*: e.g *Reuse* of past designs. According to a purely cognitive approach, reuse involves cognitive mechanisms linked to the *Problem* solving activity itself and to the individual design activity. We have identified three other dimensions which can be used to construct a cognitive classification of reuse situations:

· Prospective versus retrospective reuse: this concerns the temporal management of the organisation of the design activity.
· Reuse in planning versus reuse in translating: this concerns the level of *Representation*, abstract versus detailed , and the level of control of the design activity.
· Reuse as a problem solving mechanism versus reuse as an argumentation mechanism: this concerns the kind of process involved, either a cognitive process or an interactional process, more particularly, an argumentation process.

This cognitive classification will allow us to identify which cognitive mechanisms are specific to certain reuse situations. For example we will see that:
· mechanisms of anticipation belong to the situation of prospective reuse ;
· mechanisms for enriching the representation of the target are specific to reuse in planning whereas the lowering of the level of control of the activity is specific to reuse in translating.

18.7. CreativeIndustry

Inherit from Domain
"Problem-Context"

industries are often defined as those that focus on creating and exploiting intellectual property *Product*s; such as the arts, Films, *Game*s or fashion designs, or providing *Business*-to-business creative *Service*s such as *Advertising*.

creative industries - 'in which the product or service contains a substantial element of artistic or creative endeavor'. The media and advertising industries, in which creativity is seen as central (Lampel et al 2000, **Goldenberg** et al 1999), are considered to be creative industries.

19. "Person"

19.1. Team

Inherit from PersonGroup
"Person"

two or more people working together

1- Multiple individual (*Member*)
2- *Task* interdependence
3- Shared *Goal*s
4- *Organizationa*l setting

Notas de lectura:

Team composition methods using personal creativity modes (*CreativePersonRole*) are useful

As groups develop, they develop *DaliPattern*s of group *Assumption*s or Paradigms. These group assumptions exist almost independently of the individuals. When creativity is defined as DivergentThinking, the generation of *Idea*s that transcend the existing *Assumption*s, it is found that the less team *Member*s Know of a *Problem* and its traditional Knowledge *Domain*, the more divergent their ideas are. Therefore, in this perspective, to increase team creativity one should involve younger, less experienced people. However, I have consistently observed that the ideas of team members we label the most "resistant" can be the greatest contributors to team *Success*. *Experience* and knowledge seem to have a strong *Positive Effect* on a team's *Creative* success. If a group or team has a certain *PointOfView*, then shifts to a new viewpoint which the group "knows" is closer to the real *Problem*, then it seems that we can say that the group has been *Creative*

There are a number of *Constraints* which hinder the *TeamCreativeProcess:*
(a) Many Team *Member*s have not worked together before and this may result in a cautions and formal work climate.
(b) Teams include people from different *Level*s in the *Organization* and it may be difficult to overcome *Communication* barriers arising from formal organizational norms.
(c) Team members may have different backgrounds and different perceptions and this can result in *Conflict*s. (pero tambien es beneficioso)
(d) Some team members may lack strategic knowledge (*Strategy*) and creative problem-solving skills.
(e) Some team members may lack the *Compromise* which is necessary when developing and implementing *CreativeOutcome*

Relacionado: *OrganizationalFactor*

Successful Teams
- Small Small --Cross Functional
- *Focus*ed Objectives/ Mission
- Cuts Across Boundaries
- *Creative*, Flexible, Solutions
- Catalytic *Influence* for Broader Change
- *EdgeOfChaos*: There can be no guarantee that chaos will occur; certainly one cannot plan it. The key validity issue is to be prepared for it, to be able to tolerate it, to go with the confusions and uncertainty; not to pull out of it anxiously, but to wait until there's a real sense of *Creative* resolution. We make this argument for *Openness* to extreme *Uncertainty* to counterbalance the human being's enormous capacity creating and sustaining order, even when such order is no longer appropriate, the inquiry Team, if it wishes to be creative, needs to learn to tolerate the kind of **fluctuations** (*ScienceOfQualitiesApproach*) and to be open to periods of deep confusion, which the creative group will approach in a playful, rather than an anxious, *Attitude*.

Mis Notas

CREATE
Equipos verdaderos: un vallet, un trapecista de circo

20. "Qualities"

20.1. Valuable

Inherit from Measure
"Qualities"

extremely useful or important

Ver *Values*, *Judge*

Una posición valóricamente aséptica no discrimina respecto a las consecuencias del *CreativeOutcome*, sino por consideraciones de eficiencia y cálculo. Sin embargo, no hay que excluir la reflexión *Ethics* que demanda el tema el *CreativeAct*.

The usefulness of a product can thus be seen as adaptability to the current *Domain* or *Context*. There is a problem with this, however. Viewing adaptation is this way can be problematic in that it seems to be evaluating a novel product in relation to the *Past*. Measuring in this manner will necessarily underestimate usefulness in radically new and different products, as they may

not seem to be filling an *Adapt*ive hole or Need! Fortunately there is another way of conceptualizing usefulness. Usefulness must be seen in relation to the *Future*. Thus evaluation of usefulness, rather than being an evaluation of what needs it seems to be filling, is an evaluation of the potential of how far this adaptation can spread (*Meme*) in the present context or domain. We can only try to estimate, one can objectively measure how far a product actually spreads in this manner ' but only post hoc

21. "CTS-Tesis-Behaviour"

21.1. ComputationalThinking

Inherit from Thinking
"CTS-Tesis-Behaviour"
labels: Author: **Mitch Resnick** Domain Specific: **to understand the human genome, individuals need to Combine computational thinking and concepts in genetics**

Bibliography: **Report of a Workshop of Pedagogical Aspects of Computational Thinking. Committee for the Workshops on Computational Thinking; National Research Council** Author: **Ursula Wolz**

generalized problem *solving* with *Constraints*

core ideas of computational thinking arise in many domains independent of computer technology.

Ursula Wolz, associate professor of computer science and interactive multimedia at the College of New Jersey, noted that concepts of computational thinking permeate journalism. The similarities stem from the reliance of both fields on *language*. Languages can be natural as found in journalism or formal as found in computer science. Both formal and informal languages involve access to information, aggregation of data, and *Synthesis* of information. Concepts of reliability, privacy, accuracy, and logical consistency are essential to both formal and informal languages. Both involve knowledge *Representation* (e.g., determining the appropriate granularity for reporting a story or taking data) and Abstraction from cases.

The core of computational thinking is to break big *Problem*s into smaller problems that lend themselves to efficient, automated solutions. This approach can be implemented using realistic situations as well as visualizations

Mitch Resnick, professor of learning research at the MIT Media Lab, said that the ability to use computational media to *Create*, build, and invent solutions to problems is central to computational thinking. He argued that computational thinkers can express themselves and their *Idea*s in computational terms. He explained that meaningful expression requires developing both Concepts and *capacities*

to understand the human genome, individuals need to Combine computational thinking and concepts in genetics

modern biology is essentially an information science. Today, biological data environmental data and genomic data, for example is multivariate, multidimensional, and mul- ticausal, and it exists at multiple scales in enormous volume (increasing at terabytes of data per day)... pose problems about evolution- ary similarities among genes. Using powerful databases they can align multiple sequences of the same gene from different organisms onto one three-dimensional structure. They iteratively refine their representation to illustrate evolutionary conservation across organisms. They use their representation to clarify the comparative biology of sequences in terms of structure, function, and phylogeny.

Report of a Workshop of Pedagogical Aspects of Computational Thinking. Committee for the Workshops on Computational Thinking; National Research Council

22. "Problem"

22.1. Antiknowledge

Inherit from Space
"Problem"

is the perceived area between the known and the *Unknown*. This area is recognized because questions, *Problem*s, errors, and the absence of knowledge structure exist there. Anti-knowledge serves as a roadmap to future knowledge. The collective set of *Question*s that form an antithetical *Structure* to a *DaliSet* or the sum of knowledge. Is the extension of knowledge structures, recognizable by question patterns and extended logic patterns that form an antithetical, structured shape of knowledge to come

22.2. IntensifiedContradiction

Inherit from ARIZContradiction
"Problem"

this is a contradiction between specific *Part*s, *Quality* or *Parameter*s of a *System*. IC arises during the improvement of one part (quality or parameter) of a system at the expense of the inadmissible deterioration of another. It reveals the reason for the appearance of a superficial contradiction by intensifying it. As a *Rule*, by improving certain Characteristics of an entity, we dramatically worsen others. Usually it is necessary to *Search* for a compromise, that is, to sacrifice something. During the *Solution* of technological *Problem*s, the technological *Features* of an entity are changed, therefore G. **Altshuller** named intensified contradictions technical contradictions. A technical contradiction arises as a result of the disproportionate development of different system parts (parameters). When there are a significant number of changes to one of the system parts (parameters) and a sharp "lag" in development of another (other) of its parts, the situation arises in which quantitative changes from one side of the system acts in contradiction with others. Solution of this kind of contradiction often requires the qualitative change of the technological system. This is manifested in the law of transition from quantitative (*Quantity*) to qualitative changes (*Quality*)

22.3. ConceptualSpace

Inherit from Space
"Problem"
labels: Author: **Boden**

Boden calls her search space a 'conceptual space' which underlines the fact that it is a wholly internal mental space.

"A conceptual space is an accepted Style of Thinking in a particular Domain ' for instance, in mathematics or biology, in various kinds of literature or in the Visual or performing arts. A conceptual space is defined by a set of enabling Constraints, which make possible the generation of Structures lying within the space ' for instance, limericks or theories in organic chemistry. If one or more of these constraints is altered (or dropped), the space is transformed...
The Dimensions of a conceptual space are the organizing Principles that unify and give structure to a given domain of thinking. [...] The Limits, contours, pathways and structure of a conceptual space can be mapped by mental representations of it. Such mental maps (MindMap) can be used (not necessarily consciously) to Explore - and to Change - the spaces concerned."

Explore a conceptual space, **Boden** argues, sometimes has an ultimate *Goal*, and sometimes not. Exploration such as '*Play*ing around' can be an open-ended process, where the purpose is merely exploring mind itself (ibid., p. 47). During such explorations, the explorer uses representations (*MindMap*s) as a guide in the conceptual space. The 'maps' can be preexisting or be generated in the exploration itself. These maps of (and in) mind are generative systems that guide thought and action into some paths but not others. It is important for Boden to stress, that the conceptual space itself is changed by this mental exploration and mapmaking. Creativity always involves changing a conceptual space, either by exploring it or transforming it (*Transformation*). **Boden** exemplifies how this is done, by mentioning crossing *Limit*s, dropping *Constraints*, or negating Constraints (all meant to expand the conceptual space to include new *Possibles*)

COSTART- Creativity, according to Boden, involves the transformation of the space *Constraints*, in simple ways through changing them, negating them, removing them or adding to them, and in more complex ways involving constraints from other spaces

23. "Representations"

23.1. MentalModel

Inherit from MentalImage
"Representations"

A mental model is an Explanation (Explain) in someone's thought process for how something works in the real world. It is a kind of internal symbol or representation of external Reality, hypothesized to play a major role in cognition and decision-making (*DecisionAction*). Once formed, mental models may replace carefully considered *Analysis* as a means of conserving time and energy

Are deeply ingrained *Assumption*s, Generalizations, or even pictures or images that influence how pictures or images how we understand the world and how we take action

Nota de lecturas:

Strikingly similar *DaliPattern*s of *DaliProject* performance (*Capability*) across different industries and different project types, and the similar explanations for project failure, suggest that project team members tend to be overly *Event-Focus*ed and have incomplete or incorrect mental models about how projects work. Mental models of project team members surface clearly when asked: why projects fail to deliver what they promise? Typical answers include:
· *Scope* change
· Lack of skills and resources
· Low team moral (*Motivation*)
· Poor senior management support.
These answers are usually phrased in way that suggests failures where due to events that were *outside the control of the team*. These events are often symptoms of the way projects are organized and executed. By focusing on the 'outside' events, team members often chalk up poor performance to bad luck and miss the potential to learn about important *Feedback*s in their *System*. The *Conducts*, *DecisionAction*s and *Culture*s that create these *Problem*s are deeply ingrained in *Organization*s and personnel. Additionally, the belief that these *Factor*s are often out of the teams' control makes changing *Attitude*s and *Approach*es even more difficult. (**Ejemplo:** *ShiftingTheBurdenArchetype*)

Senge argues that many *Service* industries suffer from outdated mental models, which has led to a focus on cost-savings (*CostFactor*) at the expense of the *Quality*-of-care. This focus on cost-savings relates to organizational *Change* and the concept of *inertia*... stability and comfort with the status quo. However, organizational structures are created and recreated via *Interaction* and change needs to be part of the "on-going *Conversation*" of the organization. Organizational change requires new on-going conversations, because conversations are "both the medium and outcome of Reality construction" (ver *OrganizationalFactor*)

24. "Design-Actions"

24.1. DesignResearch

Inherit from Research
"Design-Actions"

applied design research, in the context of globalism, to the initial stages of product development.

In addition to benchmarking Competitor products, investigating cutting-edge technologies, taking ergonomic measures, and testing usability, design research now involves the study daily life and culture. It employs sophisticated research methods like documentary photography, in-depth interviewing, behavior observation, moderated group discussions, and structured group creativity. It then develops analytical frameworks and *Scenario*s that bring richness and clarity to complicated issues: revealing the symbolic *Meaning*s of *Artifact*s, characterizing typical and idiosyncratic human *Conducts*, mapping systems of *Interaction*s, and so on. Basically, design research is responsible for

1) coming up with new ways of looking at things (*PointOfView*) to lay the groundwork for creativity and erect the structure for *Innovation*
2) ensuring *Design Solution*s match people's *Need*s, abilities, and Desires

Design research has emerged as a new design discipline that combines cultural research with human factors to handle increasingly complex design challenges. By taking a holistic human-centered research DesignApproach, design research can inspire as well as define, provide conceptual as well as operational design criteria, engage in *Innovation* as well as

optimization, and, most importantly, identify the critical intersection of human *Need* and *Desire* on the one hand and design possibility on the other. Design research begins with the assumption that products succeed when they resonate with people's *Values* and *Conducts*, even if they result in changes to those same values and behaviors. In other words, when a product appeals to an individual, it does so relative to that individual's *Culture* framework, worldview, and experience of daily life. The individual falls in love with products that seem to fit exactly, as if they were designed to order. While *Stereotype*s have some basis in reality, they are built from generalities pushed to extremes. Such extremes can be inspiring or intriguing and a source for new *Idea*s, but they provide no basis for discriminating among ideas. Designers who base their work on generalities miss the details that make a difference. But to find the details, you have to *Search*.

Storytelling is the researcher's chief means of communication. The final Step in using research for design involves naming Insights then *Naming* linked Design Ideas

Mental models
Self-evaluation (*SelfImage*) becomes the first step of the DesignResearch for a couple reasons. One can never leave behind their own worldview, language skills, expectations and opinions. The researcher has to always admit their own *PointOfView*. One needs to articulate one's own point of view in order to recognize and control its influence in the DesignProcess. There are several ways a researcher can attempt such *SelfExaminationExercise*

Negotiating *Priority*
A key stage in the product development *Cycle* is the up-front *Negotiation* of priorities among product development *Participant*s. Stating *Goal*s, revising them, comparing them to those of others, and building consensus from *Conflict* is a group process of self-evaluation. Not only does it set the tone and the *Agenda* for the *DaliProject*, but it allows people to refer back to their initial *Belief*s later, when research Insights suggest certain directions. Documentation of priority negotiation thus supports self-evaluation and tracking of *PointOfView* over time

Scope **and Scale**
Time can and will be wasted if scope is not clear at the outset. The point is to consider project scale and scope in advance.

Nota de lecturas:
Partly the need for Designers to conduct research has risen from the opinion that marketing data alone is not enough to fuel design. Rather, it is necessary to become exposed to real *People* and real *Context*s as leading User research and human factors people advocate. (*UserProductRelationship*)

24.2. CreativeDesigning

Inherit from CreativeAct
"Design-Actions"

Creative designing introduces new design *Parameters*, which extends the state *Space* of *Possible Design*s. A view of designing as the prototypical example of a creative human act. *CreativeAct* related to potential design creativity (*ConceptualDesignThinking*):

1. *CreativeDesigningInterpretation*
2. *CreativeDesigningReflection*

DesignProcesses that can extend the design state space (Any of these processes may occur in any of the two classes of design activities):

- **Emergence** (the process that *Transform*s *Implicit Feature*s of the design into *Explicit* ones, substitutively (*Substitute*) introducing new variables in the design state space)
- *Analogy*
- *Combination*
- Mutation
- first [Design] *Principle*s

Nota de lectura:

It is now well accepted that *Representation*s follow a path of progressive elaboration (*Elaborate*) through the DesignProcess from an Ambiguous, unstructured and Abstract nature towards a structured and more *Concrete* represented Reality. It is also accepted that the early less concrete and denser representations, such as *Sketch*es, are related to the more creative phases of the process (*CreativeProcessStage*). We can pose as a first hypothesis that the act of creation in design happens entirely at an experiential level (*SenseSpace*), imagined (*MentalImage*) or represented, and that the following rationalisation mainly serves

as corroboration and social support. Another hypothesis is that the *StartingPoint* in the DesignProcess, as they produce more *Abstract* and *Diagram*matic representations, are *Metaphor*ical by nature because of the extreme indefiniteness of the DesignProblem and the consequent incompleteness of the *Experience*. In this sense, the Search (*ProblemFindingSearch*) for conceptual meaning is not connected to *Solution* finding but to *Problem* finding and, by being so, the *Original*ity may reside in the way we find problems and not in the way we generate solutions

Ver tambien DesignProblem

24.3. DesignEthnographicResearch

Inherit from DesignResearch
"Design-Actions"

The most powerful methods of design research enable researchers 1) to get to know other people firsthand in their own *Surroundings* and in the midst of their real-life *Activity* and 2) to *Experience*, where possible, the same experiences they will be describing, interpreting and changing through *Design*. To learn about what others value and how they behave (*Conduct*), one needs to get to Know them. Sociological ethnography lends itself well to the study of small communities of people who share certain *DaliTrait*s. The traits vary from project to project as do the people studied. What remains consistent is scale. Ethnographies can be written from small case studies of people within a representative group of some kind.: the studies can have as few as two people though it is preferable to have more than that. Since the studies are small, they permit detailed learning and one-on-one *InterpersonalCommunication*. Through observation of real world activity, discussions with people, interviews, interactions with *PrototypeModel*s and personal experience of whatever is at hand, the researchers develop enough understanding and empathy to inform subsequent product development

24.4. FeaturesModelling

Inherit from Modelling
"Design-Actions"

Feature modeling is the activity of modeling the common and the variable properties of Concepts (*Feature*) and organizing them into a coherent model (*FeatureModel*)

It is important to note that feature modeling is a CreativeProcess. It is much more than just a simple rehash of the features of existing systems and the available domain knowledge. New features and new Knowledge is created during feature modeling

we do not decompose any existing structure into its elementary parts, but we actually create the structure and its parts (*ConceptDecomposition*)

24.5. ScandinavianApproach

Inherit from DesignApproach
"Design-Actions"

Traditional 'User-centered' approaches have been improved upon in recent years but current practices tend to fall short in several respects: Designers and users are not truly engaged; social and **political** aspects are filtered out; and complexity and representativeness are difficult to identify and portray

Product developers efforts to adapt and extend elements of the **participatory** design approach include low-fidelity mock-ups and *PrototypeModels*, increased engagement and communication with potential users and an emphasis on site visits and understanding the work context (*UseContext*, *UserProcess*). Although these methods can be useful, elements of the Scandinavian approach were lost in transfers to *Product* development:

· Long-term engagement with particular participants, and the empathy, commitment and deep understanding that such engagement can bring;
· Attention to the sociopolitical and 'quality of life' issues that marked much of the early work, including *Values*, *Fear*s, aspirations, and so forth

UTOPIA project
revealed the complexity of working closely with users on a possible new product. Ehn describes a 'tradition/transcendence' tradeoff: A new product may be useful to new users, but not to the current users who have developed skills and conventions around existing tools and practices. The researchers saw a product potential, but worker participants desired a less generally

useful system that was more closely synchronized with existing practices. The desktop publishing product was not designed.

25. "Practices-Approaches"

25.1. TotalFreedomApproach

Inherit from OrganizedApproach
"Practices-Approaches"
labels: Author: **Altshuller**

The total freedom view prompted the emergence of various methods such as "Brainstorming", *SynecticsMethod*, *LateralThinking*, RandomStimulation (*RandomStimulator*) etc. which share instructions of withholding Judgment and relying on *Analogy* from other *Member*s in the *PersonGroup* (synergetic effect) or on *Randomly* selected forced *Analogy* (**De-Bono**). "Group effects" are supposed to emerge based on the assumption that all men have the ability to solve the problem and manifest creativity. Hence, a group of people that think together can suggest more new ideas and accelerate the ideation process. This family of methods relies on the assumption that enhancing randomness, breaking *Rule*s and Paradigms, and generating "anarchy of *Thought*" increase the probability of *Creative Idea* emergence

Critica

Although there is a general agreement regarding the distinctive nature of the *CreativeOutcome* (e.g., idea, painting, poem etc.), there is a controversy among researchers over the extent of the distinctive nature of the CreativeProcess. The feeling that one has to overcome mental *Obstacle*s/barriers in order to reach creative ideas, leads to the belief that one has to ensure "**total freedom**" by eliminating directional guidance, *Constraints*, *Critic*ism, and *Thinking* within bounded *Scope* (**Csikszentmihali** 1996). In spite of the dominance of these methods in the practical world1 their efficiency has been questioned by a number of researchers (**Weisberg**; **Connolly**, **Routhieaux**, **Schneider**; **Diehl** , **Stroebe**; **Paulus** , **Dzindolet**, **Poletes** and **Mabel**; and **Bouchard**). They include reports that ideas suggested by individuals working alone were evaluated as superior to ideas that were suggested in Brainstorming sessions. One of the outcomes tends to be the "**illusion of productivity**" which involves heightened satisfaction of the group from the process itself but dissatisfactory from the quality of the ideas generated. Only in a world with *Structure* can *Search* be selective and systematic, otherwise one lacks the ability to recognize that the goal has been achieved (**Simon**). **Reitman** observed that many *Problem*s that lack a structuring framework are *IllDefinedProblem* in that the *Representation*s of one or more of the basic *DaliComponent*s - the initial *State*, the operators (*Function*) and *Constraints* and the *Goal* - are seriously incomplete, and the *Search Space* is exceedingly large. There is no wonder therefore, that "total freedom" does not ensure surprisingness of the chosen ideas, in fact there are claims contending the contrary. Findings in the area of cognitive psychology provide support to the conclusion that the detection and use of progression *Rule*s may even result in enhanced surprisingness (*Surprise*). For example, according to **Perkins**, adherence to a cognitive frame of reference involves *Sensitivity* to the "*Rule*s of the game" and by functioning within a frame, a better position is achieved to notice or recognize the unexpected (*Surprise*). It appears, therefore, that creativity tasks adhering to the "total freedom" view may provide the participants with the enjoyable sense of engaging in some divine compositional (*Compose*) virtuosity while navigating in an infinite *Space* of potential ideas, but in the end the *CreativeOutcome* may be inadequate.

A noticeable finding emerges from the comparison between the no training and free association conditions. No clear indication was found that the free association method heightens creativity or brand attitude. Although this method is widely applied in advertising practice, the contention that it necessarily enhances effectiveness was challenged by several researchers (**Perkins**, 1981; **Weisberg** 1992). Some re-searchers claim that free association as well as other frequently used projective techniques may even reduce effectiveness even though they overcome group effects which typically characterize *Focus* group methods

Alternativa

There is no argument about the value of randomness: Indeed, several of the greatest inventions in history occurred *Randomly*, as non- replicable "sparks". However, randomness should be reserved only to *Problem*s in which *Constraints* originating in non-creative requirements limit the *SolutionSpace* to a unique or to a very small number of *Solution*s. The postulated association between creativity and total freedom is challenged also by recent findings in *AdvertisingResearch*, an area in which creativity plays a central role. Ver *StructuredApproach*

Nota
the TotalFreedomApproach is particularly puzzling in view of the attempts made by the human kind throughout history to understand the regularities in nature and to utilize that knowledge for the improvement of their own well being. One justification for examining regularities as potential sources for creativity is that structures resembling the *ReplacementTemplate*, developed and applied in other Fields have been valued as creative (**Altshuller**). Creativity *Perception* may be enhanced because these structures match certain *Attractors*, namely, paths that the self-organized mind tends to follow (**Kelso**). Evidence for the superior creativity of template-matching *Idea*s has been found in the contexts of new *Product* ideation, in technological *Innovation*s, and in *Advertising*

25.2. InvestmentApproach

Inherit from StrategicApproach
"*Practices-Approaches*"

Investment Theory of Creativity: 'The *CreativePerson* takes a buy low, sell high approach to ideas. In buying low, the creator initially sees the hidden potential of ideas that are presumed by others to have little value. Once the idea has been developed and its value is recognized, the creator then sells high, moving on to other pursuits and looking for the hidden potential in other undervalued ideas.' (Creativity Encyclopedia, 1999)

Relacionados: Valuable, Field

Comprar a la baja y vender al alza exige ir a contracorriente, e incluso en el caso de que se tenga la capacidad para hacerlo, durante el largo tiempo no se ira a contracorriente a menos que se posean los rasgos de personalidad exigidos (*CreativePersonConduct*)

Sternberg and **Lubart** characterise creativity as a kind of investment in ideas, the theory being that if one 'buys low', and works on unpopular or esoteric ideas, developing them, one can later 'sell high', capitalising on the creativity. Sternberg and Lubart identify six resources which each need to be tapped in order to build Valuable ideas:

1) intellectual abilities, comprising the synthetic ability (*Synthesize*) to see problems in new ways, the analytic ability (*Analysis*) to recognise which ideas are worth pursuing, and the ability to persuade others of the value of one's ideas (*Persuasion*),
2) knowledge required to move beyond a Field,
3) different styles of *Thinking* global and local,
4) characteristic personality *DaliTrait*s,
5) intrinsic *Motivation* and
6) a supportive environment in which to be creative (*CreativeEnvironment*).

25.3. EthologyApproach

Inherit from Approach
"*Practices-Approaches*"
labels: Author: **Cezanne** Quote: **Merleau-Ponty on Cézanne: "What we call his work was, for him, only an attempt, an Approach at painting".** Author: **Bourdieu** Domain Specific: Author: **Deleuze** Author: **Weber** Author: **Escher** Author: **Barry A** Note: **Inventive work** Note: **creativity as doctrine** Quote: **black box of creativity** Note: **inertia** Quote: **creativity has actually become a form of capital in its own right**

In the interests of inventiveness, we should be suspicious of the idea of creativity when raised to the power of a doctrine or a morality. Endlessly working on the same problem, doing the same thing. This has nothing to do with **creativity as doctrine** and everything to do with submission to the *Task*s of getting on with doing what one does

The ethologist does not begin with a "*Theory*" or any a priori conceptualizations at all but works within a plane of immanence. An ethologist of creative powers, would be interested in documenting and defining in a more or less **empiricist** way the affects which are made available by creative powers, for instance in the arts themselves, whether this be a case of literature, painting, cinema or whatever. The virtues of commitment to the task. "We know of no great artist who has ever done anything but serve his work and only his work" (**Weber**)

Such an ethology would, be specifically countered to any attempt to **reduce the notion of creativity to a doctrine or a morality**. **Deleuze**, is an paradigmatic witness against compulsory creativity. With his ethological attitude he has, so to speak, at least opened up the **black box of creativity** and taken a serious look inside. The genuine "artists" are the very last people actually trying to be *Creative* (**Cezanne**, **Escher**). In Cézanne we have the idea of inventiveness deployed

(*UnfoldingProcess* ?) without need for the concept of creativity. Inventiveness comes about through work that involves repetition (*Sequence* ?) of the same activity, repetition in the name not just of *seeking* an *Answer* to something but of locating, deepening, embellishing a problem (*IllDefinedProblem*): repeated *Focus*ing, obsessive preoccupation. **Merleau-Ponty on Cézanne: "What we call his work was, for him, only an attempt, an Approach at painting".** **Bourdieu** is another example

Barry A. insists that we make an error if we assimilate the category of *Invention* to the categories of either *novelty* or speed. "What is inventive is not the novelty of *Artifact*s in themselves, but the novelty of the arrangements with other *activities* and entities with which artefacts are situated". And what counts in an invention is not so much an invented artefact as the questioning invention itself opens up. Invention, then, is the opposite of closure (*Openness*). In the realm of politics,

Inventive work in fact seems to consist in an endless movement towards, into, around and away from the problem, the point of maximum **inertia**. It is repetition, but of the attempt and endlessly so, because the attempt never materializes into the accomplishment. What is at stake is not closure but the opening out of further *possibilities*

Thomas Osborne: what we now have is a romanticism and subjectivism tied to the very demands of rationalization (economic performance and efficiency) and "science" (the expertises of creativity). The doctrine of creativity, though, is more than just ideology. It is real enough. Indeed, at the extremity of this sort of interpretation, we might want to say that **creativity has actually become a form of capital in its own right**. If so, the capitalization of creativity can be resisted not by resort to a more authentic conception of creativity so much as by the rejection of the very category of creativity itself and its replacement by the more general, more anonymous, more inertia-ridden idea of inventiveness.

26. "Person-Roles"

26.1. User

Inherit from PersonRole
"Person-Roles"

a person who uses or operates something

End-user. The person who actually uses a *Product*, whether or not they are the one who purchased the product

Notas de lecturas:

Fischer characterises the *Consumer*-Designer spectrum in terms of roles of both *People* and *Media* as follows:

Consumer End
passive consumer (*Television*)
active consumer (*InteractiveMedia*)
power users
local developers
domain designer
meta-designer (*MetaDesign*)
Designer End

Fischer envisions that *ComputationalMedia* should move towards the 'metadesign' end of the spectrum

26.2. PersonRole

Inherit from DaliObject
"Person-Roles"

the *Function* assumed or part played by a *Person* or thing in a particular situation

Relacionados: Brainstorming, *Ricestorming*

27. "Design-Representations"

27.1. DesignRepresentation

Inherit from Representation
"Design-Representations"

DesignWorld Representations

Nota de lectura:

They are the basic components of a *Design Artifact* and are both the object of creation and catalysts for further creation.

Making a representation of a Design *Situation* allows the Designer to reflect on an intermediate *State*, and helps the Designer decide how to proceed

Designers produce various types of representations for different purposes during both early phases and later *DesignStages* of a DesignProcess. There is a spectrum of types of representations serving for different purposes. At one end of the spectrum, representations serve for solutions, while representations at the other end serve for problems. **The power of externalization cannot be overemphasized**. Most existing design support systems provide representations that serve only for solutions, and not for *Problem*s. (*RepresentationalTalkback*)

28. "Design-Order"

28.1. DesignInformationFramework

Inherit from InformationStructure
"Design-Order"

is a common information platform to support consistency and accessibility in design information management over multiple views of Design through different phases of the DesignProcess, an infrastructure that stores all the *DesignKnowledge* acquired and produced through the design process. Also provides an environment in which *PrototypeModel*s or *Scenario*s can be readily created according to their purposes. Un ejemplo es StructuredPlanningProcess. How to **trace** accumulated design information throughout the whole process, how to **archive** and organize the accumulated design information in an effective form, how to **share** different viewpoints generated by multi-disciplinary teams, and how to make all design **act**ivities **coherent** throughout the DesignProcess Multi-disciplinary design environment (*InterdisciplinaryTeam*) in interactive systems development requires integration and sharing of *DesignKnowledge* across different disciplinary *PointOfView*: a shared language that enables Designers effectively to *Organize*, generate, *Evaluate* and Communicate their *DesignKnowledge*. The framework provides a foundation for DesignThinking and design activities such as organizing data from User studies (DesignResearch), developing *Insight*s, generating *Design* Concepts, and Prototyping and evaluating design concepts. As one of these applications of the framework, it is used as a basic organization to accommodate multiple *PointOfView* or *Aspect* models. For example, a certain *Situation* of a Use of a product can be viewed by a *State* transition-based view or by a behavior-based view. Both of the two different views can be created by using the framework so that they can be combined (*Combination*) into a new view. The combined view enriches the range of *Understand*ing of the situation of the *Use*. Through this view, the *Possibility* to generate *Meaning*ful *Insight*s are increased.

Figures
DesignInformationFramework
Aspect Models PointOfView Combination

Scrapbook

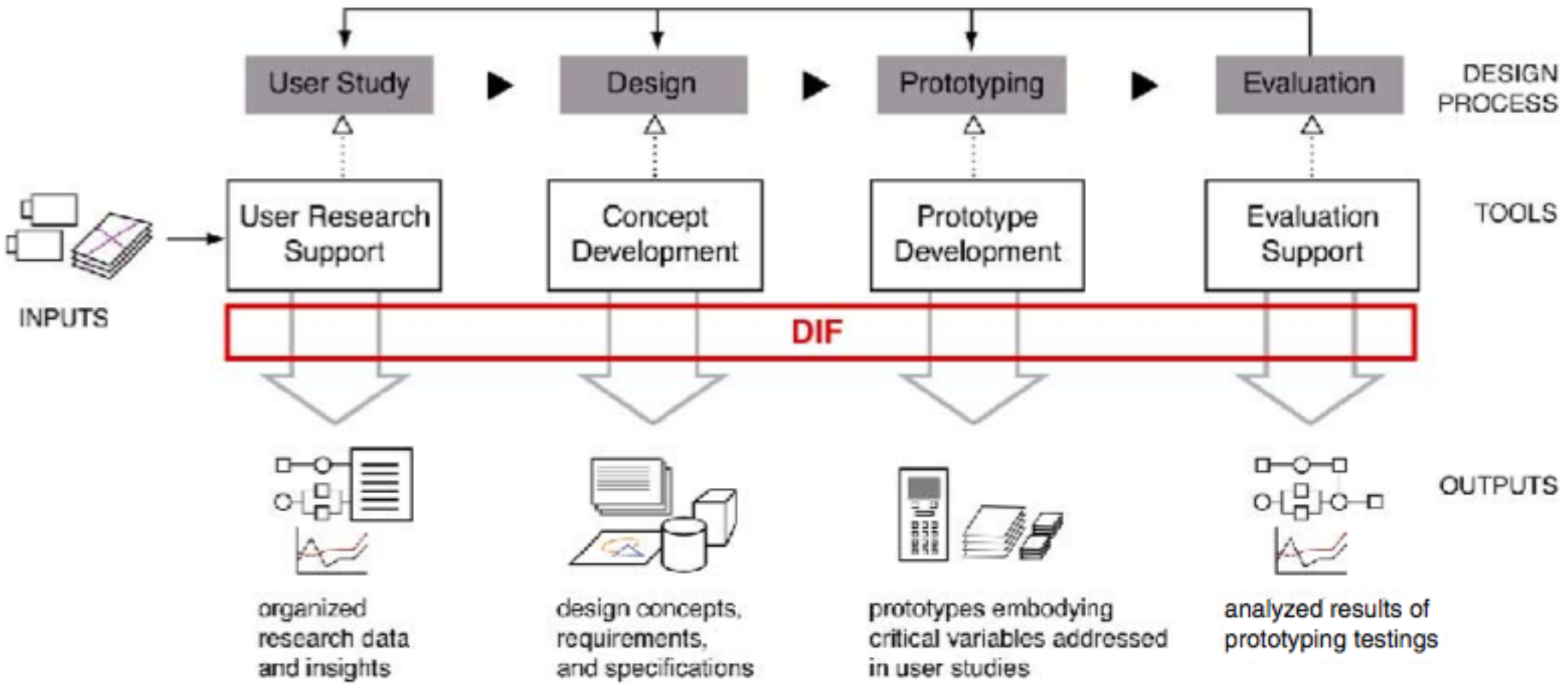


Figure 1 DIF as a foundation through the whole design process

Fig. 10-DesignInformationFramework1

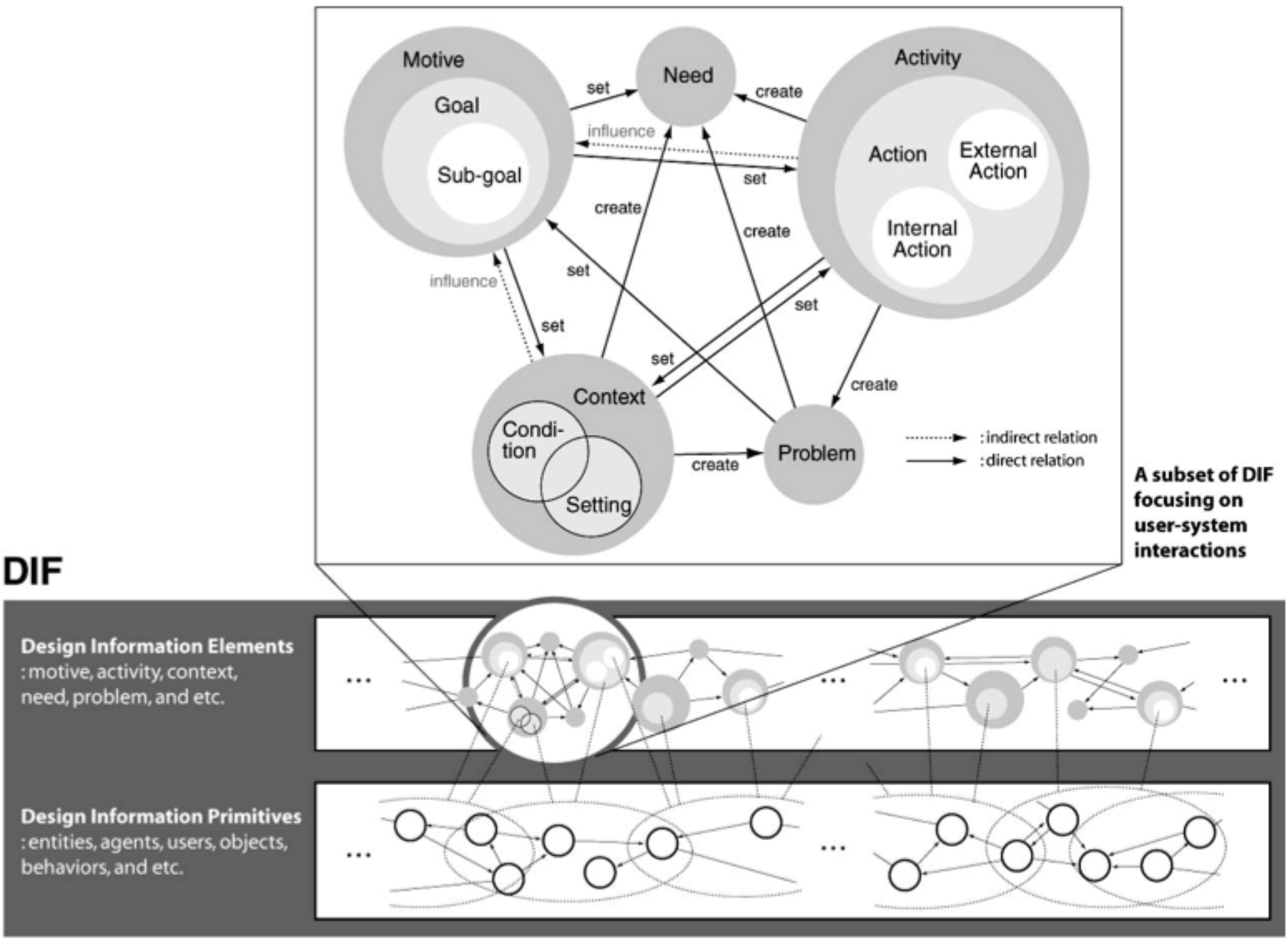


Figure 2 Relationship between the elements and the primitives of design information in DIF

Fig. 11-DesignInformationFramework2

28.2. UserProcessArchitecture

Inherit from Architecture
"Design-Order"

A UserProcessArchitecture can be defined using the definition of the *ProductArchitecture* - the mapping of *Function*s to the physical *DaliComponent*s. The User Process Architecture is a mapping from the user's *Task* to the process module

The user process module collects many subtasks and it requires input and output to continue the NextSteps. The input of each module is considered as the operations and the object use while the output is the *Transformation* of the process to achieve the *Outcome* of what User expects or *Goal State*s.

UserFunction
Module *Classification*
Module *Interaction:* Each process module has an input, output and effects. The process interaction is the flow across the interface such as material, energy and information

User Process Architecture creates a Flexibility of the process on the user side

28.3. FunctionStructure

Inherit from Structure
"Design-Order"

a breaking down of all *DaliAction*s into three hierarchical levels of operation. These are usually very distinct *State*s that the *System* goes through from the time it is produced until it is retired. There are relatively few possibilities, although the *Select*ion varies for every system (*OperationMode)*. Activities are defined as "purposeful performances" in ActionAnalysisPhase. The *DaliAction*s are described as *Function*s'*System* Functions or User Functions, depending on whether they are performed by the system or by the user. At this level we attain the level of detail necessary to meet the goal of the analysis, uncovering the Functions that must be performed. The middle level of the hierarchy is the *Activity* level. For any Mode of operation, it is usually possible to describe several Activities that occur in accomplishing the purpose of the Mode (for example, Loading, Transiting and Unloading for the Transport Mode). The FunctionStructure is, in a sense, a catalog of Requirements for the *System*

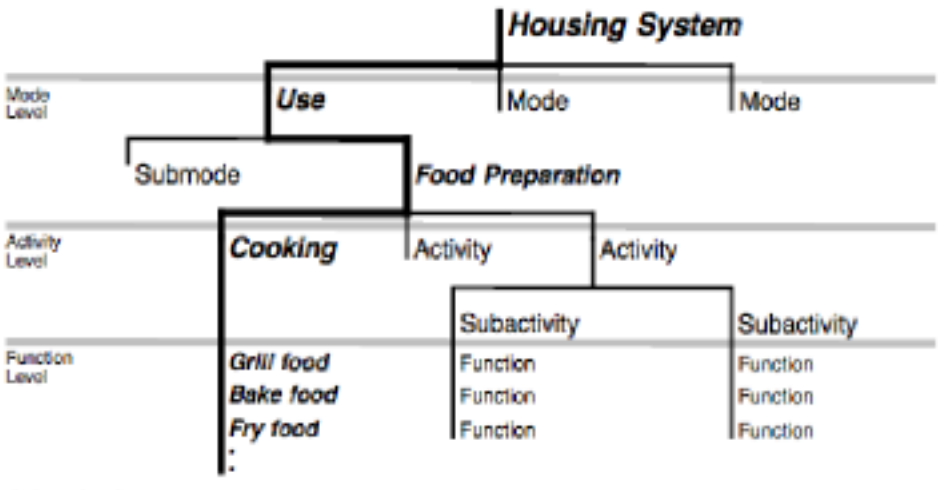
Ver Figura FunctionStructure Hierarchy

Notas:

The use of the theater *Metaphor* is very intentional. Thought of as scenes of a play, Activities can be characterized nicely and distinctively and, therefore, may be described relatively precisely. For a theatrical scene, there are players, props and a set. In an *Activity*, there are users (players), system *DaliComponent*s that the users work with (props), and environmental components that are not involved directly, but place conditions on the system (the set).

A "theater" *Metaphor* helps when developing a description: in an *Activity* "**scene**", Users are the players, system elements are the props, and *Surroundings* elements are the set. As a scene is walked through, the actions of users and system are identified and pinpointed. These are the Functions that the Designer is ultimately concerned with'what the system must be capable of doing (or supporting) well. The comprehensive list of Functions assembled by building the FunctionStructure establishes the breadth of the information base called for by ActionAnalysisPhase. Depth is provided by "insights" about how the Functions are performed. These are recorded as *DesignFactor*s, *Document*s'virtually structured essays'recording what goes right (or wrong) when the Functions are performed. *Anecdotal* observations and qualitative information, supported with facts and numbers as available and prodded for *Design* implications, supply the deep *Understand*ing on which to build thoughtful *Solution*s

Scrapbook



A three-level, top-down analysis is used to find **Functions** *that cover the requirements of a system. The result is a* **Function Structure.**

Fig. 12-FunctionStructure1

29. "Creativity-Factors"

29.1. UnfoldingProcessCondition

Inherit from PrecursorFactor
"Creativity-Factors"

Four Conditions Necessary for *UnfoldingProcess* to Happen

· *Step*-by-Step *Adapt*ation: The process, whether large or small, must be step-by-step, and gradual. Each part of the environment, at every stage of its *Planning*, conception, and construction, must evolve, be developed (DevelopmentProcess) step-by-step. The *DaliForm* must be created step-by-step, each step being an adaptation in which things get fitted more and more closely to a *Harmony Whole*.
· *Feedback*: To guide the adaptation, at each step in the process there must be a continuous and relatively immediate feedback about whether what has been done is a living structure in sufficient degree (*DegreeOfLife*). In human society this requires as a minimum a common shared understanding of 'life'. The process is then capable of adapting to this feedback, instantaneously, so that what has life can be kept and what doesn't have life will be rejected'with agreement'all while the process is going on.
· Unpredictability (ver *CreativityParadox*): To make the adaptation successful, the process must be relaxed about the unpredictable character of where it goes. Unfolding cannot occur except in a Framework which allows the whole to go where it must go. The dire modern passion for planning and advance *Control* must be replaced by an *Attitude* which recognizes that *Openness* to the *Future*, and lack of predictability, is a condition for success. It must be alright for the thing (*Outcome*) to become whatever it becomes, under the influence of adaptation and feedback, even though one does not know (*Unknown*), in detail, what that thing is going to be.
· Awareness of the Whole: Fourth, and this is the most difficult for us, there must be an ever-present awareness of the whole, throughout the process. For the adaptation to allow wholes to unfold successfully, the unfolding must take place within a framework of true awareness of the whole.

30. "Process"

30.1. InnovationProcess

Inherit from DevelopmentProcess
"Process"

innovation is the process of both generating *and applying* creative ideas produced by a CreativeProcess in some specific *Context*. In the context of an organization, therefore, the term *innovation* is often used to refer to the entire process by which an organization generates creative new ideas and converts them into novel, useful and viable commercial *Product*s, *Service*s, and *Business Practice*s, while the term *creativity* is reserved to apply specifically to the generation of novel ideas by individuals or groups, as a necessary *Step* within the innovation process.

In the process of design (CreativeProcess), *Idea*s are generally developed into conceptual *ConceptModel*s, then *PrototypeModel*s, then *Product*s which are then accepted, or rejected, by the consumer/society (*Client*/Field). The way ideas are used is through a process of persuasion. *Persuasion* comprises of the following components:

Persuasion = *Communication* + validation + acceptance + influence

Notas de lectura:

There are slight differences between creativity and innovation with regard to the logic employed, but the process behind both is still easily comprehended as a singular process (en el modelo InnovationProcess subsume a CreativeProcess)

Emergent Innovation: "An innovation that arises in the course of a series of *Activity* rather than as a consequence of a preplanned innovation project." (Creativity Encyclopedia, 1999) - *EmergentQuality*

El CreativeProcess es en extremo sinuoso, desarrollado a veces sin tiempo y lleno de elementos emergentes que pueden provocan modificaciones no previstas en el rumbo. La innovación normalmente exige una decisión previa, un *Planning*, un conjunto de recursos definidos, y hasta un sistema de evaluación (*Evaluate*). En la creatividad el componente de originalidad es muy variable, porque depende del *Context* y de la *Experience* de las personas comprometidas, pero tiene siempre un rol importante. En la innovación la originalidad puede no tener ningún valor, como ocurre en aquellos casos en que se implementa un cambio probado en otro lugar y trasstado a un sistema distinto. Las innovaciones, globalmente consideradas, pueden ser de tipo incremental o rupturista. En el nivel incremental los cambios son graduales y relativamente lentos, y normalmente no alteran la *Essence* de los modos de trabajo ni modifican el *System*. En el nivel de *Rupture* hay una transformación drástica, que cambia fundamentalmente las formas de trabajo y la constitución del sistema. En ambos casos la presencia de resistencias (*Obstacles*) es previsible.

La creatividad (CreativeProcess) y la *Modelling*. Ambos están permanentemente proyectándose en cualquier proceso de *Innovation* y se necesitan mutuamente. 'solo se produce innovación sostenible en el tiempo si equilibramos la creatividad y la modelización, sobre la base de unos *Values*'. Recorrido el espacio de lo desconocido llega la fase de modelizar, de reconocer la *Experience*, aprender de ella, conceptualizarla y proyectarla en modelos de referencia reconocibles. Estamos en la *Stage* de lo *Known*, en donde damos sentido práctico a la creatividad, convirtiéndola en algo útil y lo proyectamos en los modelos de referencia ya existentes, corrigiéndolos, *Adapt*ándolos y perfeccionándolos. Uno de los enemigos más claros de la *Innovation* se encuentra en un exceso de creatividad. Lejos de ser anulada por la burocracia ' el otro enemigo de la innovación ', el exceso de creatividad sin modelización alguna hace que los CreativeProcess pasen a ser ejercicios visionarios, propios de iluminados que en el mejor de los casos no producen ninguna mejora. En estos casos el proceso de creatividad inherente a todo proceso innovador no es capaz de dar el paso a la *Modelling*, absolutamente necesaria para innovar de forma sostenible y competitiva. El peligro de caer en un exceso de *Modelling* y en ausencia de creatividad, es lo que lleva al otro enemigo de la innovación: la **burocracia**.

'waterfall' *Innovation* process failed -> The problem: Due to sticky information the agreed-on *Specification* was not complete and accurate. '*RapidPrototyping*' innovation processes as a *Solution*. Existe una *Trends* que consiste en shifting the *Innovation* to user (*Learn*ing by doing). Major new product lines are rare " incremental improvements are by far the most common type of project in product and service development. So it is important to *Learn* to do incremental *Innovation* well. Traditional methods are based on finding needs among target *Market* Users. Manufacturers then develop *Solution*s. New methods are based on finding *emerging Need*s among *LeadUser*s. These lead users may also *develop* solutions.

In the early days through *Serendipity* and dedicated *Research* smart people and geniuses made inventions without innovation management. If creativity and therefore Innovation is to be stimulated, *Motivation* is the key feature to tackle. Motivation, as in drive or *Passion*, is displayed as Flow. Drive or passion cannot be controlled, whereas a *Condition* as flow can be provided! (*StimulationFactor*)

30.2. DevelopmentProcess

Inherit from DaliProcess
"Process"

development is the process of producing an *Artifact* or institution in response to an *Understand*ing of a *Problem* or *Opportunity* in *Context*

One Step Development: Artisans do this routinely today; before the industrial revolution, it was the normal means of production. In essence, it is a direct form of "making" that moves between the realms of the analytic and the synthetic without formal intermediate steps. When systems of production reach a stage of sophistication at which designing and making are done by separate professionals, the development process gains another dimension. There is a distinction now between *Abstract* and real, and the process of development moves to the abstract. *Insight*s are drawn from context, converted at an abstract level to Ideas and turned back to the real as *Specification*s for artifacts or institutions.

Two Step Development: The two-step development process, as a step toward reformation, adds a *Planning* stage before the *DesignStage*, separating formally the process of concept formation from the process of turning a Concept into a specification. *Planning* is where "the right mountain" is discovered before the climb begins. StructuredPlanningProcess operates in this stage.

Three Step Development: To optimize the planning and DesignProcess , a third stage should precede planning (**Figure** Three-step DevelopmentProcess). *Metaplanning* in the three-step model is concerned with planning the *Planning* and DesignProcesses. From the metaplanning level, product development projects are initiated by projecting areas of interest, modeling contexts (*Scenario*), identifying *Issue*s, establishing project resources, selecting, modifying and developing

planning/designing *Method*ology, and preparing a preliminary *ProjectCharter*. Metaplanning is particularly important for the full-scale implementation of a development process incorporating advanced-planning Teams. In the emerging new model for development, multiple planning teams operating in offset parallel sequence will be trained, briefed and given their charters by metaplanning departments. The processes of designing and planning will be as much a subject for development as the products they are used to develop. Those responsible for metaplanning will be closely associated with those responsible for the development of DesignProcesses, and as better tools for planning and designing are developed or obtained, they will be custom-**tailored** through *Metaplanning* to the *Goal*s of projects being initiated

30.3. CreativeProcess

Inherit from DaliProcess
"Process"

"Si buscas resultados distintos, no hagas siempre lo mismo"

a mental process involving the generation of new *Idea*s or Concepts, or new *DaliAssociation*s between existing ideas or concepts. **Creativity techniques** are *Heuristic* methods to facilitate creativity in a *Person* or a group of people. Most creativity techniques use *DaliAssociation*s between the *Goal* (or the *Problem*), the current state (which may be an imperfect *Solution* to the problem), and some stimulus (possibly selected *Randomly*). DivergentThinking involves creative generation of multiple *Answer*s to a set problem. The classic model is a Stage based process model: *CreativeProcessStage*

Experience has shown that it is a good idea in a creative problem solving process to start with divergent thinking to produce as many ideas or solutions as possible and thereafter to switch to *ConvergentThinking* to *Select* the few most promising ideas (*ThinkingRule*)

Ver *Voyage*, *Solve*, *CreativityMethod*, *StimulationFactor*, *CreativeProcessHeuristic*

Notas de lectura:

There are a number of theories about the underlying mechanisms of creativity, theories attributing it to everything from method to madness -- none of them very satisfactory. As to inducing creativity -- by using heuristic strategies or through "creativity training" -- this has had very limited success.

Se considera que la coherencia del resultado (*Result*) de cualquier CreativeProcess se apoya precisamente en las pautas (*Guidelines*) de relación (*Relationship*) que siguen las asociaciones de ideas (*DaliAssociations*) y en su equilibrio y adecuación según un marco de proporciones al que se llama Ritmo (Flow), la razón de unidad en la que se relacionan y armonizan los diferentes fragmentos, elementos o signos con los que construimos textos (*Texts*), mundos (*Worlds*), símbolos (*DaliSymbol*), imágenes (*Images*), representaciones (*Representation*),...

Se vislumbra en todo ello una actividad mental basada en las funciones del hemisferio derecho, en la integración de formas, mucho más allá de la secuencialidad lógica de los signos. Algo de totalizador hay en todo CreativeProcess ... Las personas creativas (*CreativePerson*) han reconocido las diferencias entre el proceso de reunir información y el de transformarla creativamente. Los últimos descubrimientos sobre el funcionamiento del cerebro comienzan a arrojar luz sobre este proceso dual. Conocer ambos lados del cerebro es un paso importante para liberar nuestro potencial creativo

Los procesos creativos no pueden ser considerados como un álgebra de posibilidades combinatorias entre los elementos formales con los que trabajan, sino que deben incluir en su mirada también el espíritu que los inspira, la forma integral que abarca todos los niveles implicados (Ver *Rhythm*, *Guidelines*, hemisferio derecho)

Csikszentmihalyi (1988, 1996) takes a different, *SystemApproach* and highlights the interaction of the individual (*CreativePerson*), *Domain* and Field. An individual draws upon information in a *Domain* and transforms or extends it via cognitive processes (CreativeProcess), personality *DaliTrait*s, and *Motivation*. The field, consisting of *People* who control or influence a domain, evaluates and selects new *Idea*s. The *Domain*, a culturally defined symbol system, preserves and transmits creative *Product*s to other individuals and future generations

The *CreativePerson* must start by generating relevant information (GenerativePhase), synthesizing (*Synthesize*) that information, and *Select*ing from among that information. *Variation* in creative *Product*s within and across individuals may be due to idiosyncratic differences in mental agendas (*CreativeAgenda*) or to differences in selecting among information that is generated. Our thesis is that individual variation in the same cognitive processes that are used by the majority accounts for differences in novelty and variation among creative products. These variables are *Trait*s

If creativity involves producing new and valuable combinations of knowledge then *knowledge can be considered the raw*

material of the CreativeProcess. Furthermore, in order to produce novel outputs, novel inputs are required. A Theory about *CognitiveDistance* contends that there is an optimal, rather than maximum, level of Novelty (*Original*). The optimal level of novelty is the point at which it intersects the ability to comprehend new information or the "absorptive capacity". The second key implication is that acquiring new knowledge is a *social process*. This line of reasoning suggests that acquiring new knowledge is mainly the result of interacting with new and different *People*. (*CognitiveDiversityFactor*) The basic idea of the hypothesis is that the people with who one has less frequent and less intimate contact (weak ties) are more Valuable sources of knowledge. The reason for this is that the more frequently and intimately two people Interact, the more they learn from one another, and so they tend to share a significant amount of *redundant knowledge*

Associative Theory: "is an explanation of the creative process. Creative *Thinking* as the formation of "associative elements into new *Combination*s which either meet specified Requirements or are in some way useful" (**Mednick**, 1962, p.221)." (Creativity Encyclopedia, 1999)

Ideational *Fluency*: a.k.a. Ideation, key component of the creative process. (**Sternberg**, 1999)

Various research methods **measure** the rate of idea production (*Quantity*), the *Diversity* of *Idea*s produced, the characteristics of *CreativePerson* (*Trait*) who generate more and better ideas, the resistance to *Change* of others, and the impact of the ideas. Others try to relate the impact of an idea to the creativity of the idea, and the creativity of the idea to the creativity of the process (*DaliProcess*), environment (*Surroundings*), or *Person*. **Esto no funciona con los** *InterdisciplinaryTeam*

Todo proceso creativo es análogo al proceso de *Solve* de un *Problem*; se trabaja con la información que se tiene a mano, se ponen en juego las *Experience* anteriores, se las *Combine* y traslada a las nuevas estructuras (*DaliPatterns*), que en su nueva configuración resuelven un problema, el cual satisface alguna Necesidad del individuo (**Arnold** 1964)

Creative process models are commonly used as the underlying model for software-based creativity support *Tool*s. With the introduction of a social creative process model we raise the interesting question of how current and envisioned technologies may support the social creative process (*CollaborativeProcess, GenexProcess*)

El elemento de *Connection* es clave para comprender todo este proceso creativo (**Hallman**). Tiene lugar alguna forma de actividad relacional, expresada igualmente como Analogy o *Metaphor*. Con esto se centra la atención en el hecho de que se crea a partir de la *Experience* acumulada y de los elementos disponibles en la Reality en que cada *CreativePerson* vive

CreativeProcess may best be considered a process characterized by a dual socio-aesthetic (*SocialFactor* and *AestheticFactor*) and organizational (*Business*) nature. The fashion *Market*, in particular, has been deeply influenced by the *CreativeAct* of designers and entrepreneur-managers

Whether solving problems alone or in a group, you really must have a guided process i.e. a *Plan* or a map of the *Step*s to be followed. This is especially so in a group due to the need to align the capabilities of the members in a *Positive* way. It is also a good idea to facilitate the group creative process. The *Facilitator* will support the process, will elaborate a plan of the steps to be followed and will manage the whole process to secure that an action plan will be elaborated and implemented.

J.A. **Marina**, todo proceso creativo se caracteriza por perseguir una meta (algo que queda claro en la *PreparationStage*), atenerse a unos *Criteria* (criterios que han de tenerse presentes en las fases de preparación, valoración y perfeccionamiento, *VerificationStage*) y fundamentarse en una actividad de búsqueda (*Search*) (concretada en las fases de *IncubationStage* e *InsightStage*).

Cuanto mayor sea nuestro conocimiento de las fases y naturaleza del proceso creativo, mayores serán nuestras posibilidades de influir sobre él, utilizando esas etapas como hitos, averiguando en cuál de ellas se producen dificultades, concretando de qué modo tales dificultades se pueden prevenir o solventar, perfeccionando el proceso y, en definitiva, incrementando nuestro poder creativo

It appears that creative processes, which are central in such CreativeIndustry are difficult to order and manage. In organizational and business settings where *timely delivery* is essential, some form of coordination and management of the CreativeProcesses seems to be required. However, creativity is often viewed as difficult to manage and order and *CreativePersons* are seen to be "notorious for resisting rigid, formulaic *Approach*es". The findings suggest that the creative processes involve two major parts: preparation of information to be used in the creative development, and the development itself

Another conception (**Brenda A. Lynch**) of the creative process is as based on the *CommunicationProcess*es that *Enact* the organization and its structures, including work relationships and organizational member PersonRoles. An essential part of the creative process is that the *CreativePerson* must labor, often trying different things, until finally achieving the result they desire. This process is not an unpleasant one; it can be thrilling and truly engaging to the individual mentally and emotionally. Some portion of the creative process involves non-linguistic (*NonVerbal*) domains of all types of sensory cues and *Emotion*

or instinct (*AestheticFactor*). I argue that creativity is not a process that occurs within the mind of one individual; rather, it is part of the on-going *Conversation*al reality of certain organizations. I argue that an effective model of creativity in professional work contexts must emphasize inter-personal processes (*InterpersonalCommunication*) and the type of *Problem* addressed (i.e., an advertising *Campaign* versus a new theatrical play) -> *DialogicalProcess*

Ver Critica al TotalFreedomApproach

Creativity can be seen as an emergent phenomenon (*EmergentQuality*) in which the *Whole* (the *PointOfView* involved in the creative processes) is larger than the sum of its parts (the *Condition*s, *Fact*s and *Assumption*s) that started it.

Mis Notas

La creatividad (el quiero hacer por placer, juego) es diferente a inteligencia (el debe ser). El *Game* es un buen proceso para la creatividad, hay marcos para el juego pero no es muy rigido:
- hay *Communication*
- *Research*
- el juego permite apropiación
- encuentro colectivo donde las subjetividades aprender a discentir y encontrar consenso. Hay que fomentar el *Dialogue* garantizando la voz (*PointOfView*) del otro.
- hay que actuar un PersonRole, y perfeccionarlo

31. "Design-Behaviour"

31.1. Designer

Inherit from PersonRole
"Design-Behaviour"

a person who plans the *DaliForm*, look, or workings of something before its being made or built, typically by *Draw*ing it in detail

Nota de lectura
Where in the past our role was centered around making things, in the purest sense, today a designer can be involved in everything about the creation of the consumer *Experience* " from
Strategy, environmental *Design*, *Product* design, new *Media*, experience design, *Advertising*, product development etc etc etc. We are now at a point in time where after all of the years that **Apple** was an outlier, now everyone wants to be an Apple

A few good designers using advanced DesignProcesses can have dramatic impact on the *Success* of *Product*s and *Service*s

A good designer has the ability to integrate, *Interpret* and Conceptualise *Solution*s and this is Valuable to the *Business*. Designers are under constant *Pressure* to develop new skills and re-train in new technology, and they can harness technology and 'couple' this with User *Need*s to create novel products and/or services. There is a need for designers to be taught to develop business skills to help their effective integration with the business *Community*. Indeed, the ability to assess the *Market*, design the right product for the *Consumer* and then position it for success requires business *Research* and awareness. As designers take up more managerial responsibilities in the role of design/project managers, a business outlook is important. Often, designers are member of a *InterdisciplinaryTeam* and so have to be able to communicate with a range of other *Discipline*s.

31.2. DesignerInsight

Inherit from Insight
"Design-Behaviour"

In the DesignProcess, knowledge exists within Designers, whose activity is a mix of Intuitive (*Intuition*) and systematic *Procedure*s for defining a *Problem*, negotiating *Idea*s and *Solve* the problem.

Problem definition is an analytic sequence (Analisys) in which the designer determines all the elements of a problem (*ProblemComponent*) and specifies the Requirements that a successful *Design Solution* must have.

Negotiation is a dialectic process (DialecticThinking) of identifying a problem and negotiating the terms that might successfully solve the problem.

Problem solution is a synthetic sequence (*Synthesis*) in which the various requirements are combined (*Combination*) and balanced against each other, yielding a final *Plan* to be carried into production

Therefore, the mix of intuitive and systematic procedures for defining and negotiating a design solution happens through a *DaliProcess* that mixes two types of knowledge: fluid or *TacitKnowledge*, and *ExplicitKnowledge*. When designers generate *Insight*s by representing their ideas explicitly, then analytic and synthetic *Method*s are the driving forces of the design activity to promote the development of a design solution through formal structures through formal and systematic *DaliLanguage* that enables a product Concept to be transmitted, negotiated, and defined across individuals. When designers generate insights based on their *Intuition*, then technical know-how, personal *Experience*s, mental models, *Values* systems, *Belief*s, and *Perception*s of what a product means and what its *Meaning* ought to be are the driving forces of the design activity to promote the development of a design solution through technical and cognitive dimensions. In this case, the DesignProcess is an *Implicit* process of generating product *Idea*s that are hard to formalize and communicate, and reflects the designer's vision about what the product's *Attribute*s should be

32. "Order-Patterns"

32.1. JapaneseTeaHouseSequence

Inherit from GenerativeSequence
"Order-Patterns"

1. SECLUDED TEA HOUSE. The tea house is in a secluded garden.
2. GARDEN WALL. Some kind of wall or barrier surrounds the entire garden. From inside the garden the public world is not visible, and hardly audible. If there is a family dwelling associated with the tea house, the dwelling may be part of this wall.
3. INNER AND OUTER GARDEN. A low barrier divides the garden into two parts: an outer garden and an inner garden. The tea house is in the inner garden.
4. GARDEN PATH. There is a slightly meandering path running through the outer garden, past the low barrier, and through the inner garden to the tea house.
5. STONE PATH. The meandering garden path is composed of mossy stepping stones, and is loosely bordered by trees and bushes.
6. OUTER GATE. Where the garden path meets the edge of the outer garden there is a gate, connecting the outer garden to the public walk The gate is opaque. There are no direct view of the public path into the outer garden.
7. MIDDLE GATE. Where the garden path crosses the low barrier, between the inner garden and the outer garden, there is a gate called the middle gate. The middle gate is small with a roof or low door on hinges.
8. BRANCHING PATHS. In the outer garden the garden path may branch in several places along its length. Any given branching path may or may not lead eventually to the tea house.
9. GUIDE STONES. Where the path branches there are guide stones set near the stepping stones. The host closes off some branches by placing a guide stone on the stepping stone at the branching point. Before the guest arrives on a given day there is only one path open through the garden to the tea house.
10. WAITING BENCH. In the outer garden, near the middle gate, there is a waiting bench. The bench is roughly 7 feet long, and may be covered.
11. WAITING NEAR HOUSE. If there is a family dwelling associated with the tea house, then the waiting bench is usually near the dwelling. If so, the waiting area may be connected with the physical structure of the dwelling.
12. TEA HOUSE APPROACH. The length of the path from the middle gate and waiting bench to the tea house, is rarely more than 20 feet.
13. STONE WATER BASIN. Somewhere along this 20 foot path through the inner garden, between the middle gate and tea house, there is a stone water basin and running water.
14. RECESS SHELTER If the tea house is to accommodate long meal sessions, then there is a covered bench a few steps away from the tea house where people can sit and view the garden.
15. KNEELING-IN ENTRANCE. Where the stone path meets the tea house there is a window-like entrance'a small opening in the face of the tea house. The entrance is roughly 2 feet high and 2 feet wide, and 2 feet above the path. Thus a man entering must stoop down and kneel in.
16. TEA HOUSE HAS THREE PARTS. The tea house is made up of three parts in plan: the tea-room proper, the tokonoma,

and an anteroom. The tea-room is the largest part'it is where the guests gather and the tea ritual occurs. The anteroom is a tiny area off the tea room where equipment is kept and some preparation is made. The tokonoma is a shallow alcove off the tea-room where objects, art, and flowers are displayed.
17. SIZE OF THE TEA HOUSE. The floor area of the tea room is limited to four sizes: 1.5 mat, 2 mat, 3 mat and 4.5 mat (a mat is roughly 6'x 3').
18. 4.5 MAT CONFIGURATION. In the 4.5 mat tea room, the half mat is placed in the center, and the 4 mats laid evenly around it in a spiral.
19. CENTRAL HEARTH. A small square hearth is fitted into the floor at approximately the center of the tea room. Guests sit on pillows around
the hearth.
20. HOST'S ENTRANCE. The host enters the tea house through a sliding screen door. The host's entrance is always in a different wall than the kneeling-in entrance.
21. CEILING HEIGHT. The tea room has a roughly 6.5 foot ceiling in it.
22. DIM LIGHTING. There are very few windows in the tea house walls. Where there are windows they are high, near the ceiling'and placed to give a dim indirect light throughout the tea house.
23. TOKONOMA. The tokonoma is an alcove off the tea room, which is visible on entering the tea house. The size of the tokonoma varies with the size of the tea room. In the smallest tea-house the tokonoma is simply a curve in the wall.
24. TOKONOMA PILLAR. The tokonoma contains a small pillar on which an object, a work of art, or a vase of flowers may be placed. The pillar is made of wood'a kind of wood not used in the rest of the tea house.

Relacionado: *Ways*

32.2. Center

Inherit from DaliPattern
"Order-Patterns"

pattern of all the Centers appearing in a given part of space

Are those particular identified sets, or systems, which appear within the larger whole as distinct and noticeable *Part*s. They appear because they have noticeable distinctness, which makes them separate out from their *Surroundings* and makes them cohere, and it is from the arrangements of these coherent parts that other coherent parts appear. An analytic *Understand*ing of the *Essence* of what is going on geometrically. For **C.Alexander**, that model is a system of centers. Every form can be understood as a system of centers in some relation to one another onaround another, and so on.

The *UnfoldingProcess* needs some idea of what is being built:
e.g. for a fireplace you need a firebox, a fireback, splayed sides, a hearth, a throat, a smoke shelf, and a chimney
· What you are building has a cultural component because of how *Culture*s have come to live:
  tea for an Englishman involves sitting on chairs
  tea for an Indian involves sitting on the floor
· Therefore one needs a set of *generic* Centers
· These generic centers form the *PatternLanguage* for the *DaliProject*

A diagrammatic model of the structure of things that is undergoing a pattern of growth an analytic understanding of the essence of what is going on geometrically. For Alexander, that model is a system of centers. Every form can be understood as a system of centers in some relation to one another one inside another, one forming part of a boundary around another, and so on. A system of centers can have a *Hierarchy* relationship, a *Web* or semi-lattice *Relationship*, or some *Combination*

A center is a kind of entity which can be defined only in terms of other centers. Centers are "and can only be" made of other Centers.

1. Centers arise in *Space*.
2. Each center is created by *ItemOrganization* of other centers.
3. Each center has a certain *DegreeOfLife* or intensity. . . . This life or intensity is not inherent in the center by itself, but is a function of the whole configuration in which the center occurs.
4. The life or intensity of one center gets increased or decreased according to the position and intensity of other nearby centers. Above all, centers become most intense when the centers which they are made of help each other.
5. The centers are the fundamental elements of the *Wholeness*, and the degree of Wholeness or life, of any given part of any given part of space depends entirely on the presence and structure of the centers there.

The essence of it is that the generic centers must unfold from the culture

they arose naturally as a result of the natural *Transformation*s in the processes of morphogenesis (*UnfoldingProcess*). That is,

the process of structural development leads to these classes of *Order*, through the workings of the transformations (*StructurePreservingTransformation*)

Many contemporary Structures lack one or more of the properties almost entirely. This is because, he argues, current processes of morphogenesis are highly limited and artificial, as they are affected by the limitations of human *Thinking*, and the segregation of "*Planning* and *Design*" as an *Abstract* function, from the rest of the process of morphogenesis. The "*Template*" Approach (*CreativityTemplateApproach*) is showing its drawbacks as well as its advantages.

Nota de lecturas

Every *DaliForm* of structure that he was able to observe could be grouped into one of these classes. This scheme of classes turns out to be very useful in *Analysis* and, **Alexander** believes, in aiding as a *Design* tool. (el análisis, diseño, y construcción son más parecidos entre sí)

33. "Creativity"

33.1. InnovationProcessParadox

Inherit from Paradox
"Creativity"

Innovation requires freedom to *Experiment* and investigate. On the other hand, innovation management (InnovationProcess), like all management tools, prescribes *Procedure*s and rigid tools in order to achieve creativity. The necessary freedom for spontaneous inventions versus the forced creativity of innovation management is paradoxical.

If you let your *Curiosity* lead the way in your investigations, you might go too far and end up with non-realizable products. You want to keep your options *Openness* and, at the same time, rule out *Impossibles*. If naivety is defined as absolute freedom to *Fantasy*, intelligence is ability to be reasonable (*Rational*).

If creativity and therefore innovation is to be stimulated, *Motivation* is the key feature to tackle. Motivation, as in drive or passion, is displayed as Flow. Drive or passion cannot be controlled, whereas a condition as flow can be provided! Management systems act contrary to the necessary freedom, they kill the drive to investigate (*Research*) and experiment. *Passion* and *Surroundings* are essential components of creativity. Motivation is a condition, a climate in which we are allowed to investigate and experiment

33.2. PerceptualCycle

Inherit from Cycle
"Creativity"

Niesser - emphasized that *Perception* was a directed process, taking place over time. As such the subject's explorations and anticipations should be considered part of perception. Perception is a skillful activity that depends upon preexisting structures (called schemata) which direct perceptual activity and which are modified as the process occurs. The model incorporates the view that perception is testing and confirming hypotheses

Explore sample Objects
Objects modifies **Schema**
Schema directs *Explore*

The **object** in the perceptual cycle is the real-world in space and time as it presents itself in the present *Situation*. The information in the *Surroundings* is structured and is sampled through exploration and modifies the schemata accordingly.

Schema. A schema is that portion of the entire perceptual cycle which is internal to the perceiver, modifiable by experience, and somehow specific to what is being perceived. The schema accepts information as it becomes available at sensory surfaces and is changed by that information; it directs movements

Exploration takes place upon the directions of the schemata, and, through movement, samples information from the environment. Perception is thus a skill and a kind of doing

The general explanatory principle for acquisition of knowledge of the possible and impossible relies on Neissers perceptual cycle. As Neisser pointed out, schemata are anticipatory structures. They can anticipate (e.g., through imagery) and direct exploration and attention towards certain objects, and not others. The anticipatory nature of exploration allows for *Surprise*s, as when the anticipated is not found, or found in ways dissimilar to the anticipated. In this way, schemata are anticipatory, but also constantly being tested against Reality ' a test that modifies the schemata

33.3. DivergentThinking

Inherit from CreativeThinking
"Creativity"

divergent thinking involves creative generation of multiple *Answer*s to a *ProblemSet*

Divergent (Also Diverging, Diverge, or Divergent Thinking): Generating many possible responses, ideas, options, or *Alternative* in response to an open-ended *Question*, *Task*, or *Challenge*. Often used casually as equivalent to *CreativeThinking*. (Isakson et al., 1994, Index)

Divergent Thinking Variables: (Ideational):

-*Fluency*: ability associated with producing many ideas (*Quantity*),
-*Flexible* associated with producing varied ideas, emphasizes examining a *Situation* from different or varied perspectives or *PointOfView*, and
-*Original***i**ty: associated with producing unique, novel, or unusual (*Original*) *Outcome*s which are statistically infrequent in relation to an appropriate comparison sample or group.

Notas de lectura:

Ladder of Abstraction: A DivergentThinking technique used for generating many, varied and unusual *ProblemStatement*s. Asking '*Why*?' produces more *Global* or general statements, while asking '*How*?' produces more specific and *Concrete* statements. (Isakson et al., 1994, Index)

los términos "pensamiento creativo" y "pensamiento divergente" no son sinónimos, pues el CreativeProcess no se opone a la lógica y al *ConvergentThinking*, sino que a menudo se complementa con ellos

Para **Guilford** el pensamiento divergente se desarrolla en un universo que no reconoce *Limits* ni exclusiones. De acuerdo a la definición de Paul **Torrance**, divergencia equivale a mirar desde distintas *PointOfView*, buscar siempre más de una *Answer*, desarticular *Schemes* rígidos, no apoyarse en suposiciones únicas y previas; es decir, ensayar, establecer nuevas *DaliAssociation*s, *Select* de modo no usual, establecer reestructuraciones (*Structure*) sobre lo aparentemente insólito o inútil, lanzarse por caminos inesperados, tantear para producir algo nuevo o desconocido

El pensamiento divergente equivale a mirar desde distintas *PointOfView*. Es por sobre todo un pensamiento que no se restringe a un *Plane* único, sino que se mueve en planos múltiples y simultáneos. Característicamente *Search* más de una *Answer* frente a un *Challenge* o problema. Actúa removiendo supuestos, desarticulando *Schemes*, *Flex*ibilizando posiciones y produciendo nuevas *Connections*. Es un pensamiento que *Explore*, ensaya, abre caminos y se mueve en un *Worlds* sin *Limits*, frecuentemente hacia lo insólito (*Surprise*) y *Original*. La divergencia es un aspecto medular del CreativeProcess, sin embargo, la propia definición de creatividad, en cuanto incluye la idea de alcanzar un *Result*, requiere del *ConvergentThinking*. Efectivamente, el movimiento divergente nos ayuda a producir discontinuidad, escapar de las *Perception* habituales y generar nuevas *Relationships*, pero eso no es todo. El pensamiento convergente, con sus diferencias, se vincula igualmente con la creatividad en la medida en que representa la capacidad de ordenar las *Alternative* abiertas, discriminar, Evaluate y hacer elecciones (*Choose*)

Nota Advertising
Creativity in *Advertising* frequently involves methods that encourage the generation of a large number of *Advertisement* Concepts on the assumption that the rewards of producing a large number of ideas (*Quantity*) will outweigh the costs (*CostFactor*). The generation of new ideas in this manner tends to be highly unformalized and unsystematic. Often, such methods are based on the divergent thinking approach (e.g., focus groups, free association, and other projective techniques) whereby judgment is suspended and ideas emerge by associative thinking (*FreeAssociationThinking*) in a 'limitation free'

environment. However, even in a divergent thinking context certain patterns of creativity may emerge (*CreativityTemplate*). Such patterns will be more stable and less transient than the abundance of random ideas that emerge in the process of associative thinking.

Comparing this theory from the 1950s with the current literature of today, you will find there is no correlation between high scores in divergent thinking and real-life *CreativeOutcome* 'most psychologists agree that divergent thinking is not the same as creativity'

33.4. DialecticThinking

Inherit from CreativeThinking
"Creativity"

The dictionary describes dialectic thinking as juxtaposing (*Juxtapose*) contradictory *Idea*s and seeking to resolve their conflicts. Think of bringing together opposites and overcoming what appear to be irreconcilable differences. It is in the resolving of the conflicts that creativity happens. To integrate opposites requires moving from linear logic (sequential reasoning) to more creative thinking.
Dialectic thinking involves three steps:
1. A premise is presented: the thesis
2. An opposing premise is identified: the antithesis
3. The effort to reconcile both premises'the synthesis'stimulates creative ideas

Nota de lectura:

Ogilvy (1979) has argued that a polar opposition between individualism and collectivism leads to a *dialectical* process: "the pursuit of each extreme toward its own negation, its autonomous generation of the need for its own opposite"

Dialectical Thinking: 'A specific form of postformal reasoning that involves the coordination or integration of contradictory (*Paradox*) views or frames of reference (*PointOfView*).' (Creativity Encyclopedia, 1999)

Dialectical Reasoning: 'Practice of weighing and reconciling juxtaposed or contradictory arguments for the purpose of arriving at the truth.' (Creativity Encyclopedia, 1999)

33.5. Concept

Inherit from Notion
"Creativity"

an abstract idea; a general notion. A widely held idea of what something is or should be is a concept (: the concept of loyalty was beyond him). An idea or invention to help sell or publicize a commodity (see *AdvertisingConcept*)

Referencias:
MindMap, agrupar conceptos permite poner a prueba las asociaciones y detectar informacion que falta
RandomStimulator, Forzar una conexion entre dos conceptos desiguales y distintos para crear una nueva idea
IdeaIncubator, volver a la mente menos frenetica y mas capaz de manejar conceptos
Adapt, En que contextos diferentes puedo colocar mi concepto?
Analogy, combinar palabras, conceptos y asunciones con objetos y acontecimientos aparentemente irrelevantes
ColorQuality, ser mas intuitivo y necesite ideas/conceptos nuevos

Notas de lectura:

In conceptual *Thinking*, the general (*Classification*) must be seen in the concrete individual (*Instance*), but the individual must also be specified beyond the general. As such, concepts are connected to concrete individuals, and do not exist independently thereof.

Barsalou - Perceptual symbols result from an extraction process that selects a subset of a perceptual state and stores it as a *DaliSymbol*. This means that the form of the symbol resembles the perceptual state to which it refers, and that the *Similarity* among different perceptual symbols to one another is informative about the similarity of their referents... Having a **concept** is having the ability to simulate its referents competently in their absence. **Mammen** and **Barsalou**, link concepts to sets of

individuals (*Instance*), rather than being transduced or abstracted from them. A view of concepts *and Category* is necessary for *Simulation*s (*CreativeImagination*) and *Thinking* to remain grounded in *CreativeAct*. By grounding concepts in categories of individuals, and arguing that having concepts means having the ability to simulate its referents and *Variation*s thereof competently in their absence, it is possible to produce novel variations from the very same knowledge structures that adequately reflect objective reality. Here concepts exists as not only knowledge of what is, but also anticipatory knowledge of what could be, and could not be (*Impossible*). Variations can then be simulated (recombined, viewed under changed properties or changed circumstances) while remaining grounded in (sets of) real world individuals or events. Such *Implicit* structuring in concepts is one way we represent the possibilities and impossibilities of the world. By drawing on this (probably largely *TacitKnowledge*) knowledge of what is possible and impossible for both concepts, *Event*s and individuals, we can generate novel (*Original*) *Variation*s. *Question*s such as can be asked:
Is it *Possible* for concept X to have *Attribute* Y?
Is it *Impossible* for concept X to have property Y?
Is it *Unknown* whether concept X can have property Y?

Any elements and *Structure*s in a *Domain* that we need to model (FeaturesModelling). *Instance*s of concepts, on the other hand of object-oriented objects, do not have any predefined *Semantic*s. We can think of concepts as 'reference points' in the brain for *Classify*ing phenomena. A concepts stands for a class of phenomena. Of course, it is important to give *Name*s to relevant concepts, so that we can talk about them without having to list all their properties (*Feature*). Concepts are inherently *Subjective*: their information contents depends not only on the *Person*, but also on *DaliTime*, *Context*, and other *Factor*s

34. "Artifacts"

34.1. Outline

Inherit from DocumentArtifact
"Artifacts"

a draft of a *Diagram*, *Plan*, proposal, etc., summarizing the main points : draw up an outline for the essay.

34.2. BoundaryObject

Inherit from CreativeArtifact
"Artifacts"
labels: Bibliography: **Turner G. Supportive Methodology and Technology for Creating Interactive Art** Bibliography: **Fischer, Gerhard and Jonathan Ostwald. (2003). Knowledge communication in design communities. In R. Bromme, F. Hesse and H. Spada (Eds.), Barriers and Biases in Computer-Mediated Knowledge Communication (1-32). Amsterdam: Kluwer Academic Publishers.** Author: **Star & Griesemer** Quote: **an issue that boundary object theory did not directly include**

physical object meaningful across individual *Space*s, to *communicate* with (**Fischer, Gerhard and Jonathan Ostwald. (2003). Knowledge communication in design communities. In R. Bromme, F. Hesse and H. Spada (Eds.), Barriers and Biases in Computer-Mediated Knowledge Communication (1-32). Amsterdam: Kluwer Academic Publishers.**)

non-programming artists prefer to use shared *language* and boundary objects that are also meaningful in computing terms (**Turner G. Supportive Methodology and Technology for Creating Interactive Art**)

Cross the *Boundary* between multiple *social Worlds*. Boundary objects are *structurally* weak enough to inhabit and be used across multiple social worlds, but become structurally strong when used within individual social worlds. Successful boundary objects satisfy the informational requirements (*Need*s) of each of the social worlds they are used within; more successful boundary objects should satisfy more requirements from more social worlds. Mismatches between overlapping *Meaning*s and *Representation*s "become problems for *Negotiation*", requiring careful managing of boundary objects, their meanings and representations, and the Interfaces they provide between social worlds. The central *Cooperative* task of social worlds which share the same space but different *perspectives* is the *translation* of each others perspectives. Mismatches between overlapping *Meaning*s and *Representation*s become problems for *Negotiation*, requiring careful managing of boundary objects, their meanings and representations, and the interfaces they provide between social worlds

The central *Cooperative* task of social worlds which share the same space but different perspectives is the *Translation* of each others *perspectives*

Used within, adapted to many of them "simultaneously" (**Star & Griesemer**, 1989, p. 408)

"*Adapt* to *Local Need*s" within social world but "maintain a common identity across sites" (Star, 1990, p. 46)

May vary in permeability, fixedness
Can be *Abstract*, *Concrete*, both, or in-between
Boundary objects play a critical role "in developing and maintaining *coherence*"
How well "information *Artifact*s" are fitted to the *CommunityOfPractice* that create and work with them

Types of Boundary Objects

Repository
*Space*s
*Abstract*ions

Trust **an issue that boundary object theory did not directly include**

35. "Practices-Actions"

35.1. CreativeSearch

Inherit from Search
"Practices-Actions"

A search can be described as conative because it involves a *Subject* being actively directed towards an object. As such, search is inherently a *Relationship* between a subject and an object (the problem can be seen as the non-object, with the solution being the object). The CreativeProcess can be described as a directed activity, as a searching process taking place in the world (The clearest proponent of this approach to creativity (i.e., viewing it as a kind of 'search') is the *information processing*). In a search the subject moves around the *Space* to bring him or her into contact with the desired object. Furthermore, the space includes *Constraints* of various kinds, and the subject's actions (*Activity*) can be described as entailing search strategies. A search is inherently a search for a *Solution* to a *Problem* in a '*ProblemSpace*' (it implies a directed activity. It necessarily entails a subject in a directed activity towards an object in a space). By engaging in a search the IPS is looking for a path through the problem space, that will take him or her to the goal. As the number of possible paths are usually very high (just consider the possibility space ' the number of possible states ' in a game of chess) the IPS uses *ProblemSolvingHeuristic*s.

How something at the same time can be *Original*, and come from somewhere, as it is seemingly necessary in creative search. The solution was to argue that *Possible* and *Impossible* are part of *Objective* Reality. They are objective, although non-existing, qualities of this world.

36. "Person-Behaviour"

36.1. Excursion

Inherit from Flow
"Person-Behaviour"

Excursion is the term used to describe the *SynecticsMethod* Flow because one takes an artificial vacation from the *Problem*. The *Principle*s that allow this excursion to happen are:
1. Making the familiar strange
2. Making the strange familiar
The above two principles are also known as *Connection*-making and connection-breaking

Excursion: A technique designed to help an individual or group attain 'distance' from a *Problem Context*, or look at a problem in a new way or from a different perspective (*PointOfView*), in order to *Stimulate* freshness or originality in their *Thinking*. (Isakson et al, 1994, Index)

Convertir lo familiar en extraño equivale a contemplarlo desde otro *PointOfView*. Para lo cual el *CreativePerson* se sirve de las *Analogy*

36.2. Knowledge

Inherit from Culture
"Person-Behaviour"

what is *Known* in a particular Field or in total; *Fact*s and information. Any body of facts gathered by study, observation, or *Experience*, and to the *Idea*s inferred from these facts

Knowledge exists within *People*, part and parcel of human *Complex*ity and unpredictability. Knowledge works through flexible *Guidelines* to *DaliAction* that are developed through trial and error over long periods of *Experience* and observation. These flexible guides are shortcuts to *Solution*s to new *Problem*s that resemble problems previously solved by experienced people. Therefore, knowledge is information that a person possesses in a form which allows immediate *Use*. Knowledge is fluid as well as formally structured; it is Intuitive and therefore hard to capture in words or *Understand* completely in logical terms

TacitKnowledge and *ExplicitKnowledge* interact with each other in *CreativeAct*ivities. The interactions between these forms of knowledge result in the creation of new knowledge. This *Transformation* is possible through *comparing* information from different *Situation*s, *analyzing* the consequences of information to decisions and actions, *creating Connection*s between different bits of knowledge, and *promoting Conversation* with other people about their *Thought*s in relation to the information assembled (*KnowledgeAction*)

verified information

Davenport, Prusak: "Knowledge is a fluid mix of framed *Experience*s, *Values*, *Context*ual information, and expert insight (Expertise) that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in *Document*s or *Repository* but also in organizational *Routine*s (*Procedures*), *DaliProcess*es, *Practice*s, and *Rules*." (mainly instrumental or operational knowledge 'leaving aside the *Hermeneutic*al dimension) - **Bonsiepe:** knowledge as accumulated experience needs to be communicated and shared between individuals. Without *Design* interventions knowledge presentation and *Communication* would simply not work, because knowledge needs to be mediated by an interface so that it can be perceived and assimilated. Otherwise knowledge would remain *Abstract* and could neither be accessed nor be experienced

"Los grandes creadores manejan siempre más información que los demás", observa J.A. **Marina**. Esta disponibilidad de *Contents* y habilidades es la que permite al sujeto, según **Sternberg** y **Lubart**, no sólo producir creativamente en un área concreta sino desarrollar incluso un trabajo mas *Creative*. **Boden**: "cuanto más impresionante es la creatividad, mayor es el *Expertise* típicamente involucrado". Es necesario reunir dos tipos de conocimientos para el logro del CreativeOutcome: *Expertise* e *InformalKnowledge*

Notas de lecturas

Goodwin. There are different ways of getting reliable knowledge about the world. But because they refer to the same world we can compare them and decide which is more appropriate for particular forms of action. This implies that knowledge and (*Ethics*) *DaliAction* are connected, unlike the usual assumption in current science that *Fact*s and *Values* are quite separate

P.Kreimer (CTS): el conocimiento es, para la mayor parte de los autores de las nuevas corrientes, el resultado de una construcción social, motivo por el cual la nueva sociología del conocimiento ha sido frecuentemente denominada como "constructivismo"

Scrapbook

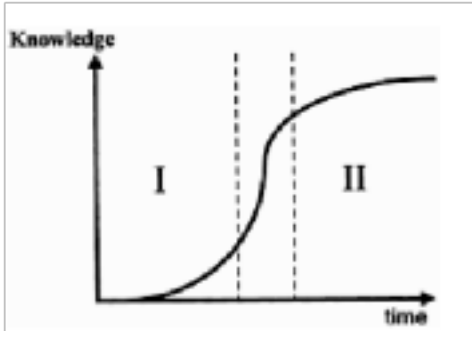


Fig. 13-Knowledge1

36.3. Paradigm

Inherit from PointOfView
"Person-Behaviour"
labels: Domain Specific: **Paradigm** Author: **Bohm** Author: **Peat** Domain Specific: **(** Domain Specific: **CTS)** Author: **Laudan** Author: **Lakatos**

a set of *Experience*s, beliefs and *Values* that affect the way an individual Perceives Reality and responds to that *Perception*

Ver paradigm

Paradigm: A set of *Rule*s, *Guidelines*, or *Belief*s adhered to consistently to guide or direct one's behavior (*Conduct*) or *Thinking*; a stable *DaliPattern* of operating or thinking. (Isakson et al., 1994, Index)

Bohm and Peat (1987) suggest that every Field of research should experiment with *Alternative* paradigms, simultaneously using different *Ways* of looking at the phenomena to generate research and theory. Ver BohmDialogue

Por lo general, hay que ser externo al *System* para no quedar atrapado por los paradigmas del mismo. Aprovechar ser externo a la *Discipline* para sobrevolar sus paradigmas

Paradigm (CTS):

Lakatos y **Laudan**, que el desarrollo histórico de la *Science* puede caracterizarse mejor que por las afirmaciones kuhnianas de hegemonía paradigmática por la tesis de la competencia entre programas o *tradiciones* de *investigación* opuestas

El desarrollo de un paradigma se debe básicamente al éxito en la resolución de algún *problema* importante y a la labor de resolución de los enigmas

36.4. Flow

Inherit from Feeling
"Person-Behaviour"

is the mental state of operation in which the person is fully immersed in what he or she is doing, characterized by a feeling of energized focus, full involvement, and success in the process of the *Activity*. Components of an experience of flow can be specifically enumerated; he presents the following:

1. Clear *Goal*s (expectations and *Rule*s are discernible).
2. Concentrating and focusing, a high degree of concentration on a limited field of *Attention* (a person engaged in the activity will have the *Opportunity* to focus and to delve deeply into it).
3. A loss of the *Feeling* of self-consciousness, the merging of action and awareness.
4. Distorted sense of time - one's subjective experience of time is altered. (*DaliTime*)
5. Direct and immediate *Feedback* (successes and failures in the course of the activity are apparent, so that behavior can be adjusted as needed).
6. Balance between ability level and *Challenge* (the activity is neither too easy nor too difficult).
7. A sense of personal control over the *Situation* or activity.
8. The activity is intrinsically rewarding, so there is an effortlessness of action.
9. When in the flow state, *People* become absorbed in their activity, and focus of awareness is narrowed down to the activity itself, action awareness merging (**Csikszentmihalyi**, 1975. p.72).

Not all are needed for flow to be experienced.

Csikszentmihalyi suggests several ways in which a group could work together so that each individual member could achieve flow. The characteristics of such a group include:

- Creative spatial arrangements: Chairs, pin walls, Charts, however no tables, therefore primarily work in standing and moving.
- Playground design : Charts for information inputs, flow graphs, project summary, craziness (here also craziness has a place), safe place (here all may say what is otherwise only thought), result wall, open topics
- Parallel, organized working
- Target group *Focus*
- Advancement of existing one (Prototyping) (*PrototypeModel*)
- Increase in efficiency through *Visual*ization
- Existence of differences among *Participant*s represents an *Opportunity*, rather than an *Obstacle*

Notas de lectura:

The difference between a problem solving user and a creative problem solving user is the presence of flow. Flow is an automatic, effortless, yet highly focused *State* of Consciousness. It is the one aspect in which all *CreativePerson*s are unanimous. What solvers seek to do is *Focus* their *Attention* onto the *Task* at hand, which is an ability seen in those regarded as particularly *Creative*. When the solver is allowed to move comfortably and smoothly among the information the chances for creativity are at their highest. Support for flow is achieved by supporting each of the conversion and modifier processes involved. This happens when distractions are kept to a minimum and the user is in control and guiding the system, not the system guiding the user. By *filtering to the most important tasks for the user*, and *allowing the user to create their own abstractions*, the environment becomes an extension of their mind. Characteristics of a Flow *Experience*:

1. Balance of *Challenge*s and skills
2. Immediate *Feedback* to one's *DaliAction*s
3. Clarity of *Goal*s
4. Merging of action and awareness
5. Distractions excluded from Consciousness
6. No worry of failure
7. The activity becomes autotelic (an end in itself)
8. User's sense of *DaliTime* becomes distorted
9. Self-consciousness disappears

The first three characteristics are structural requirements for flow to occur. The fourth and fifth characteristics are the actual flow state itself, while the sixth through ninth characteristics are the consequences of the flow experience and are mentioned as measurable indicators of the flow state

Flow: 'Intense absorption in a task, a state associated with peak performance, often of a *Creative* kind.' (Creativity Encyclopedia, 1999) 'An optimal *Experience*. A *Feeling* when things were going well as an almost automatic, effortless, yet highly *Focus*ed state of Consciousness.' (**Csikszentmihalyi**, 1996)

Esta Experience se produce con mayor probabilidad en aquellas *Situation* en que las *Person* encuentran un equilibrio entre los *Challenge* y las *Task*s, de modo que el trabajo se transforma en un agrado, la persona se deja llevar y cae en un estado de plenitud. Si el desafío supera las habilidades hay ansiedad. Si el desafío está por debajo de ellas hay aburrimiento. Si desafío y habilidades se equiparan puede darse la experiencia de flujo

El Universo Holografico - pueden reflejar realmente estados de conciencia en resonancia con el aspecto de «onda» holística de la Reality. La ansiedad, la cólera y el «*CreativeBlock*» representarían estados fragmentados.

Csikszentmihalyi identifies the following nine characteristics of flow:
1. There are clear *Goal*s every step of the way. Knowing what you are trying to achieve gives your actions a sense of purpose and *Meaning*.
2. There is immediate *Feedback* to your actions. Not only do you know what you are trying to achieve, you are also clear about how well you are doing it. This makes it easier to adjust for optimum performance. It also means that by definition flow only occurs when you are performing well.
3. There is a balance between *Challenge*s and skills. If the challenge is too difficult we get frustrated; if it is too easy, we get bored. Flow occurs when we reach an optimum balance between our abilities and the task in hand, keeping us alert, focused and effective.
4. Action and awareness are merged. We have all had experiences of being in one place physically, but with our minds elsewhere ' often out of boredom or frustration. In flow, we are completely *Focus*ed on what we are doing in the moment.

5. Distractions are excluded from Consciousness. When we are not distracted by worries or conflicting priorities, we are free to become fully absorbed in the task.
6. There is no worry of failure. A single-minded focus of attention means that we are not simultaneously judging our performance or worrying about things going wrong.
7. Self-consciousness disappears. When we are fully absorbed in the activity itself, we are not concerned with our *SelfImage*, or how we look to others. While flow lasts, we can even identify with something outside or larger than our sense of self ' such as the painting or writing we are engaged in, or the team we are playing in.
8. The sense of *DaliTime* becomes distorted. Several hours can 'fly by' in what feels like a few minutes, or a few moments can seem to last for ages.
9. The activity becomes 'autotelic' - meaning it is an end in itself. Whenever most of the elements of flow are occurring, the activity becomes enjoyable and rewarding for its own sake. This is why so many artists and creators report that their greatest satisfaction comes through their work. As Noel Coward put it, 'Work is more fun than fun'.

Maybe you have a special place you go to for focused creative work ' a secluded office, a particular chair, a seat in your favourite café. Or you may have a favourite notebook, pen, software application or make of computer ' using other tools doesn't feel quite right (*CreativeEnvironment*). Once you get into the habit of using these triggers, they form a kind of ritual, to help you reach that state of focused absorption

36.5. Consciousness

Inherit from Conduct
"Person-Behaviour"
labels: Author: **Freire**

the fact of awareness by the mind of itself and the world. Is a *Quality* of the Mind generally regarded to comprise qualities such as Subjectivity, self-awareness, sentience, sapience, and the ability to perceive the relationship between oneself and one's *Surroundings*

Notas de lectura:

también pueden plantearse diferentes niveles de conciencia: '1: Nivel sensorio-físico, 2: Nivel fantásmico-emocional, 3: Mente representativa, 4: Mente regla-rol, 5: Nivel reflexivo-formal, 6: Nivel visión-lógico, 7: Nivel psíquico, 8: Nivel sutil, 9: Nivel causal, 10: Nivel último'

Cognitive processing for a given task takes place at different hierarchical levels of Consciousness. The base level or object level represents conscious, task-driven processing of information. Higher order, or meta-level, processing monitors (*NoveltyMonitoring*) the output or processing of the object level. The meta-level processes also control the object- level processing through agenda selection (*CreativeAgenda*), processing selection, and termination *Rule*s. Importantly, these two levels of cognition do not have "access" to the nature of the processing that is occurring at the other level. Each has access only to the flow of information from one level to the next (i.e., output)

D.Bohm: "Consciousness is much more of the *ImplicateOrder* than is matter. . . Yet at a deeper level [matter and consciousness] are actually inseparable and interwoven, just as in the computer game the player and the screen are united by participation in common loops. In this view, mind and matter are two aspects of one whole and no more separable than are *DaliForm* and *Contents*. ". **Grof** to the viewpoint that "each of us is everything." meaning that every human being has potential access to all forms of consciousness. His data provide a kind of phenomenological evidence for a **holographic** model of consciousness

P. Freire: critical consciousness (conscientização). *CriticalThinking*. Students immersed in a *Culture* of conscientização are not mere recipients and parrots on demand within an educational banking system, but rather are active agents engaged in an ongoing process of study (FreireDialogue), discovery, and *DaliAction* about the *Circumstance*s of their present *Surroundings*

37. "Process-Tools"

37.1. UserFriendlyTool

Inherit from Tool
"Process-Tools"

'User-friendly' means that the user does not have to *Learn* a new design *DaliLanguage*

Tools to carry out trial-and-error design:
1. That are 'User-friendly'
2. That offer the right '*SolutionSpace*'
3. That offer libraries of pre-designed modules
4. That can translate from user-language to producer (*Manufacturer*) language without error

Economics of sticky information tends to shift the locus of *Problem*-solving to users. For custom design projects, manufacturer information is standard from project to project but user need differs .With toolkits customers 'not *Manufacturer*s -need to 'understand Customer (*Client*) need'

The *SolutionSpace* contains all the design variables and tools they need to *Create* a design. Example: Hairstyling toolkits:

Design variables offered: hair position, length, color, waviness;
Tools offered: virtual scissors, comb, colorants, curlers, straighteners.

Custom designs are typically not totally unique. Toolkit libraries should contain pre-designed modules and modifiable 'default designs' 'so that users can concentrate (*Focus*) their design work on the *Original Feature*s of their designs. Smooth movement across user solution space may involve bumpy translations on supplier map

Creating user-friendly design *System*s

Identify the independent design dimensions that are important to the user.
Give each design dimension a familiar, functional name (e.g., 'thickener' instead of xanthan gum')
Create a translator 'hidden from the user 'that translates each move by a user-designer in user solution space to a move in manufacturer solution space

37.2. CPSMethodConvergentThinkingTool

Inherit from CPSMethodTool
"Process-Tools"

tools that *Analyze*, develop, and refine options (*Alternatives*)

Positive Evaluation Tools: provide an affirmative approach to strengthen new options
ALUo (Advantages Limitations Unique Qualities, overcoming limitations)
LCOb (Likes, Concerns, Opportunities, brainstorming to overcome concerns)
PPCo (Pluses, Potentials, Concerns, overcome concerns)

Hits ' a *Subjective* process where one identifies and *Select*s promising *Idea*s based on *Experience*

Highlighting ' Compresses options into a manageable number of themes by comparing and sorting existing options

Card Sort ' helps compare, rank and prioritize promising options through the use of numerically labeled cards

Musts/Wants ' groups options into two pre-determined *Category* based on importance

Evaluation Matrix ' structured *Approach* to compare multiple options against specific *Criteria*

PCA (*Paired Comparison Analysis*) ' establishes the *Priority* of options by comparing them against each other

Criteria ' *Criteria* are generated, selected, and applied in order to screen options

SML (*Short, Medium, Long*) ' *Organize*s options by categorizing them along a time from short to long term

Assistors & Resistors ' identifies and lists all sources of assistance and resistance onto a worksheet. These sources of assistance and resistance are separated across who, what, where, why, when, and how *SituationalQuestion* categories

Nota de lectura:

Paraphrase: A converging technique in which the client describes, in his or her own words, the *Principle* or essential *Attribute*s or dimensions common to the options chosen from a larger set of possibilities. (Isakson t al., 1994, Index)

37.3. RedHatTechnique

Inherit from ParallelThinkingTechnique
"Process-Tools"

The Red hat allows individuals the opportunity to express *Emotion*s, *Feeling*s and *Intuition* without any need to justify them. The Red hat should always be done on an individual basis and no-one person should be allowed to 'pass'. This is based on the notion that all decisions must be emotional in the end. Our Choice of direction and the decisions we make are always based on emotions and *Values*. This is a key hat within the entire process and enables us to surface emotions such as *Fear*, anger, hatred, suspicion, jealousy, love, etc

37.4. BrainstormingAndAnalogyTechnique

Inherit from LateralThinkingTechnique
"Process-Tools"

group Brainstorming for *Idea* generation and the use of *Analogy* for *DaliPattern* reconstruction and *Problem* definition

Ver tambien *AnalogyMixer,* Dali-Base-Problem

37.5. HarvestingTechnique

Inherit from LateralThinkingTechnique
"Process-Tools"

Harvesting captures your creative output (*Outcome*) by helping to *Organize Idea*s and Concepts into certain categories (*Category*) through the use of a *CheckList*. This checklist contains categories for specific ideas (*IdeaClassification*), 'for-instance' ideas, seedling ideas, direct concepts, 'pull-back' concepts, directions, Needs, new *Focus*es, *Change*s, and *Flavor.* The harvesting *Procedure* is not just a hindsight recording but should be a consciously monitored activity throughout any session