

ORGANIZATIONAL SUSTAINABILITY, THE ORGANIZATIONAL RELATIONAL STRUCTURE INDEX

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ABSTRACT

Currently, our global culture is proposing a new relationship with nature. This proposal is expressed through the concept of development sustainability that is imposed as a term pervading biological, economic and social systems, in search of harmonization or balance allowing a better quality of life for mankind. However, experience shows that there are difficulties in gathering and assessing data to be used as valid sustainability indicators. In addition, indicators do not appear to be completely accurate because they are either incorrect or misapplied. We believe that the error or failure referred by the majority of authors has its correspondence with knowledge dissociation and in confusing logical types above which the sustainable development concept is founded. Related to the above, this paper suggests that sustainability is in the base of cultural systems relational structure. Therefore, developing indicators involves assessing the robustness of this structure in relation to semiosis generated by the system to preserve itself. To assess this relationship structure, the Organizational Relational Structure Index (ORSI) is proposed.

Keywords

Coherence, Congruity, Culture, Environment, Relational Theory, Sustainability.

1 INTRODUCTION

1.1 Background

Today, many authors refer to the sustainability concept as ambiguous and subject to debate or controversy; even though, there is consensus that, in general, sustainability refers to the ability or capacity to endure (Broekhuis and Vos, 2003; Giannettia, Almeida, and Bonilla, 2010; Geelsa, 2010).

By the other hand, sustainability associated with the development concept, turns to be a new archetype of social, environmental, and economic development which has started to spread globally in our time (Brundtland, 1987).

The term “sustainable development” (established in Brundtland, 1987) can be defined as “satisfying the needs of the current generation, without jeopardizing the future generation's ability to meet their needs” (Ginsberg, 2000). From the above, it is possible to conclude that such definition is a consequence of the distinctions that man has today over its surrounding, driving to the need of proposing and building a new culture-nature relationship. By the same, the idea of sustainability is imposed as a globalizing term, crossing biological, economic and social systems, in search of harmonization or equilibrium allowing man’s life quality improvement (Osay, 2002).

In this way, sustainability (Achkar, M. 2005) has **four dimensions**, which interact among them, Figure 1.

1. **Physical–Biological**: considers those aspects related to preserving and strengthening ecosystems diversity and complexity, their productivity, natural cycles and biodiversity.
2. **Social**: considers equitable access to nature’s goods, either in intergenerational and intra-generational terms, inter genus and inter culture, inter groups and social classes and also at individual scale.

3. **Economic:** includes the overall set of human activities related to good and service production, distribution and consume. It is necessary to redefine traditional economic concepts, especially needs and satisfiers, material and immaterial, social and individual, needs.
4. **Political:** refers to person's direct participation in decision making, in defining collective and possible futures. Public goods management structure and democracy contents.

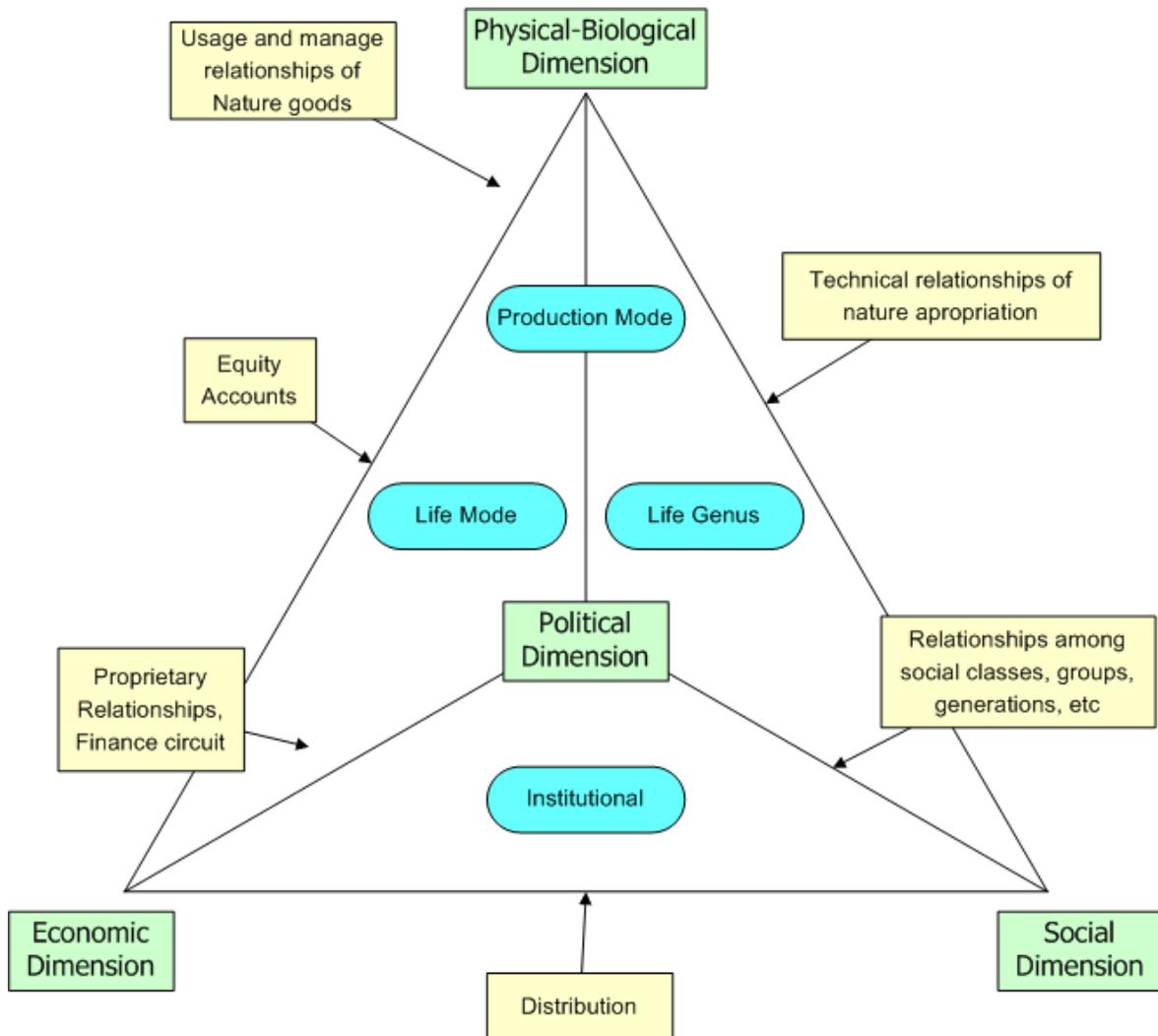


Figure 1. The four dimensions of sustainability.

Under the horizontality premise, there arises then the challenge of modeling sustainability indicators, which keep interrelated and integrated the biophysical, social, economic and political dimensions, in such a way that is feasible constructing a base, upon which decisions could be made in every level of sustainable development. In addition, it is necessary to bear in mind that there will be indicators which can be applied on a global scale in the same way, in any place; nevertheless, there are indicators that can be inadequate or insufficient to measure sustainability in a certain region. In fact, experience shows that difficulties exist for data gathering and evaluation to be used as valid sustainability indicators. Also, indicators do not turn out to be completely precise, because they are either incorrect or deficiently applied (Osay, 2002).

In spite of these limitations, at present it is inevitable that economy includes in its balance sheet either social or environmental sustainability. Proof of it is the creation of Performance Standards that help IFC and its clients to handle and to improve their social and environmental performance by means of a result-based approach. For achieving the expected results, it is essential a consistent approach be applied in order to avoid adverse impacts on workpeople, communities and in those cases where it is impossible to avoid, reduce, mitigate, or compensate the impacts, as appropriate.

Nevertheless, facing all these good intentions posed above, sustainability as a proposal was born from a conception dissociated from the world. We believe, and as we will see in the next section, that the mistake or lack to which most of the authors refer has its correlation in this knowledge dissociation and in logical types confusion. The sustainability viability either conceptual or practical must leave obligatorily the epistemology of certainty and the objectual reductionism to move towards an epistemology constituted from complexity, uncertainty, and relationality.

Facing the above stated, this work proposes that sustainability is in the base of the relational structure of cultural systems. By that, developing indicators implies evaluating the robustness of this structure related to the semiosis generated by the system to survive. In contrast to traditional indexes, this proposal allows to evaluate if the organization, facing a specific concept (e.g.

environment), generates coherence and congruity in the decision making process related to this one. Therefore, **Sustainability** from this perspective is the organization's conservative strategy, as a relational system, from structural or configurational changes in the relationships, determined from the culture.

As an example, if in an organization the environment concept generates a schyzodemic semiosis (dissociative), there will be low coherence and congruity as regards the decision making process associated with this concept, what would convey in high environmental liabilities compared to the assets produced in this economy scope. Therefore, this organization would have high credit risk, independently from complying with a series of "classic" performance standards.

1.2 The unfeasibility of environmental and social scopes as foundational categories of sustainability.

The linearity and rigidity of the objectual and empiricist paradigm which supposes a unique and universal reality, accessible to each and everyone, and that exists independently from the observer's observing, has entered into a deep crisis in the last 20 years (Abel, 1998; Bateson, 1973; Bullen et. al., 1997; Edmonds, 1996; Varela et. al., 1992). According to this way of thinking the world, the organism condition is essentially passive, responding to an external ambience where things or objects have a meaning by their selves which is accessible by being previously and objectively defined. According to Guidano (1991), "In this look, human mind evolves as a passive recipient of the external order, which will determine it almost in its entirety". In this vision, what is named horizontality is no more than the strategy of linking the dissociation of Social and Environmental categories, fruit of the reduction and split of the Culture-nature relationship. Social sciences, particularly Sociology, became seemingly bared facing the environment as concept; this is fundamentally because of the double belonging of the social and natural categories. This turns into the inability of presenting an autological speech in the creation of a society-nature theory. The crisis of Sociology, described by Luhman, considers its inability to present an autological

component when creating a theory of society; this is, to understand its object as something describing itself. This turns into the inability of explaining constant structures of the experience and the social action, for which it is not possible to explain the society as result of a predictive process of alternative selection by the individuals.

An example of this operation is the following: let's suppose that we have to evaluate the sustainability of a forest; where do we classify the unit "forest", in the environmental domain, in the social domain, or in both?

If we classify it under the environmental domain, then its sustainability is independent from the social domain, since from its inherent properties it might be handled and reproduced. From this perspective, it would be enough to know the properties that make the forest to allow its sustainability. If we think it better, in the current description the social domain does not appear, we are talking about a forest out of the social domain, although we are talking about it.

If, on the contrary, we refer to the forest from the Social domain, the possibility of sustainability resides in the profit the forest produces, this economicist reduction is the most frequent. If, nevertheless, we persist classifying it under both domains, the solution is to incorporate explicitly the social component, through its regulatory function of exchange flows and biodiversity changes. Nevertheless, it is never explained, from this cognitive base, how it is possible to relate cultural, scenic, aesthetic and educational values to exchange flows and biodiversity. When the authors invoke, as a new approach, the ecological sustainability, the above mentioned relationships are considered done, they are a dogma not to be discussed (Kalin-Arroyo et. al. 1995).

In rigor, if we have to pose a new Culture-nature relationship, from its sustainability, the dissociation of this relation makes it unviable. This way, culture-nature systems organization must be understood as relational autonomic systems, this is, that the distinction basis is based on the relational process as organization rule and not on the entities that generate it.

On the other hand, the Economy as category does not belong to the same logical type of the Culture-nature relation, since the administration of the Oikos (οἶκος νόμος - Economy) or relational

system is determined by the cultural relational type. By the same, Economy is a member of the class Culture, being these in a hierarchic relationship and not between pairs.

Understanding Culture as meta-configurations organized on the conservation of bonding rules (what one makes own) and belonging (one makes part of) which allows territoriality to be realized (Lavanderos and Malpartida 2000); the emerging relational type can generate or not viable structures to reproduce the cultural system organization. We refer to territoriality as the effective equivalence process in the meaning configurations exchange (maps or scenarios) from the activity generated in the communicating observer's environments for bonding and belonging (Lavanderos 2002).

2 SUSTAINABILITY PROCESS: DESCRIPTION, EXPLANATION, AND TAUTOLOGY.

If we define the **Sustainability Process** (SP) as a system of actions towards achieving a goal, then its success depends fundamentally, from the relational vision, on the coherence among what is described, the associated explanation and the legitimacy of the tautology to the relational network. The description of the actions does not endure any logic; it is, as points out Bateson (Bateson, 1980), a series of facts of which we do not know how they get interconnected. By the same, the explanation will not supply any information more than the already owned by the description. It is then the tautology or connective form applied to the description which allows connecting the actions generating sense to the series of facts contained in the description for a certain context. Then, when we refer to the tautology legitimacy, what we state is that for a command relational network, an instruction not necessarily achieves an explanation generating decisional coherence, this means that the narrative should match what it is going to be done with what finally is done. This way, the Sustainability Concept refers to the legitimacy degree of the tautologies used in the productive management process; i.e. the greater the tautological legitimacy the greater the coherence in the management process which will have as consequence a highly cohesive relational network (use

value), coordinated, decentralized and with high power of exchange (change value). Then, it is a matter of understanding SP as the semiotic-aesthetic effective exchange which allows the network to act cohesively to achieve a goal. We understand semiotic-aesthetics as relational configurations generating effective and affective belonging and bonding. The above could be exemplified in the following way: it is not enough that the leader generates orientation in the actions with high explanatory value, fruit of the applied tautology, but also it shall be legitimized in the subordinates affections or confidence.

From the beginning, an effort has been done to develop a “Sustainability Theory” and its corresponding indicators, based on the rigor and objectivity of the scientific method which implies rationalist rigidity, objectivist insensitivity, reductionist simplification, neutrality farce, and indifference facing history and context, proper of the dominating positivist paradigm (Lavanderos, 2002). The goal, then, is to open up to a thinking style open to interpretive, methodological and ethical sensibility. That implies to assume uncertainty and instability as premises for strategic sustainability management, and including complexity, diversity, interdependence, differences and non-linearity of ecological, social, economic, and political phenomena, and mainly the participation of the stakeholders affected by the strategic sustainability planning.

Facing this challenge, an epistemological change is proposed allowing structuring a theory for Sustainability from a complexity and uncertainty approach allowing evolving this way from a realistic ontology to a prescriptive epistemology of Sustainability. Such approach is possible to be found in the Knowledge Relational Theory.

Relational Theory is an explanatory system that bases its operation on the relation as a sense and world generating process. To this theory, in cognition the relational unit is Organism–*Entorno*, contrary to the classic proposal of organization and environment or nature (Malpartida and Lavanderos, 1995 and 2000). The *Entorno* of the observer is made up of territoriality relational configurations, which are unique and permanent to this one. Therefore, the common sense inconsistency (Complexity) is an answer to the reduction of the territoriality.

The unit description, interpretation and manipulation constitute the basis of all scientific activity. Independently of the nature of such units, these turn out to be a necessary condition, whatever it is the observation field considered.

In the relational process, objectivity does not refer to the territory or nature (experiencing), but to the process of obtaining the map (reformulation of the experience); that is to say, what are the criteria, rules, alternatives or explicit or implicit conventions which accounts for the model construction process or reformulations in general and of explanations in particular (Kimovsky, 1995).

In case of Sustainability, the “relational” will be processed based on two fundamental parameters: Organization’s **Coherence** and **Congruity**. This is, from the matching between the narrative and the action plane and the interchange capacity achieved from the configuration generated by the relational system when the sustainability concept is introduced as a configurator of such relationality.

3 PROPOSAL

3.1 Organizational Sustainability by Coherence and Congruity. The ORSI index

In the current context, the value generation process roots in understanding the strategic role of intangibles, especially when speaking about sustainability. Obligatorily, this statement involves a paradigmatic change in the vision of business and the role of R&I (Research and Innovation) what would directly affect the development of innovation strategies. Taking the above as a basis, design efforts associated with R&I must be driven from the relationship between innovation strategies and the knowledge form associated with its development, since value generation would be explained in better degree in the new economy scope.

One feature constituting this relationship is expressed in the **coherence degree**, which is the closeness between the narrative of decision-making and the actions properly made. Therefore, a

small gap leads to a high organizational coherence degree. Under this scheme, management is stated so that its results change, from a certainty vision to one of confidence. This separation from certainty responds to the fact that organizations must be understood as communicating networks, where transactions are organized and directed from culture–language relationship, so any operation–action is always an interpretation.

This uncertainty condition in the interpretation allows to venture, then, that the center of attention is not goal fulfillment, but coherence generating confidence. By the same, it is through coherence that the generation of value might be explained, in a better degree, in the sustainable development scope. Managing coherence implies designing a strategy to diminish the gap between the narrative and the actions derived from the decision making, so that a lower gap drives to organization higher coherence degree.

Value will arise in every step of the relationships of the production process assembly as it controls the difference between the saying and doing scopes. But, where is this difference located? What determines the difference between the narrative and the action scopes? A possible answer is to explain it by means of two concurrent processes:

- Meanings Exchange (effectiveness in command reproduction), and
- Network Interactivity (behavioral process of rapprochement or rejection between actors, at the moment of carrying out a decisional process).

In other words, the network has a way of thinking and doing, fruit of its history of decisions, which is conservative through shielding or closure operations facing external agents. This means that a person joining a network to work for the first time will not understand the working codes of the network, although the words are the same he/she handles.

Simultaneously, the persons who make up the network do not necessarily understand what the boss pretends in decision making, what will generate uncertainty and actions will be far from the expected. Likewise, there are good and bad relationships, which can be momentary or permanent.

These processes generate differences between saying and doing and are responsible of effectiveness and efficiency loss facing strategic operations as in sustainability.

An organization can be defined as a “constituted relational structure, from its culture, from narrative and behavior configurations for decision making in contexts of certain meanings”; then, the coherence concept binds closely to code and meaning notions as base operation. This leads us to reconsidering management, going from a certainty belief to a confidence sensation inside uncertainty or complexity. From the above, if we consider organizations as complex systems (since their operations are fundamentally processes organized in the language, which introduce the uncertainty condition), it does not turn out to be strange to observe, in practice, the low correspondence between strategic programs and their accomplishment actions.

Analogous to Network concept, we have defined Rel or Relational system, which allows locating organizational problems in the relations that emerge on its daily dynamics; the above implies that relational methods evaluate persons as entities in regard to others. If we take that into account, the low correspondence would be explained as a specific state of the relational structure associated to decision making. Related to the above, we have defined that an organization’s sustainability is the strategies to preserve the relationships which generate that organization. Strategies would be intended by those who make possible that preservation. Sustainability depends on two processes:

- An inner system, defined as **Coherence**
- An outer system, defined as **Congruity**

3.2 Coherence definition

Coherence is defined as “the closeness between the narrative of decision-making and the actions properly taken”. Therefore, a small gap between them leads to a high organizational coherence degree. The value emerges in every process chain’s link, according to the control of the difference;

this way, the knowledge process associated to wealth emerges from the recursive process of the extracted differences, exchanged among the stakeholders culturally constituted as a network (Lavanderos 2002, 2005; Lavanderos and Malpartida, 2001; Malpartida and Lavanderos, 2000). The knowledge happens to be a process of constant relational network configuration, which expresses itself in its own decisional style (from highly coherent to incoherent).

By analyzing the organization's definition, the coherence concept is tightly linked to the notions of language use as a base operation. This drives reconsidering accounting in a value chain context and audit from certainty distinction to one of uncertainty or complexity confidence.

Organizational Coherence is an emergent feature produced by the relationship between what is said by the leader and what is understood by his/her direct collaborators.

From the value point of view, we have that the Value of Use is a function of Organizational Coherence; where its generation depends directly on the cognitive type, semiotic quality, and trust.

Quantitatively, Organizational Coherence = $\sqrt[3]{NCA \times NSA \times NIA}$

Where:

- NCA is the Network Cognitive Affinity
- NSA is the Network Semiotic Affinity
- NIA is the Network Interactive Affinity
- Cognitive Affinity. Semiotic connectivity patterns are equivalent.
- Semiotic Affinity. Semiotic and Meaning patterns are equivalent.
- Interactive Affinity. Attraction patterns are equivalent.

The detail of the calculations and interpretation of the results can be found in Arenas et. al. 2008.

3.3 Congruity definition

Conversely, Organizational Congruity is an emergent feature of the relationship among the command team and other networks inside and outside the organization.

From the value point of view, we have that the Value of Exchange is a function of Organizational Congruity, which comprehends four structural relational factors (Co4 = Co-organization, Cohesion, Conduction, Coordination) legitimated in an exchange relationship among two or more Rels.

The formula for Congruity is:

Co4 is qualitatively expressed as:

- $Co4 = f(\text{Co-organization, Cohesion, Conduction, Coordination})$

Quantitatively, Organizational Congruity = $\sqrt[4]{Co-Organization * Cohesion * Conduction * Coordination}$

The qualitative expression of the internal processes would be:

- $Co-organization = f(C, S)$
- $Cohesion = f(S, I)$
- $Conduction = f(I, S)$
- $Coordination = f(S, C)$

Note: C, S and I factors appear in different order, showing this way the difference in their relative importance for every case.

The model can be seen in Figure 2.

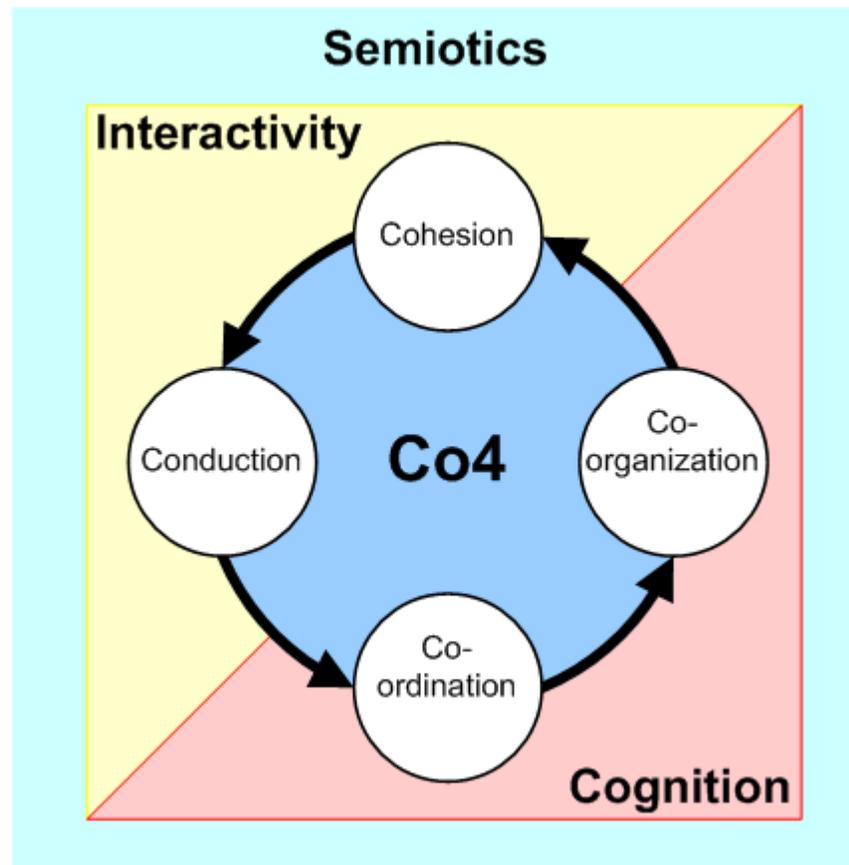


Figure 2. Co4 relational structure.

Where:

- **Co-organization.** Code production to maintain the organization.
- **Cohesion.** Robustness of the resulting structure from the reciprocal relations determined by interactivity and Semiosis. This way, as more reciprocal connections, more network cohesion.
- **Conduction.** Is the ruling form associated to command, which goes from highly centralized systems (hierarchies) to decentralized systems (heterarchies).
- **Coordination.** Propagation quality (reach) among members of the network in response to

an event.

- **Co-organization → Cohesion Transition.** Co-organization generates codes (relational structure) from one cognition form, generating cohesion.
- **Cohesion → Conduction Transition.** Cohesion defines the relational way which allows a specific kind of conduction.
- **Conduction → Coordination Transition.** To materialize, Conduction needs Coordination, it is a feedback.
- **Coordination → Co-organization Transition.** Coordination is the bridge to improve co-organization.

Likewise, the Strategic Alignment process to improve business coherence and congruity has been named Organizational Relational Sustainability Index (the whole –inside and outside– relational system).

$$\text{ORSI} = \sqrt[2]{\text{Coherence} * \text{Congruity}}$$

Based on the above, if in an organization, considering its form of knowledge, they are not verbalizing the business key concepts (sustainability) and, at the same time, suspicion exists among actors; the possible result is a low coherence between strategic programs and their fulfillment actions. The expression of that will be a low ORSI value (low effectiveness when exchanging with external networks), low cohesion, low coordination, and high centralization (in conduction). This has three consequences:

- Low Social Responsibility.
- Low Environmental Responsibility.
- High Financial Risk.

The above because of low congruity and coherence, and also because the sustainability concept is not internalized in the decision making process.

3.4 Sustainability Concept through ORSI

The Sustainability concept is limited by a dissociative vision about it. Until today, the way of use of this concept has been circumscribed to find equilibrium between the social and the environment without reducing the economic scope. As a consequence, in organizational decision making processes associated to sustainability, the “environmental” is seen as an obstacle instead of an allied to wealth production.

Then, as this concept generates ambiguity and is not internalized as part of the value chain, the only visible consequence will be the generation of waste and/or liabilities, without taking into account the related assets; that is, the loss approach is materialized. In other words, given the current condition of the sustainability concept, is highly feasible to find a Co4 system with low cohesion, high centralization, low coordination and very low congruity –responsibility of interchange with other networks.

ORSI allows evaluating decision-action sustainability configurations the network can take, as bending and stressing from the triadic cognition-semiotics-interactivity occurs. These configurations are organization’s **Coherency** and **Congruity** because they are legible not only to the network itself but also to the external ones, with which they have decided to establish, maintain or cut off relationships.

The way from prescriptive to postscriptive logic in relation to what is understood as sustainability knowledge production implies locating the creation of value (as SP) in the sustainability decisional process which can be shown as: description → configuration → explanation → decision → action between objectives and goals, between actions and programs, i.e. to look for the alignment according to the narrative and action axes. Incoherencies produced are fundamentally due to

insufficiency of communication support to control the difference between both axes, so difference amplification is generated, by cognitive type incompatibility or low certainty speech generation in decision making, or because in the daily affective ambience a symmetrical relationship prevents any possibility of network cohesion.

A way to resolve this ambiguity is using coherence and congruity generated by a productive network when structuring their relationships based on the sustainability concept.

The reason why it is important to generate coherence and congruity is because there will be a more equilibrated view of sustainability, and as a result the environmental assets and liabilities will be more adequately managed.

4 CONCLUSIONS.

If we accept the relational definition of Sustainability, the relational structure generated by coherence and congruity related with the Environmental concept will be unsustainable, meaning high environmental risk. In this way, the evaluation of Environmental risk from the financial point of view is based on the integration between ORSI and IFRS's principles, where each organization should include Environmental Liabilities in the company's balance sheet. This sole act implies to evaluate the decisional process consistence trough coherence and congruity with technical and financial aspects. The above allows establishing only through one index which part of the asset is being charged to environmental variables.

Therefore, to assess environmental liabilities it shall be considered:

- Sustainability knowledge production as a consequence of environmental dissociation
- Operational Aspects
- Implementation and land use

- Closing, decommission and demolition, if required

Normally, productive organizations consider in this item aspects related to the closing of the exploitation phase without considering sustainability knowledge production associated to the decisional process; operational aspects derived from the production and implementation and land use; energy and water use, and waste management.

If we do not consider in first place evaluating sustainability knowledge production through ORSI, then we can do any (or all) of the following (Negash, 2009):

1. Not recognize short- and mid-term environmental liability (only long-term liabilities had been recognized) leads to direct impact over equity.
2. Prevent asset re-structuring (e.g. asset carbon re-structuring in the carbon market and carbon bond issuance). This not only implies liability but also creation of economic value.
3. Prevent from adequately compensate or mitigate liabilities impossible to re-structure, not linking CSR to liability compensation implies wasting investment which could be used in operational liability compensation and/or social bond issuance.

Therefore, a mistaken sustainability concept and technical/financial evaluation may lead not only to a sustainability reduction but also to a financial risk increase associated to this variable.

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