

## **4th MAAOE Conference 2003**

### **Shared Work Environments as Ecologies: New Ways of Working and Dealing with Crisis**

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#### **Abstract :**

*Shared Work Environments are important aspects of organizations where shared work activities between organisational members are increasingly required within a climate where such activities are often jeopardised by economical, political, ethical and social crisis.*

*Shared Work Environments can be appropriately developed and help people deal with crisis through shared dynamics, relationships, and activities.*

*This paper explores the nature of Shared Work Environments and argues their systemic nature by re-defining them as ecologies (Dix 2002). Important aspects of ecologies that relate to shared workspaces include notions such as evolution, flexibility, responsiveness, surprise, and dependence.*

*The paper proposes that Shared Work Environments are complex ecologies where each 'actor' or organisational member represents a necessary condition for the system to be sustained. The notion of ecology offers a new way of conceptualising work and shared workspaces.*

#### **1. Introduction**

In this paper I discuss the nature of Shared Work Environments and argue their systemic nature by re-defining them as ecologies<sup>1</sup> (Dix 2002). A Shared Work Environment is a complex ecological system where *actors* are necessary conditions for the system to be sustained and construct its identity on a daily basis.

Practices and dynamics represent strong features of Shared Work Environments and within these systems actors should not adapt themselves to pre-designed spaces, but rather develop and manage their own. Generated and created by actors' practices and dynamics, Shared Work Environments help shaping social systems that will be the basis for physical and organisational settings.

The proposed notion of Shared Work Environments offers a unique opportunity to reflect on how to shape organisations so they can enable shared and supportive work practices. Such practices can represent strong foundations when dealing with professional and organisational crisis.

#### **2. Background**

In 1999-2000 I participated to a six months experience as research assistant and supervisor of an urban telecentre<sup>2</sup>. Following an analysis of this case study (Morelli and Loi 2001, 2002), some observations emerged around the notion of Shared Work Environments:

- Shared Work Environments are product-service systems, therefore a systemic approach should be considered in their design, implementation and management;
- Users of such environments play an essential role in the development of such spaces; their unpredictability needs to be acknowledged; a design that reflects such unpredictability and users' needs is necessary;
- The relationships between various actors (users, technological artefacts, software and interfaces, physical space) play an important role in during the life of such spaces (Loi 2001);
- These spaces require constant upgrades, re-designs, re-assessments and modifications, and have to be designed considering such characteristics to allow their maintenance over time.

<sup>1</sup> For the purposes of this paper, the term ecology refers to an entity composed of interdependent elements and their environment.

<sup>2</sup> The project was funded by the Australian Research Council under the SPIRT (Strategic Partnership with Industry, Research and Training) scheme and it was a cooperative research between University (RMIT University and Melbourne IT) and private institutions (Virtual Moreland and COASIT).

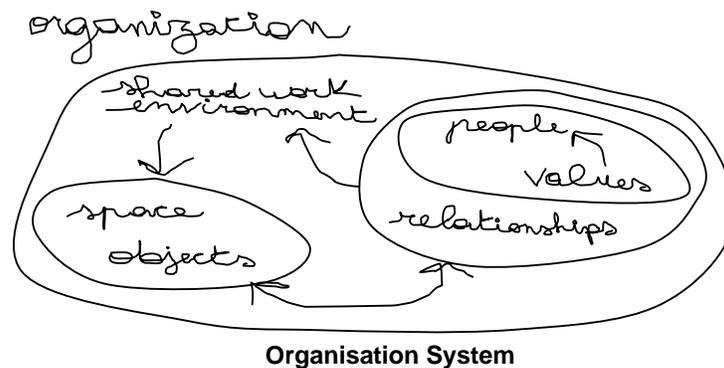
Following these findings, my proposal is that Shared Work Environments should be considered, designed and managed as if they were ecologies as they behave as ecologies<sup>3</sup>.

### 3. The Systemic Nature of Shared Work Environments

A Shared Work Environment is a complex system composed of actors and their relationships where parts are linked to the whole and the complexity of the system represents its strength. A Shared Work Environment is part of a larger system, in this context an organisation. Systems are complex creatures made of a series of elements (or actors). In this paper I focus on the following actors which I see as major components of an organization: **People** (Users); **Physical space** (room, walls, building, urban area); **Objects** (technology, furniture, little tools, decorations, etc); **Relationships** (Between all components); **Values and opinions** (of an individual, a team, a company, a social group, etc).

I argue that a Shared Work Environment should be included in the list of actors of an organization (**Error! Reference source not found.**) and suggest that:

- people and relationships are necessary conditions for the existence of a Shared Work Environment – they generate Shared Work Environments;
- objects and physical space are influenced by and influence people and their relationships (and therefore Shared Work Environments);
- values (and opinions) are held by people and manifest in their actions therefore influencing Shared Work Environments.



#### 3.1 Ecology: a Definition

The term ecology is used in several domains and disciplines, including science, information technology, management, philosophy and design.

Eric Trist (Emery and Trist 1972, Trist 1976, 1979, 1983) discusses the *organizational ecology* concept “investigating the possibility of developing new patterns of interorganizational relations that can help shape the future in a proactive way” (Morgan 1986). As these relations are a natural response to the environment’s complexity and turbulence, Trist argues that “they should be encouraged to help make the environment more manageable” (Morgan 1986). As individualistic actions can make the social world unmanageable, evolution and survival of the ecology of organizational relations are Trist’s main concerns.

Nardi and O’Day (1999) have defined *information ecologies* as “a system of people, practices, values, and technologies in a particular local environment. In information ecologies, the spotlight is not on technology, but on human activities that are served by technology”.

Fritz Steele (1986) states that “a human organization is an ecological system whose health is determined by its balance of a number of factors”<sup>4</sup>. The author (Steele 1986) defines organizational ecology as “the pattern of reciprocal relationships and influences among organizational members and their workplace”. His intent is to understand the relationships between organisations and the settings in which they operate “so better choices can be made about how to structure, use, and change these settings to satisfy both organizational and individual needs” (Steele 1986).

<sup>3</sup> An interesting event that made me reflect on the notion of Shared Work Environments as ecologies was my January 2002 visit to some Reggio Emilia schools (Reggio Children 1996; Reggio Children & Project Zero 2001). Reggio Emilia schools are learning environments, based on constructivist methodologies, where experiences and ways of teaching, learning, playing and sharing common spaces are interrelated to the point that they become one thing – like ecologies. Reggio Emilia’s characteristics of interconnectedness of learning and work practices, of bond between practices and space and of respect of the importance of users within such systems consolidated and encouraged some thoughts that were incubating since my telecentre experience.

<sup>4</sup> Such as “users’ preferences and needs, users’ activity patterns, the required action patterns of the organization (including major technology), the physical features of the organisation’s settings, the environments in which these settings are located, and the management decision processes that control the stability and rate of change of the settings” (Steele 1986).

In this context I borrow the notion of ecology from a variety of sources and domains and I define it as an *entity composed of interdependent elements and their environment*.

Important aspects of ecologies that relate to shared workspaces discussed by some authors (Burrows, Coburn and Loi 2002, Dix 2002a, 2002b, Emery and Trist 1972, Kelly 1994, Nardi and O'Day 1999, O'Reilly 2000, Steele 1986, Trist 1976, Walck 1996) include: **Teaching** (each entity of an ecology teaches those who operate within that ecology); **Relationships** (ecologies evolve and increase in size and complexity as new relationships are formed); **Responsiveness** (as the nature and composition of an ecology change entities need to act and respond differently to ensure they still have a role within that ecology); **Surprise** (when part of an ecology individual entities often prosper for reasons that could not be foreseen); **Dependence** (an ecology's "form will be dependant on all the entities within the ecology and the environment in which that ecology is embedded" (O'Reilly 2000; Burrows 2002).

In the next sections I discuss the implications of an ecological view of Shared Work Environments and offer a case study to contextualise the discussed notions.

#### 4. Shared Work Environments as ecologies

Stating that a Shared Work Environment behaves like an ecology, does not provide any specific tangible description of what a Shared Work Environment should look like and be designed. The statement offers however a series of *points of departure* to create a methodological framework for Shared Work Environments to emerge. I here discuss and develop understandings and possibilities for the designing of Shared Work Environments where the organising metaphor is that of an ecology. Furthermore, I suggest that the physical space should mirror and be consequent to such understandings.

Gareth Morgan (1986) discusses the limitation of the use of the metaphor of organizations like organisms stating that "we are led to view organizations and their environments in a way that is far too concrete" – view that breaks down because organizations can be understood as "socially constructed phenomena" and have therefore "a more fragile and tentative" shape and structure if compared with the "material structure of an organism" (Morgan 1986). A consequence of this critique is the acknowledgement that organizations depend on the "creative actions of human beings" and that "it is misleading to suggest that organizations need to adapt to their environment" and that "environments select the organizations that are to survive" (Morgan 1986).

These points are consistent with the discourse around Shared Work Environments. The ecology-metaphor has value if regarded as a *flavour and opportunity*. A Shared Work Environment is a space created by relationships, by people – *it is socially constructed*. I suggest that the physical space should mirror such social construction and that each Shared Work Environment is different from another due to this characteristic. Consequently, the Shared Work Environment I discuss in this paper represents an *ideal socially constructed type* I intend to explore and promote.

#### 5. Shared Work Environments as Ecologies: Some Characteristics

I now discuss major characteristics of Shared Work Environments that behave like ecologies. These are: evolution, co-evolution, responsiveness, dependence, surprise, flexibility, playfulness and beauty.

##### 5.1 Evolution

An important aspect of ecologies is their evolutionary dynamism. Actors and their practices evolve; relationships evolve. An ecology experiences continual evolution (Nardi and O'Day 1999) - it is a fluid entity that should be acknowledged, observed, and fostered. Fritz Steele (1986) mentions that, in the case of workplace management, continuous processes should be in place "with regular attention given to data collection, diagnosis, action, and assessment as a cyclical process". Due to its ecology-like behaviour, a Shared Work Environment should be considered in terms of continuous processes and modification.

A Shared Work Environment is a *fluid entity* as it *evolves constantly*. This implies that flexible mechanisms should be in place to encourage and cultivate such fluidity.

##### 5.2 Co-Evolution

When a new actor enters an ecology, relationships are reformed and the ecology morphs/adapts itself to accommodate the new patterns and "as the nature and composition of the ecology changes, many entities will have to act and respond differently to ensure they still have a role" (Burrows, Coburn and Loi 2002). As Nardi and O'Day (1999) mention, different parts of an ecology "*co-evolve*, changing together according to the relationships in the system".

The same occurs in Shared Work Environments where actors, linked by relationships, co-evolve and re-assess as patterns change. The individuality of each actor is granted within a system where *the space between such actors* is the centre of consistent evolution. As evolution occurs, actors, due to their relationships, adapt to new patterns *together*, co-evolving. In this way individuality is enriched at the same time as the space between individuals.

##### 5.3 Responsiveness

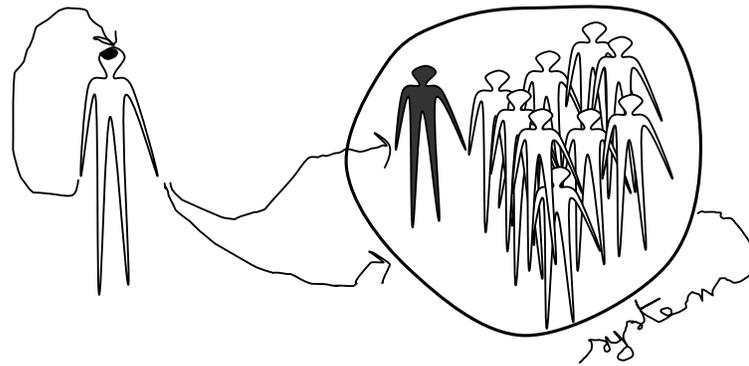
Like in an ecology, both a Shared Work Environment and its actors are required to respond to change, acting like organisms – *they are required to be responsive*. Failing to be responsive may imply losing a place in an ecological system and losing opportunities for growth and enrichment.

This characteristic is significant as it put emphasis on actors as *active organisms*. Actors are required to respond, be active, create, be open to change and contribute.

#### 5.4 Dependence

An ecology's form is "dependant on all the entities within the ecology and the environment in which that ecology is embedded" (O'Reilly 2000; Burrows, Coburn & Loi 2002). Each entity is dependant on the rest of the system; influences other entities and the entire system. Similarly, in a Shared Work Environment entities cannot function in isolation.

As Jonathal Benthall (1972) points out "where human artefacts are concerned, we are dealing with entities that are not self-sufficient but depend on continuous refreshment from *their* environment, including ourselves". This characteristic emphasises not only the requirement for actors to be active, but also that this *being active* is both an internal and external process where one is active towards oneself, the system (Shared Work Environment) and other actors (**Error! Reference source not found.**).



**Active toward... oneself, others, and the entire system.**

Figure 2

#### 5.5 Surprise

When part of an ecology, actors often prosper *for reasons that could not be foreseen*. Unpredictability is at the base of an ecology and of a Shared Work Environment. Such characteristic is a positive one as it represents a *possibility for growth*. Actors should embrace surprise and be empowered by it.

A Shared Work Environment *should have mechanisms that trigger surprise*. Surprises make actors respond and act.

#### 5.6 Flexibility

A Shared Work Environment should "lend itself to manipulation and transformation" by its occupants and "be open to different ways of use"<sup>5</sup> (Ceppi and Zini 1998). Only a flexible mentality and environment can accommodate growth, evolution and dynamism. As Bateson (1978) suggests a healthy ecology is "a single system of *environment combined with high human civilization* in which the flexibility of the civilization shall match that of the environment to create an ongoing complex system, open-ended for slow change of even basic (hard-programmed) characteristics".

#### 5.7 Playfulness

A Shared Work Environment, to be and grow *must enable playfulness*. Play is "a function of the imagination" (Alexander, Ishikawa and Silverstein 1977) and it should be not simply enabled, but fostered. Play is central to learning patterns, allows surprise and unpredictability to emerge, it is a creative act which carries co-evolution.

In a Shared Work Environment people should feel free to contribute with their individual self. The physical space which houses a Shared Work Environment should become the place for creative activity and display – people should be encouraged to bring *stuff*, their own creations and artefacts, to create a sense of shared identity and play with it. A Shared Work Environment should be like a playground. *A playground that enables ownership*<sup>6</sup>. In a Shared Work Environment actors are free to play and bring their own identity to create ways of playing. Objects become triggers for play to take place and for relationships to be created and sustained.

<sup>5</sup> This quote refers to the class environment, although I believe the same is applicable in this context.

<sup>6</sup> As Alexander, Ishikawa & Silverstein (1977) argue when describing children's playgrounds: "Not a highly finished playground, with asphalt and swings, but a place with raw materials of all kinds – nets, boxes, barrels, trees, ropes, simple tools, frames, grass, and water – where children can create and re-create playgrounds of their own".

## 5.8 Beauty

A Shared Work Environment should be a beautiful place to be in and be part of. Like a home it should reflect its *inhabitants*, their feelings, ideas, and dreams. The finding of beauty is up to the inhabitants of a Shared Work Environment – they are responsible for finding and creating beauty, whatever beauty may mean to them.

A sense of beauty which is built and maintained by actors *enriches the identity* of a Shared Work Environment. Actors need to understand how their own and the shared sense of beauty can be sustained, fostered, modified, and created. They are in charge of their Shared Work Environment's beauty.

## 6. Shared Work Environments as Ecologies: an example

I report in this section the example of a Shared Work Environment I have been part of for few years. I will analyse this case study according to the characteristic I mentioned previously to clarify them and open up some methodological questions.

### 6.1 Background to Case study

Early in 1998 RMIT University approached the Telstra Corporation, Australia's largest telecommunications company, with the concept of establishing a research team. This team (THT aka Telstra Home Team) would create and develop ideas for the information economy.

A formal business agreement was signed between RMIT and Telstra to assemble an interdisciplinary team of PhD Researchers that in return for scholarship would undertake research projects for Telstra. The researchers would get a dedicated space to work collaboratively within the University. The team explored the possibilities and prospects for on-line products and services suitable for various communities of interest and presented a series of solutions to Telstra, acting as a creative stimulus and generating alternative ways of looking at the market.

### 6.2 Analysis of Case Study

As previously mentioned Shared Work Environments that behave like ecologies have a series of characteristics. I will now discuss such characteristics using events and examples I withdraw from the team's experience.

Evolution. The THT went through a series of restructures during its life. Each time a member decided to depart or a new member became involved the entire team had to face a change in practices and ways of doing things collaboratively. Relationships between members modified consequently. Being an interdisciplinary team, the evolutionary dynamism was even greater, as new disciplines were introduced to become part of the shared space and shared modus operandi. Both team members as individuals and Team as a system evolved continuously during the experience.

Co-evolution. As evolution occurred, team members were able to effectively adapt to and develop new patterns together, co-evolving. This was due to the relationships linking team members. A good example of this was the creation of a very peculiar shared writing and presenting style the team developed – a style which did not belong to one or another member but to the space between them.

Responsiveness. Team members were constantly required to respond to several stimuli and in turn were providing stimulus for each other. Each response was a chance to learn something new that was generally from another disciplinary mindset. To some members the issue of being responsive was too complex to deal with and had to leave the ecological system the team represented.

Dependence. Meetings and tasks felt incomplete if a member was not present. The team soon realised that the shared space the team occupied was more an intangible space rather than a physical space. Presence was a necessity within a system where each participant was dependant on the others.

Surprise. Sudden due dates, strange disturbance, personal issues, and similar were often triggers for new patterns and ideas. To the group triggers represented beginnings of new possibilities. Each time a team member decided to leave the group (a few times unexpectedly) the departure was interpreted as an opportunity to create a new ecology, new projects and ways of operating.

Flexibility. Being an interdisciplinary team made of five people with different lives, ideas, and ways of being, flexibility was a necessary condition - not an option. Some people left the team due to the extremes to which we could take the word flexibility. Timetables, spaces, methodological and disciplinary notions were constantly stretched or compressed.

Playfulness. Play was central at all times. We used to bring in materials, books, and interesting objects that sometimes would be the centre of play for a bit, and then become a trigger for creation. At times objects of play would become a written piece or a project component – just because team members spent time playing with things, allowing meanings and possibilities to emerge.

Beauty. We soon developed a shared sense of belonging and associated beauty. Some places became special as they had a flavour that the team felt they could be associated with. Our sense of beauty would probably find a place in a design magazine but it did fit for us and our shared space. A shared sense of beauty emerged quite clearly in the team's way of shaping content, writing and presenting it.

## 7. Conclusions and Some Questions

Shared work activities between organisational members are increasingly required within a climate where such activities are often jeopardised by economical, political, ethical and social crisis. Shared work activities concentrate in and around Shared Work Environments that need to be carefully enabled, designed and managed.

As discussed, Shared Work Environments dynamically grow via evolutionary mechanisms. They are *fluid entities* constantly morphing, growing, and changing and they cannot be managed or designed in the traditional sense. I suggest that users should have a key role in the shaping of these spaces, although the issue of how to approach this notion methodologically requires deep and further investigation.

Opportunities for a substantial shift in the notion of design and management could be considered and discussed. Such opportunities see design and management blurring to create *new figures* that, within organisations, can act as *enablers* for users' practices to emerge and for Shared Work Environments to be sustained and co-developed.

Further reflections on the *disciplinary territories* within organisations could provide useful insights to understand how to enable users' practices and design appropriate spaces to house such practices.

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