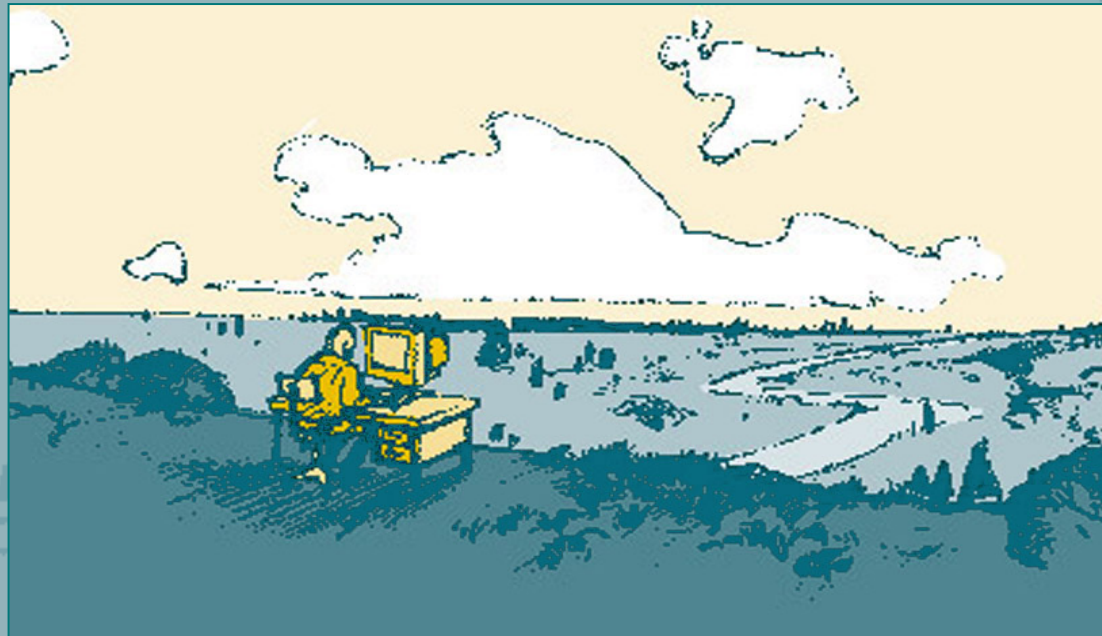# 3rd World Environmental Educatin Congress

Educational Paths towards Sustainability

Turin - 2-6 october 2005

Designing hyperlandscapes for environmental complexity education

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What do we mean by « complexity » ?

- global approach of the environment

- global approach of the learner

- systemic reasoning

What do we mean by « complexity » ?

- global approach of the landscape

  Education through and for the landscape

  Several views of the concept « landscape »

- global approach of the learner
- systemic reasoning

Education through the landscape   **Education for the landscape**

⟵──────────────────────────────────⟶

May be we'll focusing on ...

the learner   **the society**   **the discipline and/or the concept**   **the management of the landscape**

own identity ancestors

ideologies fights stakes

natural events

human actions

diagnostic pathologies epidemiology

sense representations meditation

social and political result

complex system

impact studies

discovery amazement appeasement aesthetic emotions

social identity

participation

signs of the past evolution

town and country planning

management

Several views of the concept « landscape »

Landscape =

a real object

Landscape =

a mental representation

|		
Surroundings	Resident	Philosopher
Nature	Naturalist	Walker
Space	Geographer	Cognitivist
Heritage	Historian	Psychosociologist
Territory	Planner	Citizen
Resource	Merchant	Economist
Media	Landscaper	Artist

What do we mean by « complexity » ?

- ## global approach of the environment
  - ➢ Education through and for the landscape

  - ➢ Several views of the concept of landscape

- ## global approach of the learner

- ## systemic reasoning

Multiple intelligences
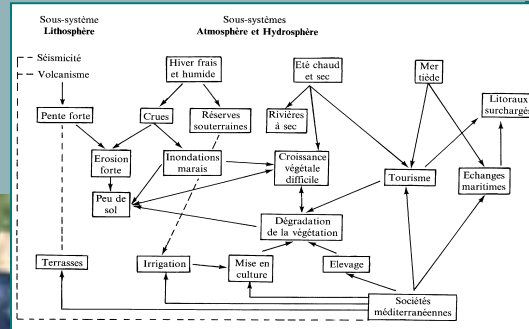
Logical-mathematical

Linguistic

Naturalist

Bodily-kinesthetic

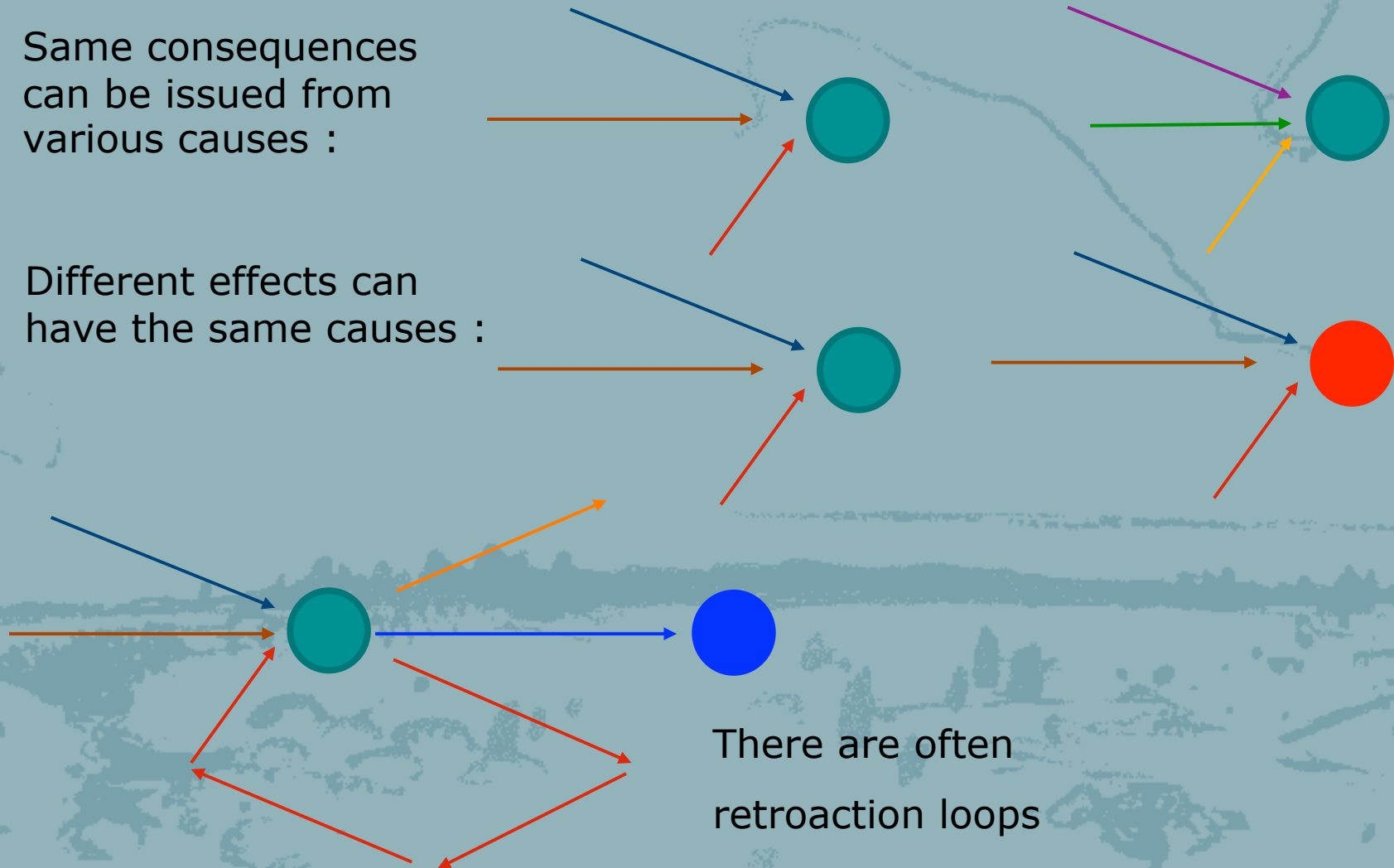Intrapersonal

Interpersonal

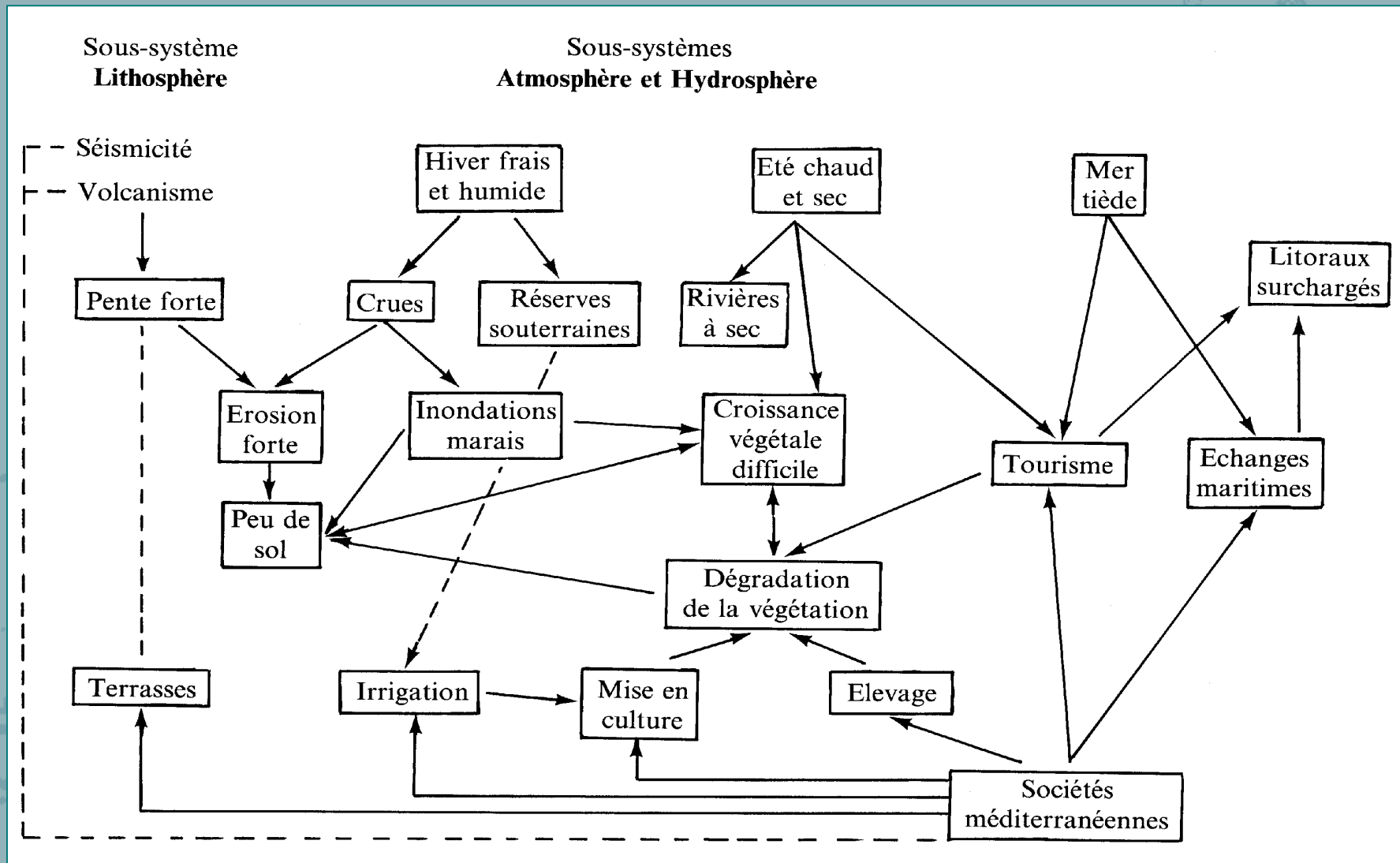Visuo-spatial

Musical

H. Gardner's model

What do we mean by « complexity » ?

- ## global approach of the environment
  - ➢ Education through and for the landscape

  - ➢ Several views of the concept of landscape

- ## global approach of the learner
  - ➢ Multiple intelligences

- ## systemic reasoning
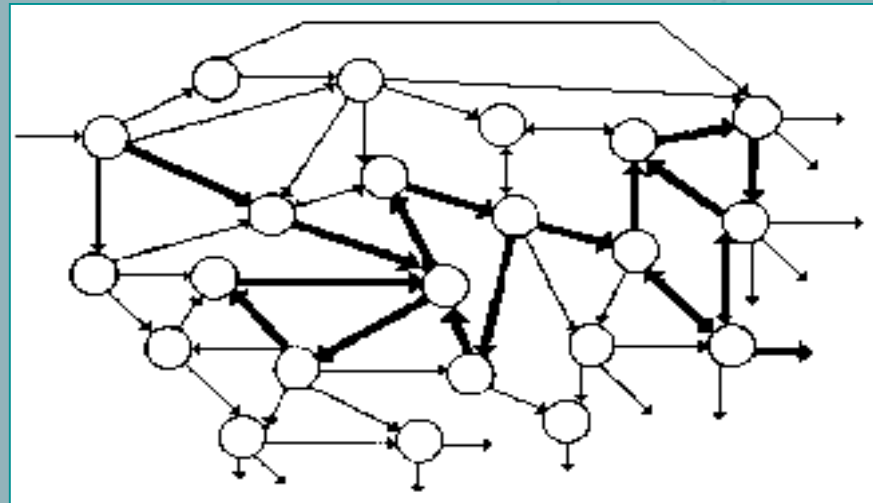
What is (simply) systemical reasoning ?

- Same consequences can be issued from various causes :

- Different effects can have the same causes :

There are often

retroaction loops
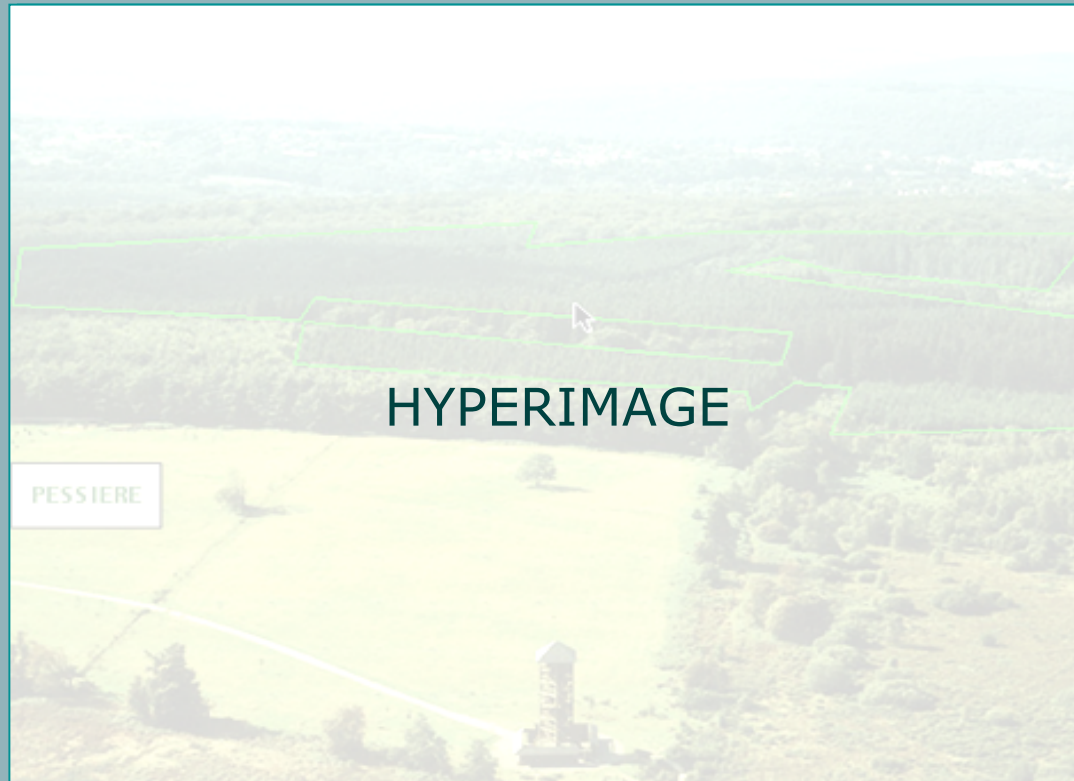
CO₂

$5\,t$ de feuilles — Par ha, 35.10⁶ feuilles = 5.7 ha surface foliaire

$1\,t$ de fruits, fleurs, écailles

(5,5 t de branches)

$8\,t$ de bois

(2,5 t de troncs)

(2 t de taillis)

(6 t de litière)

$2\,t$ de racines

Mor

CO₂

Minéralisation

Alimentant

Mull

$0,5\,t$ de Pédoflore
Bactéries 95.10⁹/gr de sol
Actinomycètes 38.10⁶/gr de sol
Champignons 1.10⁶/gr de sol

50 à 300 T de matière organique sous forme d'humus

$1\,t$ de Pédofaune
dont $0,6\,t$ de lombrics
Nématodes 25 à 300.10⁹/ha
Acariens 4 à 10.10⁹/ha
Collemboles 4 à 20.10⁹/ha
Insectes (larves) 4.10⁹/ha
Protoures 15.10⁹/ha
Myriapodes 15 à 12.5.10⁹/ha
Protozoaires 2.10¹⁰ gr de sol

Podzolisation

0,7 kg/ha
0,3 kg/ha
0,4 kg/ha
0,8 kg/ha

Biomasse à l'ha des oiseaux
1,3 kg

Biomasse à l'ha des producteurs
(forêt de 120 ans)

Plantes ligneuses	feuilles	5 t
	branches	76 t
	troncs	180 t
	souches et racines	54 t
Plantes herbacées	organes aériens	1 t
	organes souterrains	1 t
Biomasse totale		515 t

Une invasion de 5.10⁶ chenilles à l'ha provoquant une défoliation totale correspond à une biomasse de 100 kg de matière sèche de chenilles

Biomasse à l'ha des petits Mammifères
5 kg

Précipitations 100% — Cycle hydrologique

Evapotranspiration **52,5%**

Ecoulement **6,7%**

Restitution
82 kg N
7 kg P
77 kg K

Egouttement **76,3%**

Evaporation
Ruissellement

Infiltration **65,0%**
Absorption
Rétention
Absorption
Percolation **47,0%**
Drainage latéral
Nappe aquifère

Sous-système **Lithosphère**

Sous-systèmes **Atmosphère et Hydrosphère**

- Séismicité
- Volcanisme

Pente forte

Hiver frais et humide

Eté chaud et sec

Mer tiède

Crues

Réserves souterraines

Rivières à sec

Litoraux surchargés

Erosion forte

Inondations marais

Croissance végétale difficile

Tourisme

Echanges maritimes

Peu de sol

Dégradation de la végétation

Terrasses

Irrigation

Mise en culture

Elevage

Sociétés méditerranéennes

Key-concept in ICT :

HYPERTEXT

Non-linearity   **Multidimensionnality**

Virtuality   **Interactivity**

HYPERMEDIA = HYPERTEXT + virtual images + virtual sounds

HYPERIMAGE

PESSIERE

HYPERLANDSCAPE

Une approche de la complexité

Experience of our body in the space

↓

Images-schemes

↓

Organization of our mental conceptions

Recurrent structures, that make sense, that express our experience mainly through our body spatial **movements**, our **handling** of objects et our **perceptive interactions**.

Structures **connected** together, **fited together**.

Lakoff and Johnson

Track for the research :
To explore the way of cognitive education by moving in the space, really or virtually.

What is the pedagogical interest of the panoramic hyperlandscapes ?

Some hypothesis…

Could the conception of (virtual) walkings of panoramic hyperlandscapes change our perception and thinking of our real environnement ?

May be the conception of hyperlandscapes could be a way for original body experiences ? Are there schemes-images interesting to be « imprinted » by body experiences ?

Is it possible, by a sp... narrative structure fo... hyperlandscapes, to ... develop the feeling a... understanding of the ... complexity of the spatial relationships ?
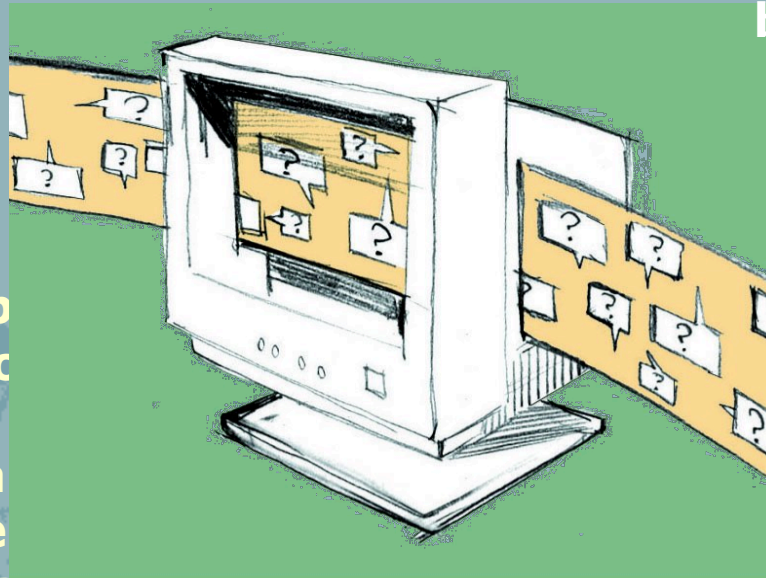
How to learn the design of an hyperlandscape in order to develop the approach of the complexity of the landscape ?

Which methodology ?

- ## global approach of the environment
  - ➢ Education through and for the landscape

  - ➢ Several views of the concept of landscape

- ## global approach of the learner
  - ➢ Multiple intelligences

- ## systemical reasoning

Focused on the learner
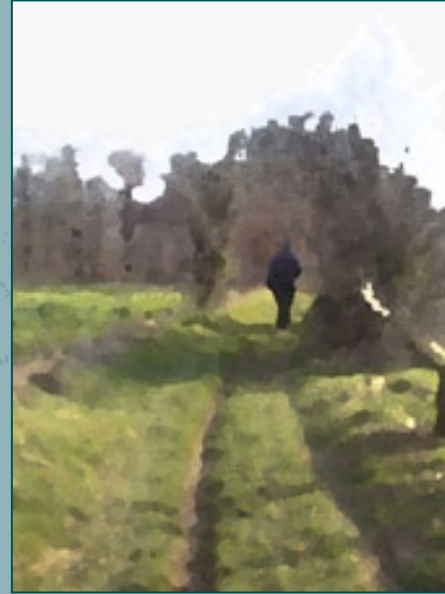
intrapersonal intelligence

Focused on the society

As the fauvists

Focused on the learner

Without looking at the paper

Focused on the discipline

As accurately as possible

Visuo-spatial
intelligence

Bodily-
kinesthetic
intelligence

Logical-mathematical

Visuospatial

Focused on the
discipline

Bodyli-
kinesthetic

Focused on the discipline :

« to create a model in 3D of the typical landscape of the region, with objects collected during a transversal walk »

Bodyli-kinesthetic intelligence

Interpersonal intelligence

Visuospatial intelligence

Problem solving

Decision making

What do you wish as future landscape for your country ?

Focused on the society
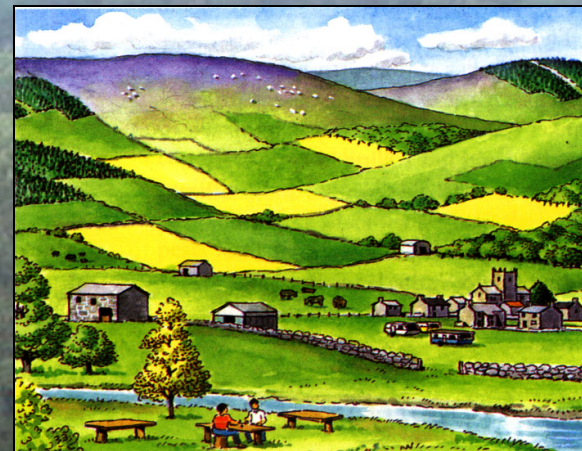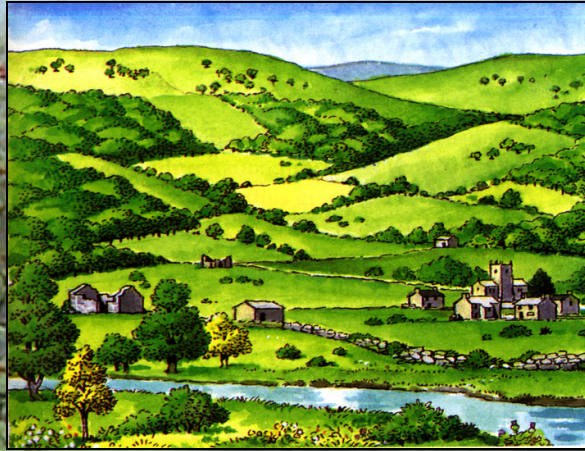
intrapersonal intelligence
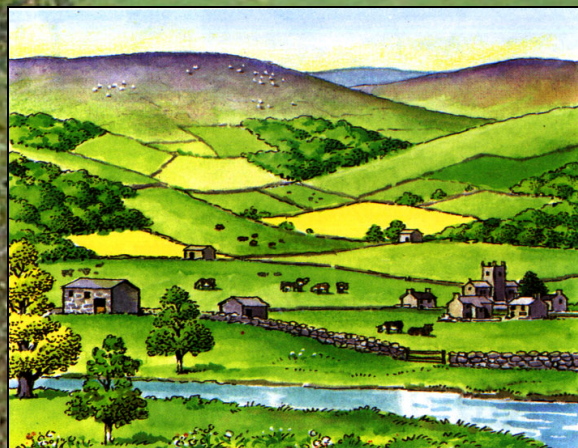
Meetings and interviews of locals, tourists, farmers, politicians, …

… in order to cross their points of view.

Perception and spatial cognition on the field and on the screen

Designing hyperlandscapes

to develop a

« bodily-kinesthetic intelligence » based on the pleasure to meet a lot of connections, and open doors on surprises.

Panoramics views to get into the habit of looking all around us,...

... to get into the habit of making a general survey of a situation.

Perception and spatial cognition
on the field an on the screen

Activities to become used to look all around, in a 360° perspective

Sensitive immersion at 360°

Some tools to incitate the creation of an original script for discovering the landscape

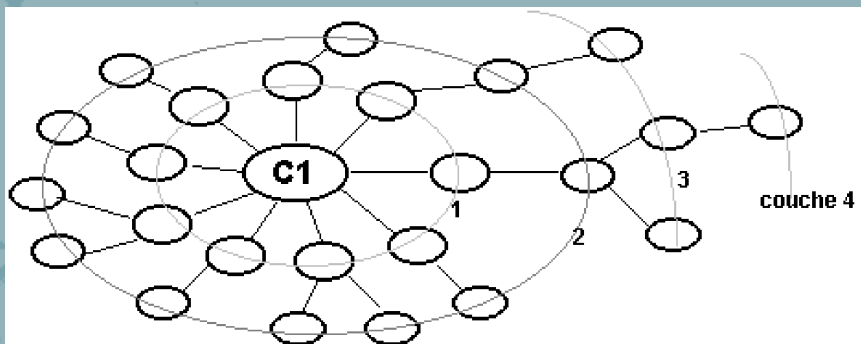## Photolanguage with various aspects of the life, of the world

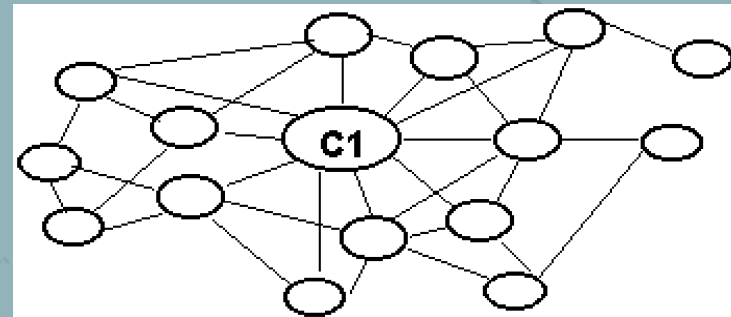# How to vizualise the narrative structure of the hyperlandscape ?

Some models to evaluate if the narrative structure used to link the ideas is based on a linear or on a systemic pattern.
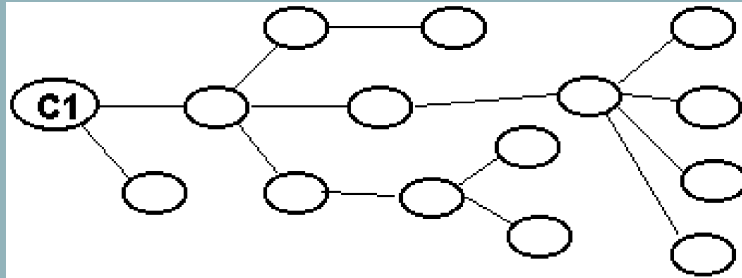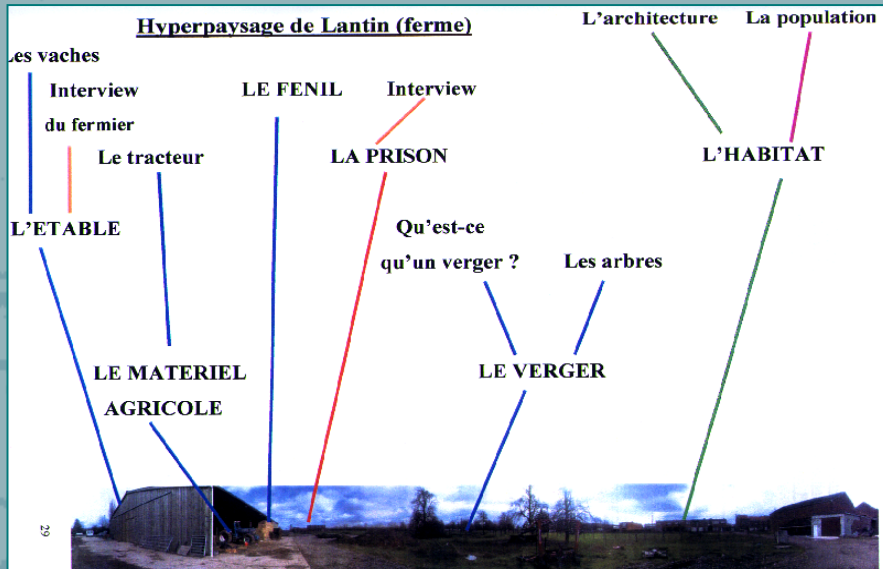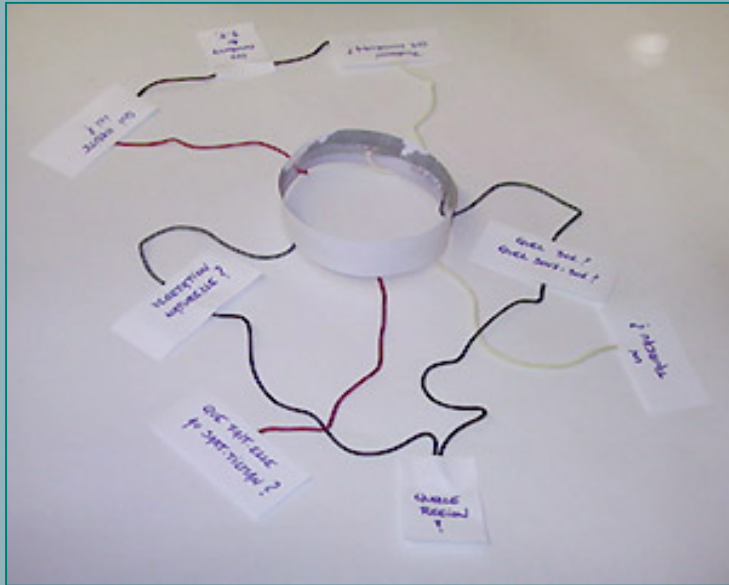

The tree

The snow's flake

The spider's web

Tribollet B ., Langlois F., Jacquet L., 2000. Protocoles d'emploi des cartes conceptuelles au lycée et en formation des maîtres, *Trema*, IUFM de Montpellier, n° 18.

Hyperpaysage de Lantin (ferme)

Les vaches

Interview
du fermier

Le tracteur

L'ETABLE

LE FENIL

LA PRISON

Interview

Qu'est-ce
qu'un verger ?

Les arbres

LE MATERIEL
AGRICOLE

LE VERGER

L'architecture   La population

L'HABITAT

Perception and spatial cognition
on the field and on the screen

PANORAMIC VIEWS 360°

ANCHORS

OTHER IMAGES

MINIPANOS

DYNAMIC
MENTAL MAPS

Concevoir des hyperpaysages pour développer une intelligence corporelle-kinesthésique qui trouve son moteur dans les possibilités de connexion et d'ouverture tous azimuts.
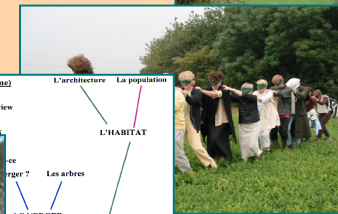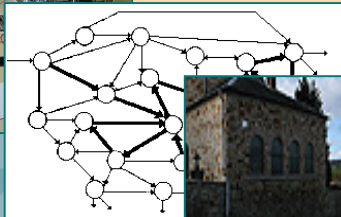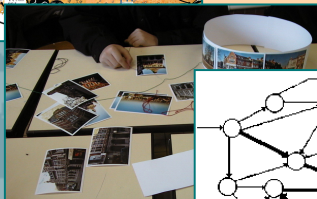
LINKS
RETICULAR
ITINERARIES

IMAGES-
SC HEMES

METAPHORS

HYPERLANDSCAPE

Les hyperpaysages : pour une approche pédagogique globale

de l'apprenant

et du paysage

Thank you !

Merci de votre attention !

www.hyperpaysages.org