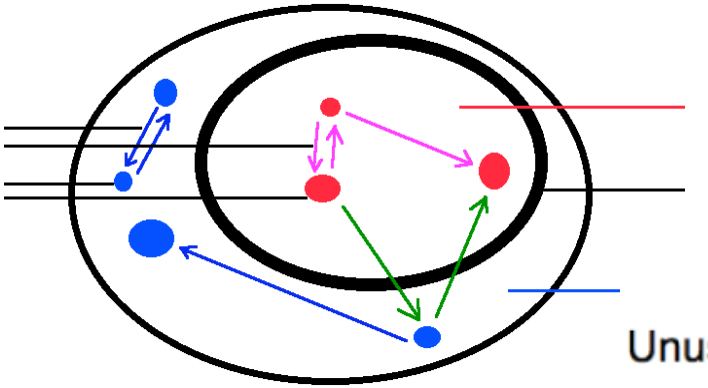
Conference **ISSS** 2010 54th Meeting

International Society for the Systems Sciences Conference **ISSS** ...

July 18-23, 2010. With special workshops on Systems Education, July 16-17, 2010.

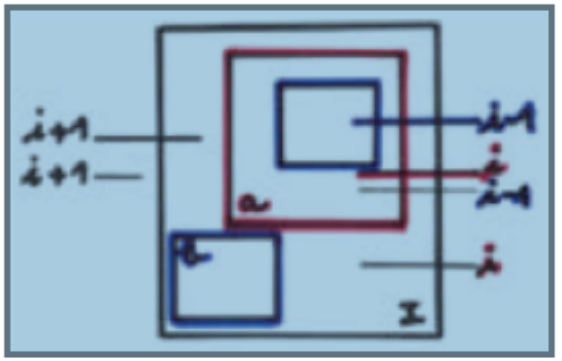
http://**isss**.org/ **Toronto**, ON Wilfrid Laurier



E pluribus unum

Unus pro omnibus, omnes pro uno

In varietate concordia



The way, to be resilient and self-sustainable, the living systems are running through. (slides presentation), 18 p.

Pierre BRICAGE (2010)

http://www.armsada.eu/files/evolutionrun.pdf

SOME RIGHTS RESERVED creative commons
All content on this website (including text, photographs, audio files, and any other original works), unless otherwise noted, is licensed under a Creative Commons License.
ShareAlike

This work is licensed under the
Creative Commons
Attribution-NonCommercial-NoDerivs
License
Ce travail est protégé par une licence
Creative Commons
(559 Nathan Abbott Way, Stanford, California 94305, USA)
au profit de l'

Il peut être copié et distribué gratuitement, uniquement dans un but non-commercial, mais sans modification, et à condition que soit indiqués
It can be copied and distributed, only in a non-commercial purpose, but without modification, and provided with the indications of

European Union of Systemics

the author/l'auteur : BRICAGE Pierre **, the origin/la source :** http://www.armsada.eu/files/evolutionrun.pdf
the title/le titre : The way, to be resilient and self-sustainable, the living systems are running through. (slides presentation),
the pages/la pagination : 18 p., **the year/l'année :** 2010,
& the book/la publication: International Systems Science Science Congress Waterloo, Wilfried LAURIER University, ON, Canada

Associations for the Reciprocal and Mutual Sharing of Advantages and Disadvantages:

THE WAY,
to be resilient and self-sustainable,
THE LIVING SYSTEMS RUN THROUGH.

UPPA PAU, France, Europa

BRICAGE Pierre
pierre.bricage@univ-pau.fr
http://web.univ-pau.fr/~bricage/

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

SYSTEM, ACTORS, INTERACTIONS, INTERFACE, ECOEXOTOPE, ENDOPHYSIOTOPE
BEING EATING & BEING EATEN, The 7 GAUGE INVARIANCE FEATURES of LIFE
WINNER, LOSER & ARMSADA

WHAT IS an ARMSADA ?

LEGUMES NODES: EMERGENCE from PARASITISM to MUTUALISM
LICHEN: from ORGANISM / ECOSYSTEM, towards ARMSADA
THE CELL ENDOCYNCENOSIS "*The Other One(s) MUST Survive First*"

HOW, WHEN and WHY an ARMSADA merges ?

LESS and MORE: the NEURONE, not a level of ORGANISATION
THE VIRAL ORIGIN OF CELL
THE LIFE CORAL: MULTISYNTONIC & FRACTAL

The way,
to be resilient and self-sustainable,
the living systems run through.

REGULATION / DIS-REGULATION OF ARMSADA

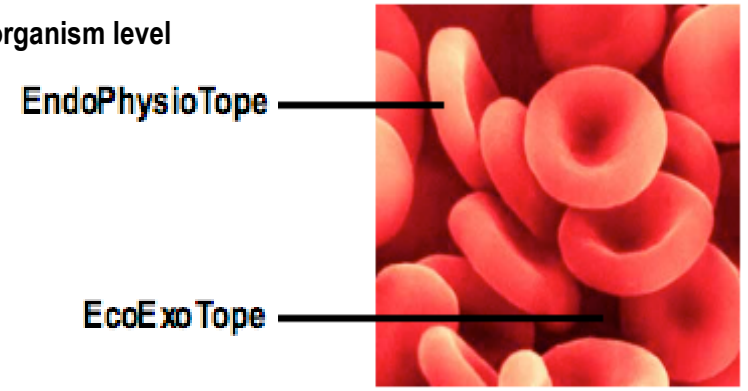
APOPTOSIS: "the DEATH of ONE, the NO-DEATH of ALL"
CANCER: "the NO-DEATH of ONE, the DEATH of ALL"
CURATIVE VACCINES: "impossible but certain"

EXAPTATION "TURNING DISadvantages TO advantages, AVOIDING advantages TURN to DISadvantages
FROM COMPLEXITY TO SIMPLEXITY
INVARIANCE OF SCALING

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

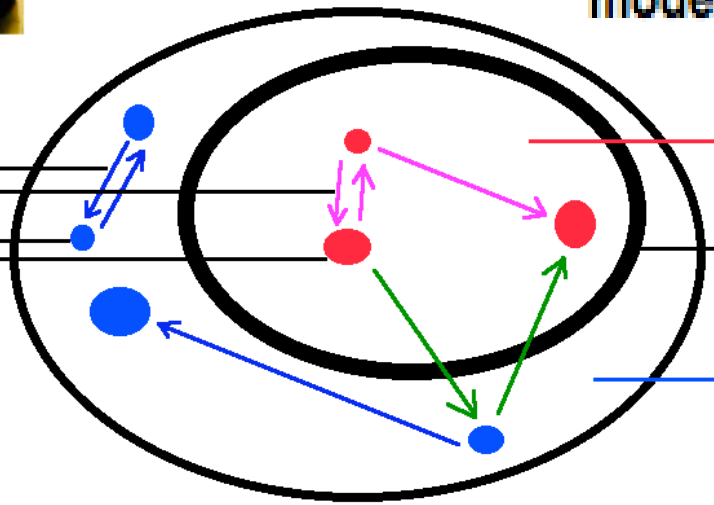
reality

at the ecosystem level
superior adjacent level of the organism level



at the cell level
inferior adjacent level of the organism level

model



key words

interactions

actors

WHOLENESS

key concepts

EndoPhysioTope

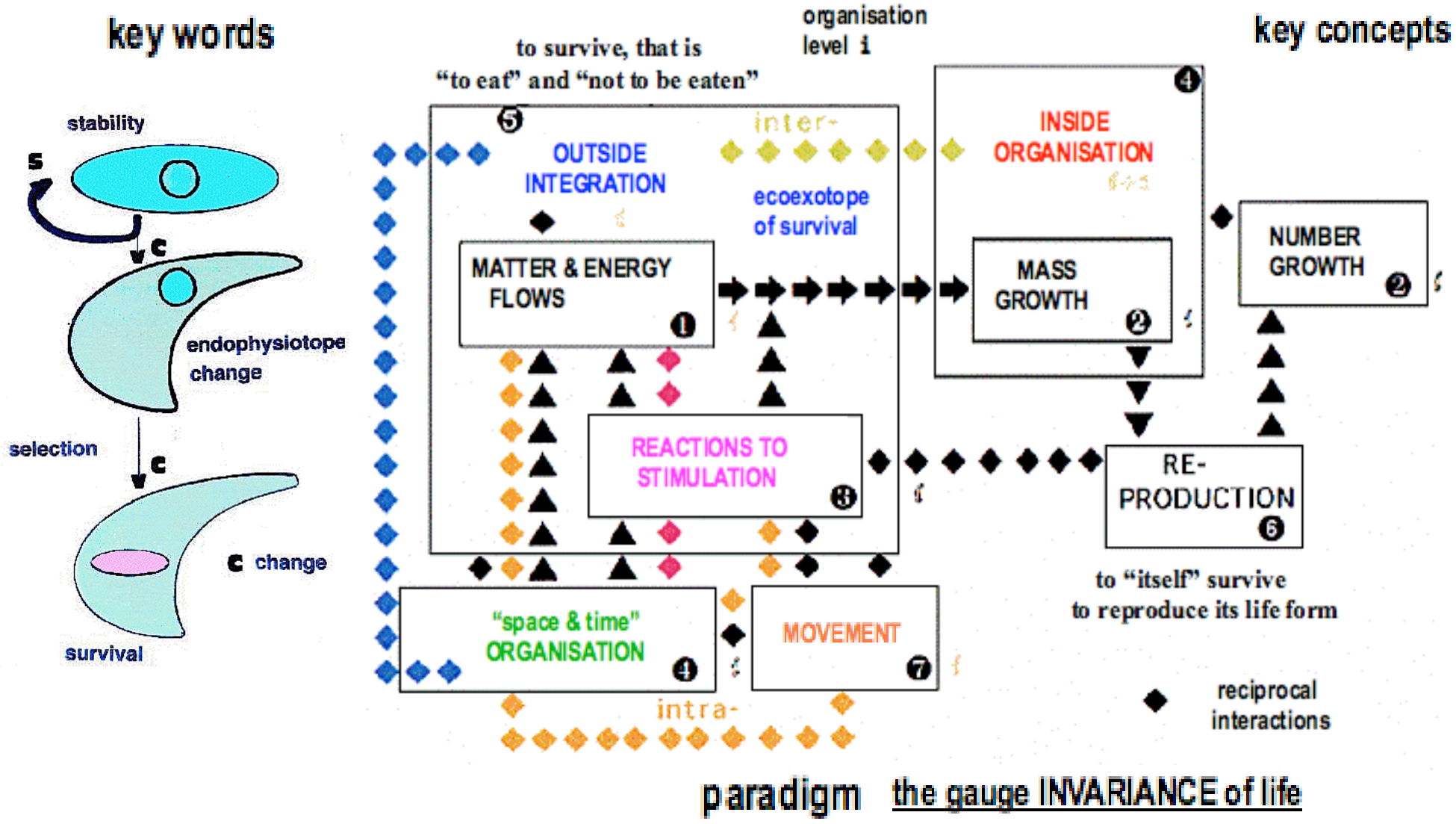
interface

EcoExoTope

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

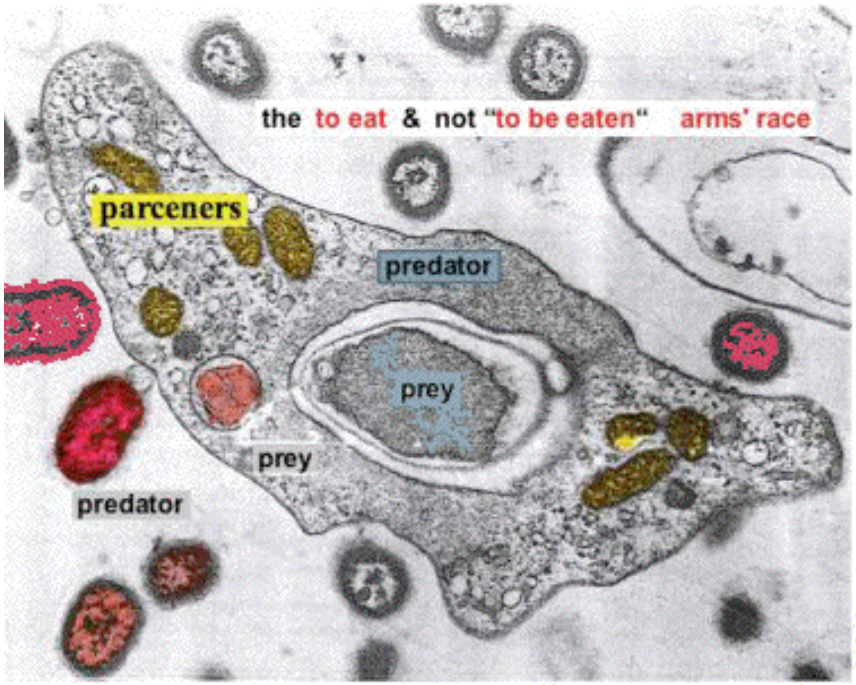
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr



The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

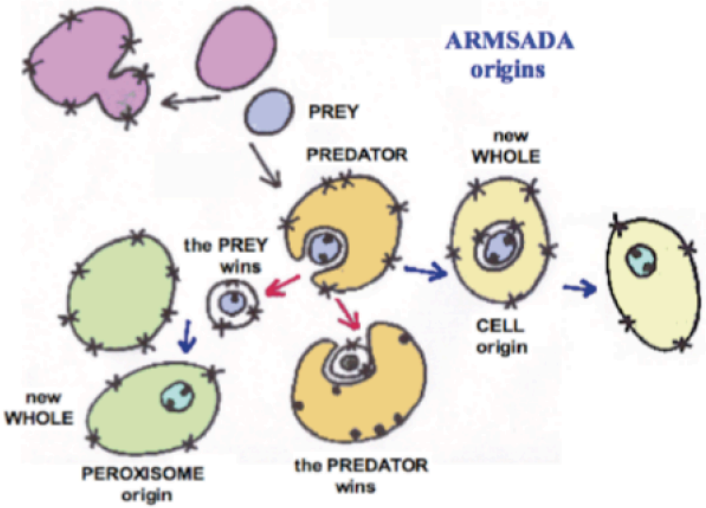
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

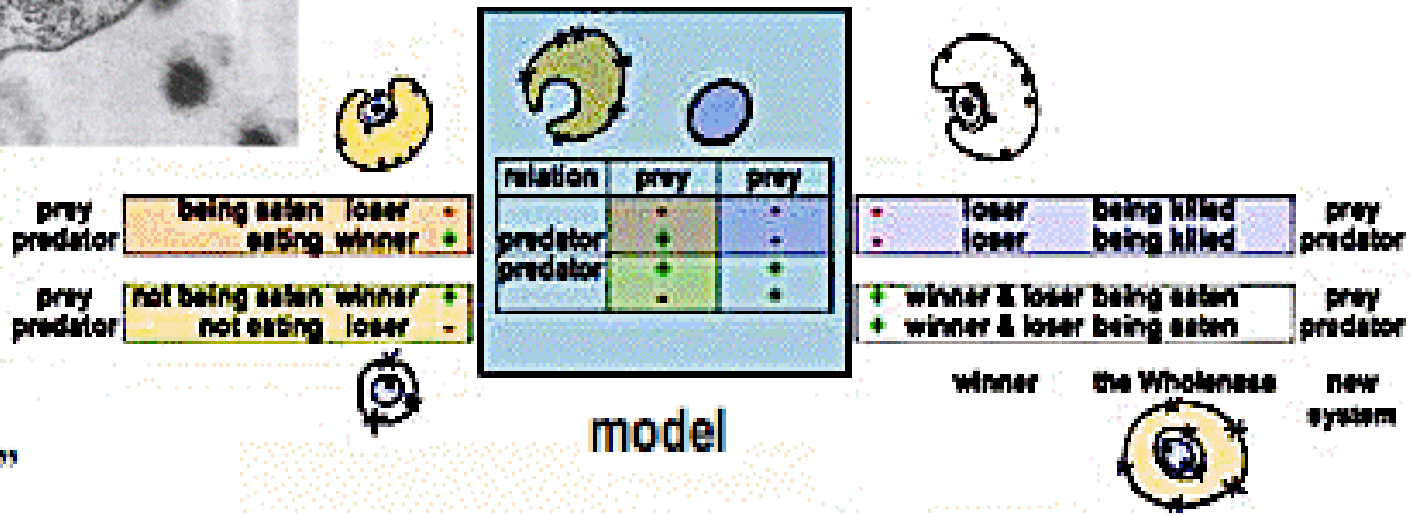


reality

key concept

to survive, that is
"to eat" and "not to be eaten"





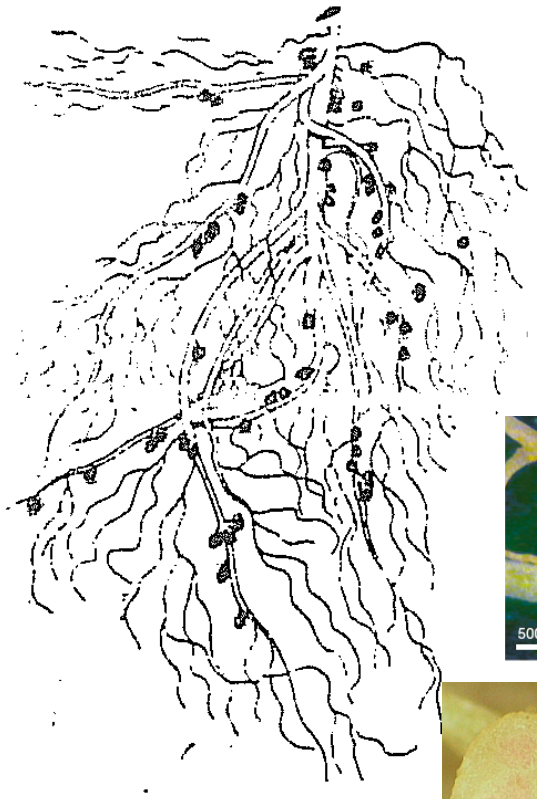
model

WHAT is an ARMSADA ?

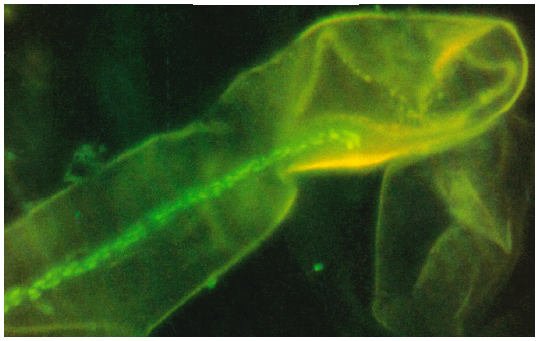
The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

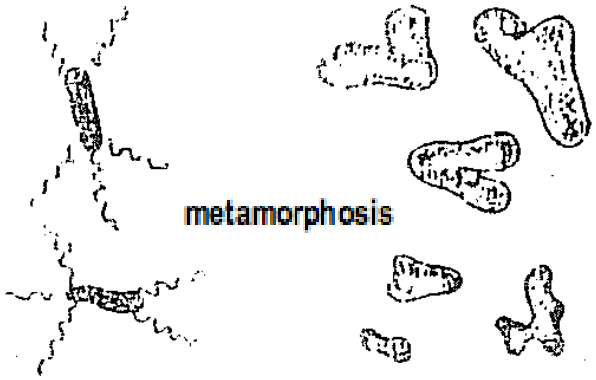
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr



emergency



emergence

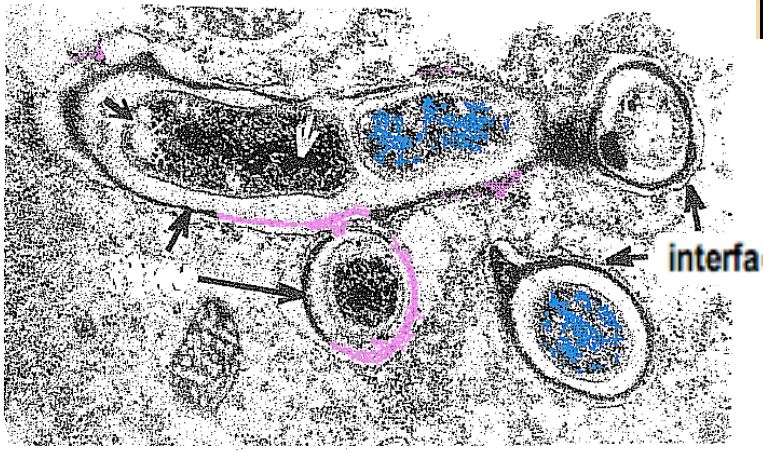


individualism
free living

collectivism
subdued

from parasitism
to mutualism

key words

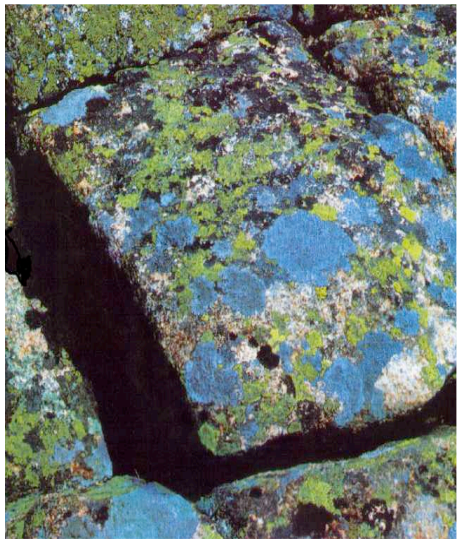


The occurrence of infected cells, with persistent infection threads, in legume root nodules. De Faria S.M. & al. 1987, Canadian Journal of Botany 65 : 553-558.

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

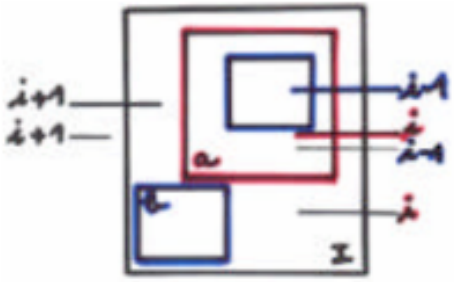
ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

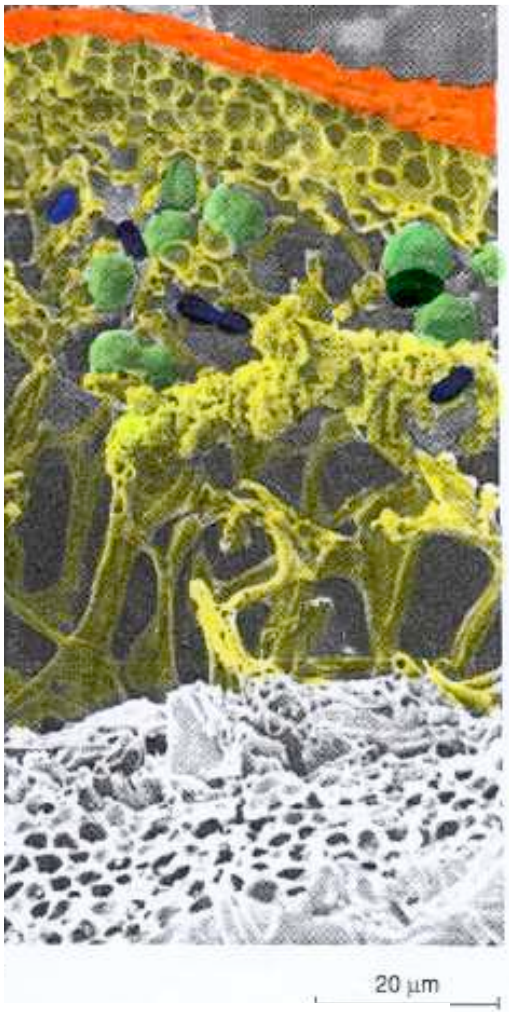


organism

model



ecosystem



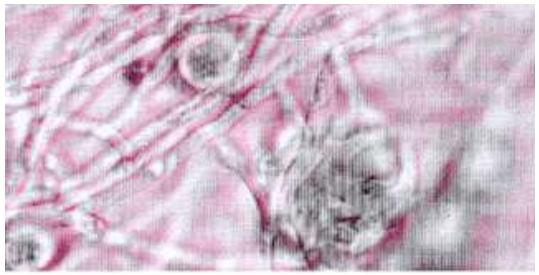
2 NEW WORDS: ECOEXOTOPE & ENDOPHYSIOTOPE

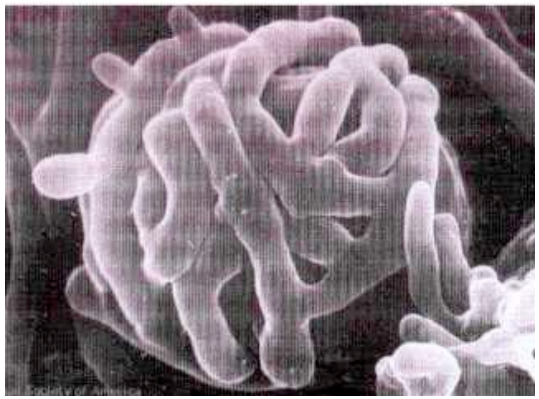
2 "TRIVIAL" CONCEPTS:

* TO SURVIVE IT IS "TO EAT" & "NOT TO BE EATEN"
* THERE ARE NEVER ADVANTAGES WITHOUT DISADVANTAGES

1 NEW PARADIGM:

ALL THE LIVING SYSTEMS MERGED FROM AN ARMSADA ASSOCIATION for the RECIPROCAL and MUTUAL SHARING OF ADVANTAGES and DISADVANTAGES





reality

predator / prey

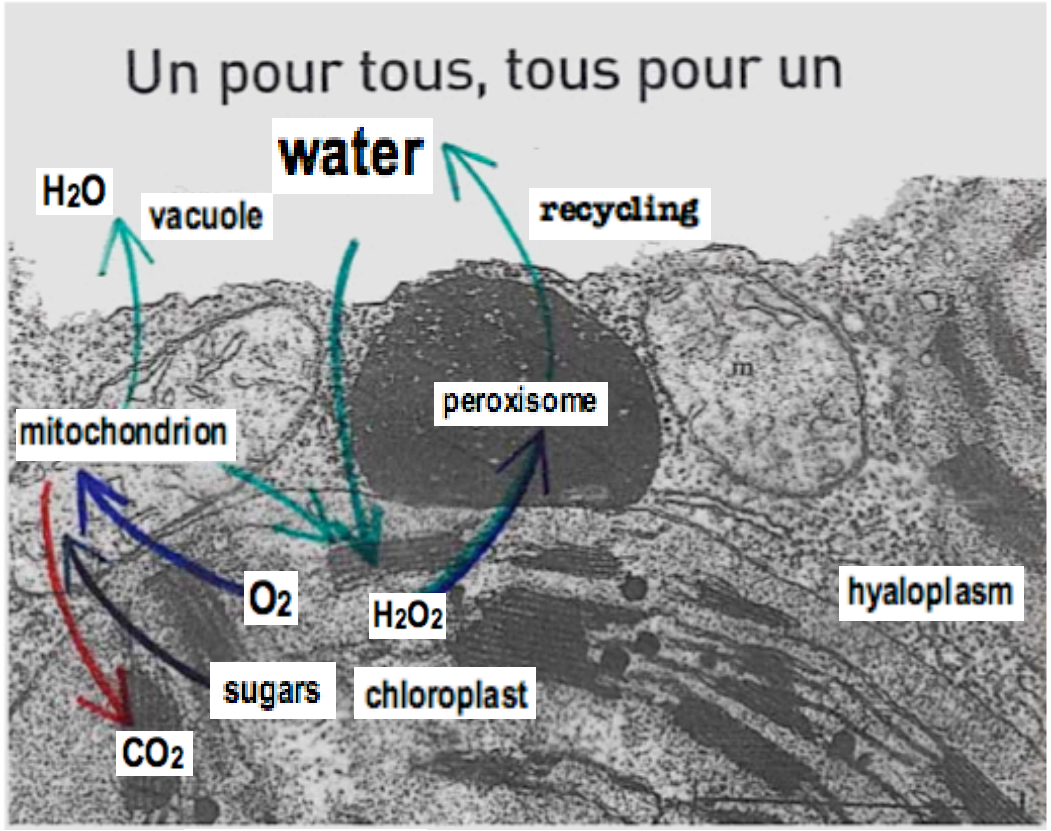
key concept

2 "EVIDENT" FACTS: MODULARITY & ERGODICITY

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr



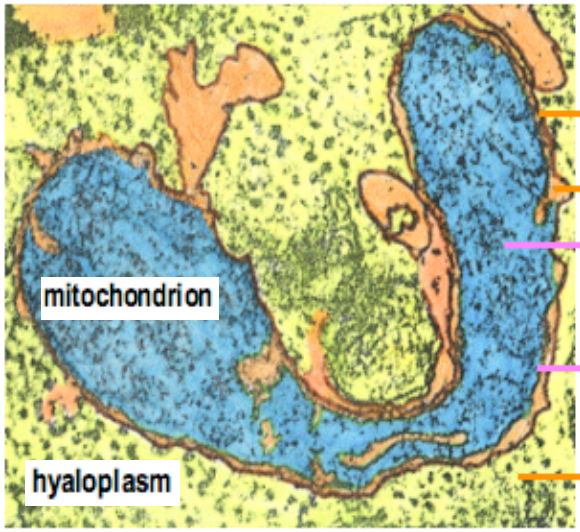
juxtaposition

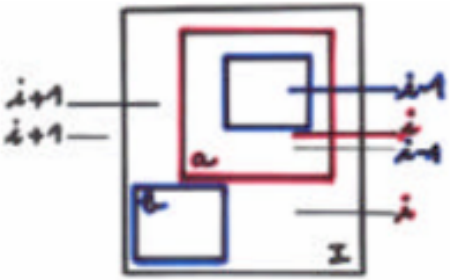
E pluribus unum

paradigm Unus pro omnibus, omnes pro uno

In varietate concordia

encasement





Sharing dangers through INTER recycling

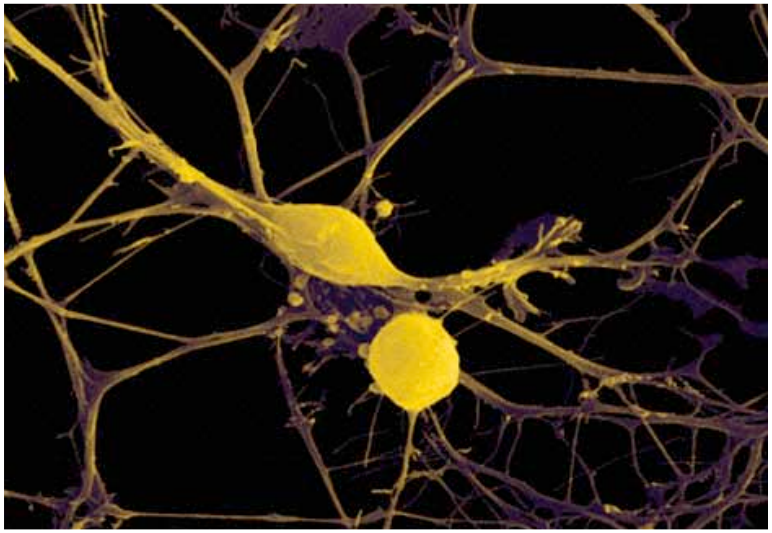
System-Of-Systems

EndoSynCenosis

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

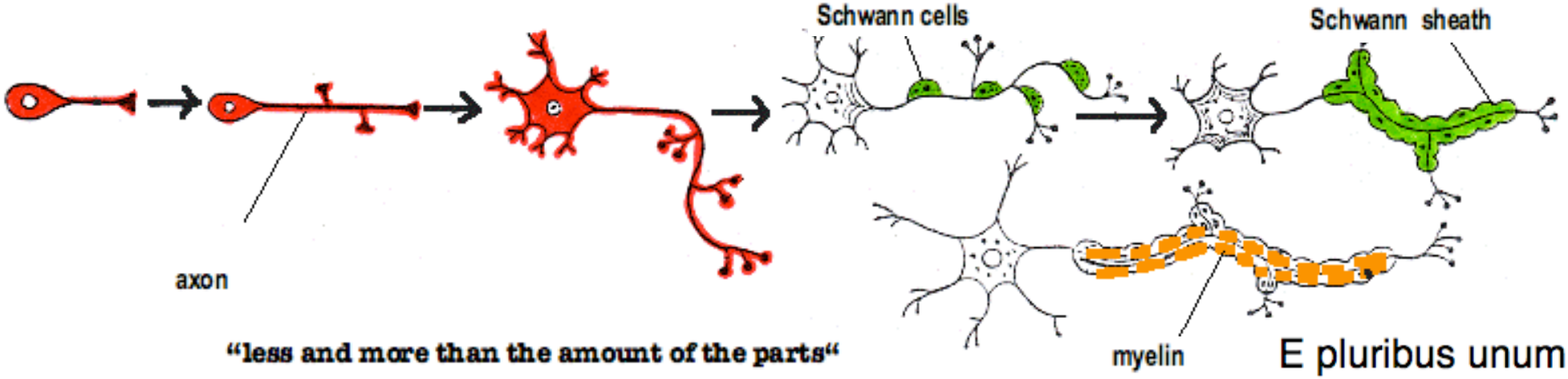
ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

HOW, WHEN and WHY an ARMSADA does merge ?



NOT a level of ORGANISATION

key concepts



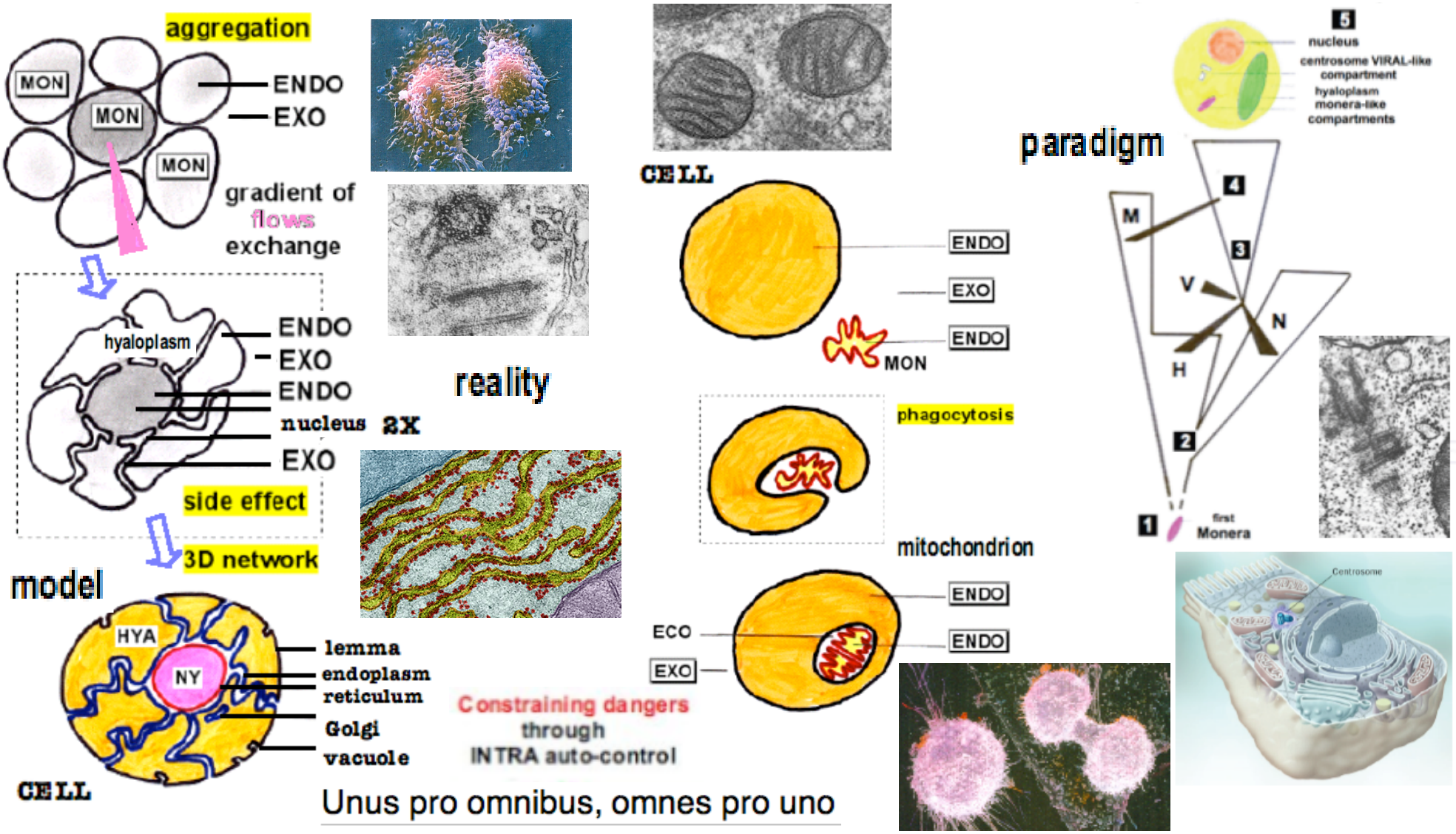
"less and more than the amount of the parts"

E pluribus unum

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

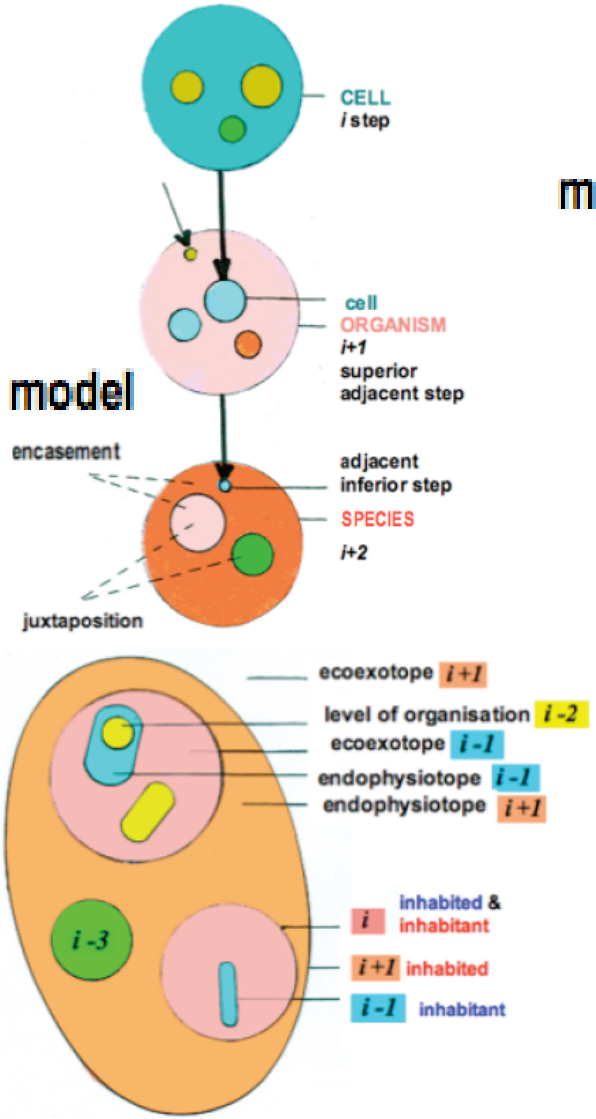
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

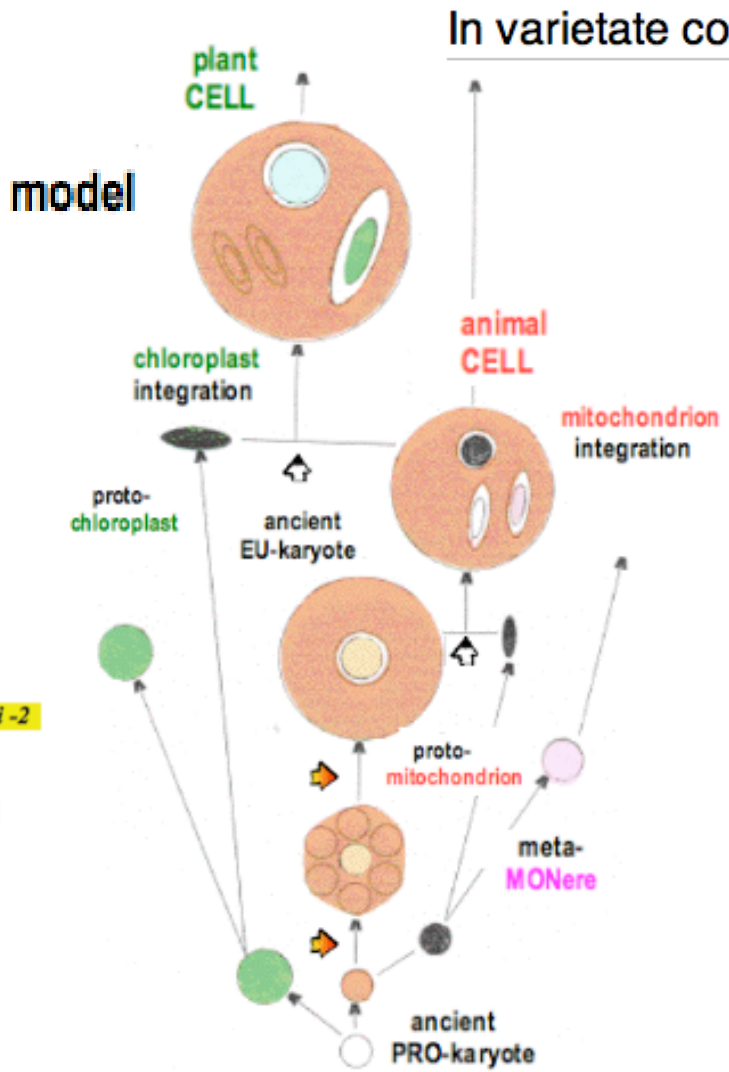


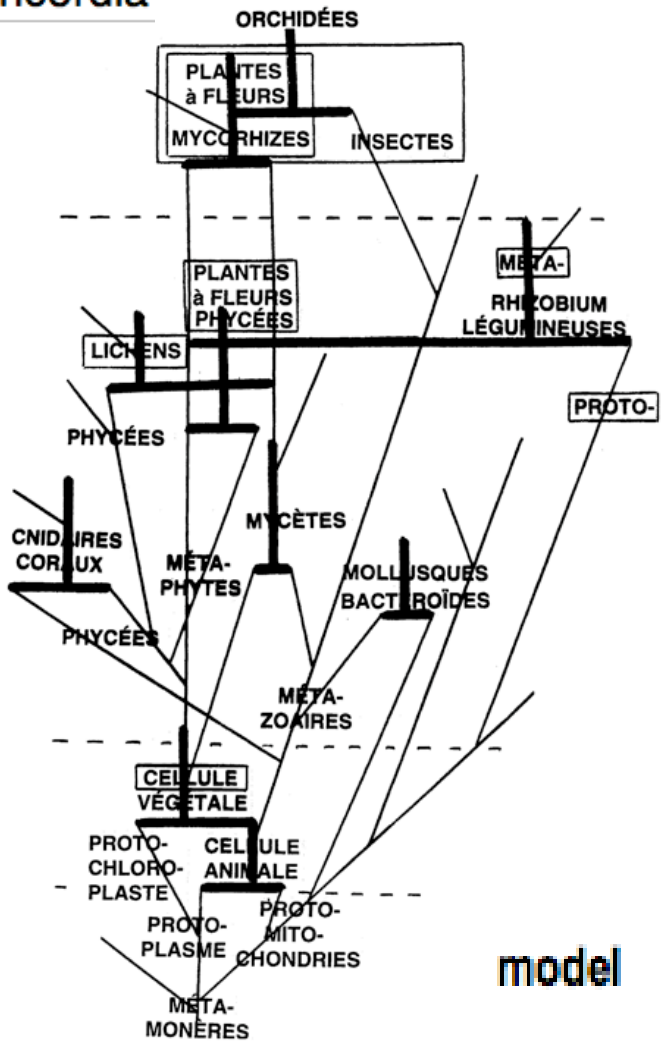
The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr



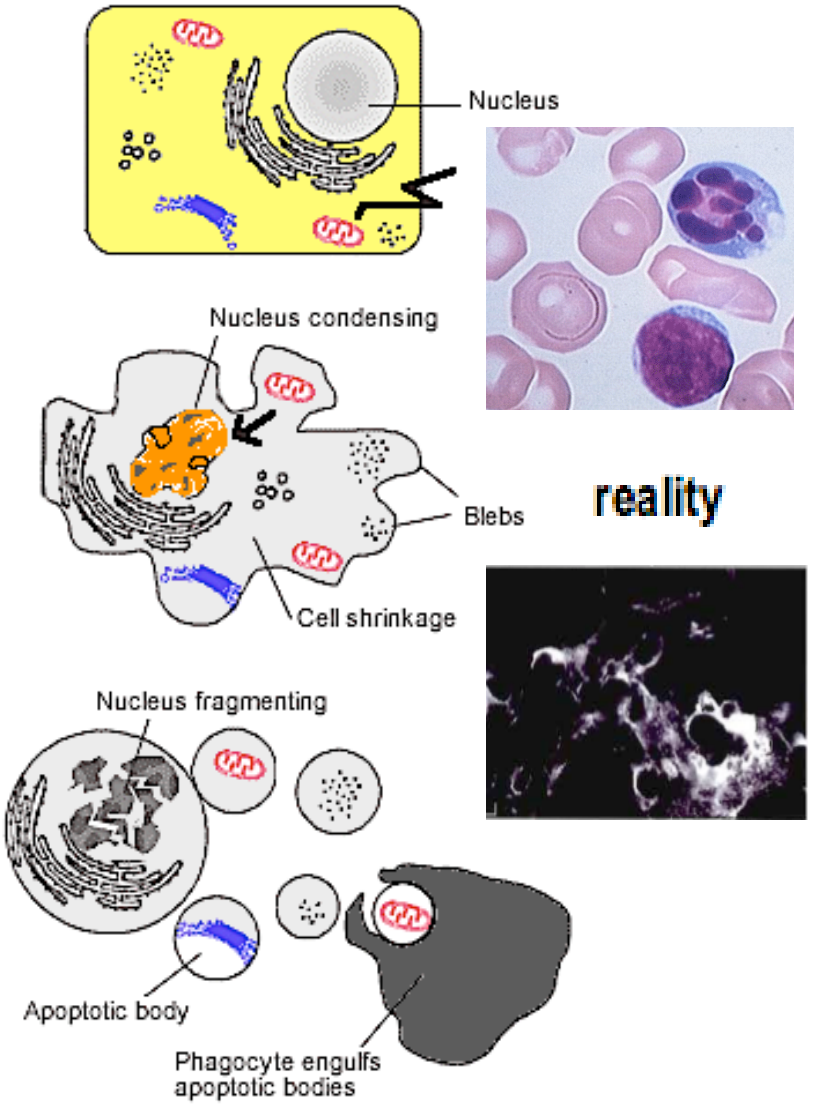


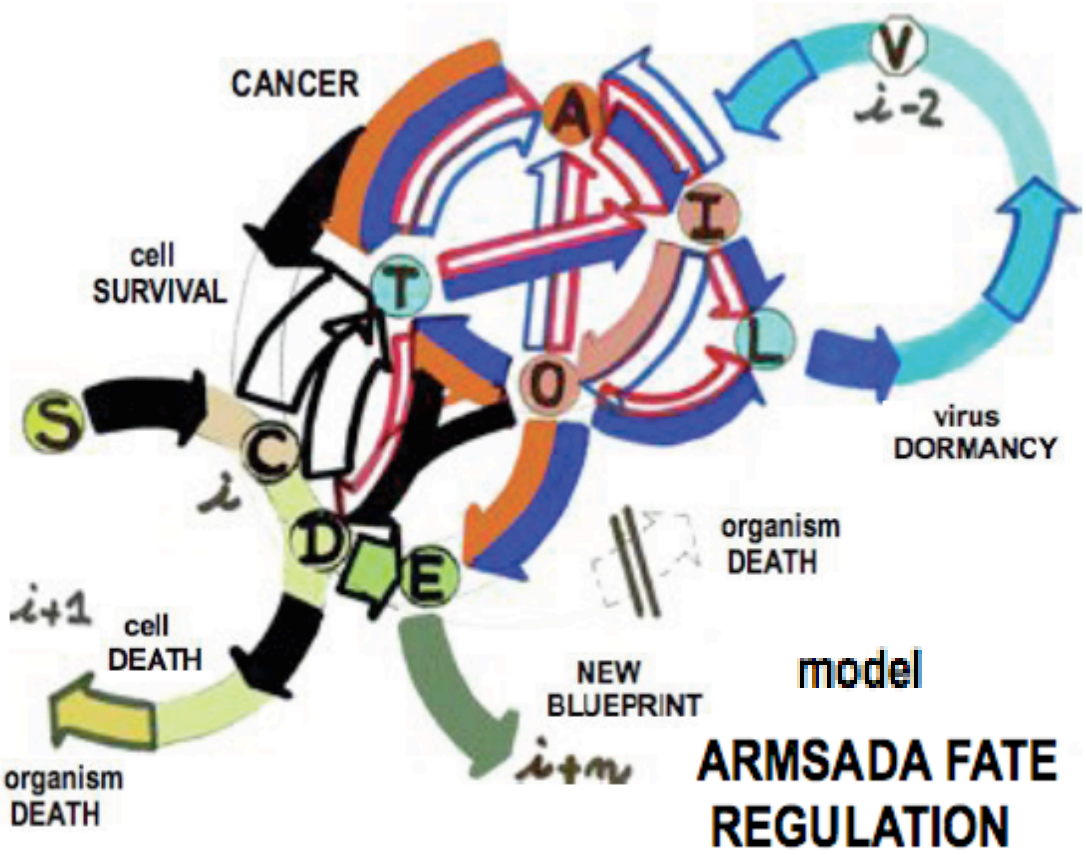


The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr



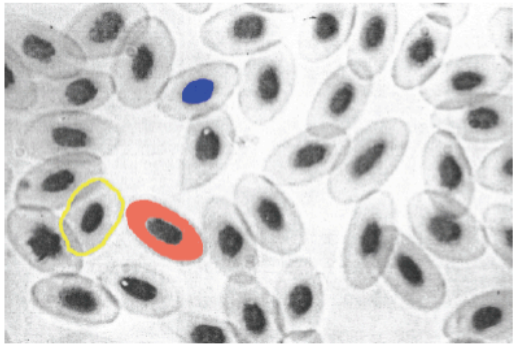


C Cell (***i*** level): **S** Stem cell, **D** Differentiated cell, **O** state of transition, **T** Tumour cell, origin: arrows in white (retrogression), fates: **A** Apoptosis, **V** Virus (***i-2*** level, development cycle: arrows in blue): **I** viral Infected cell, **L** Lysis, ***i+1*** level of the organism, ***i+n*** merging new level: **E** emergence (adapted from: Bricage 2003 a, b, c, Bricage 2005 a1 & b1).

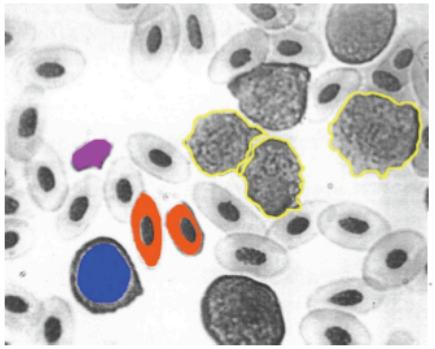
The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

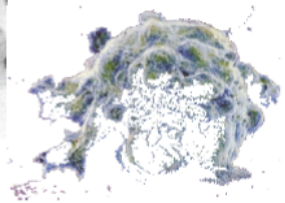


frog healthy blood cells

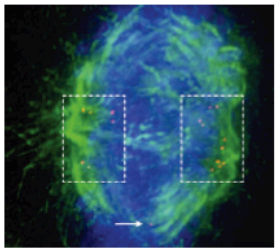


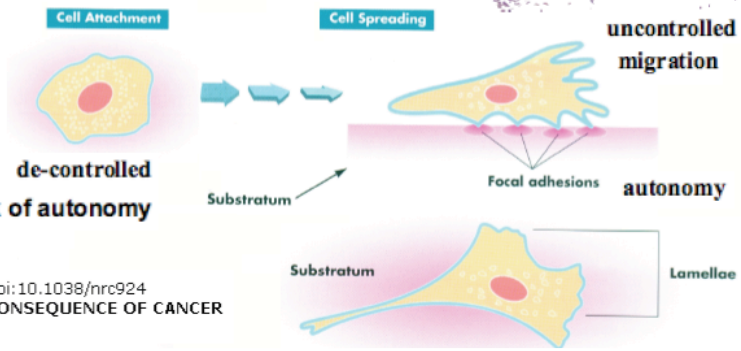
frog cancer cells

de-controlled proliferation

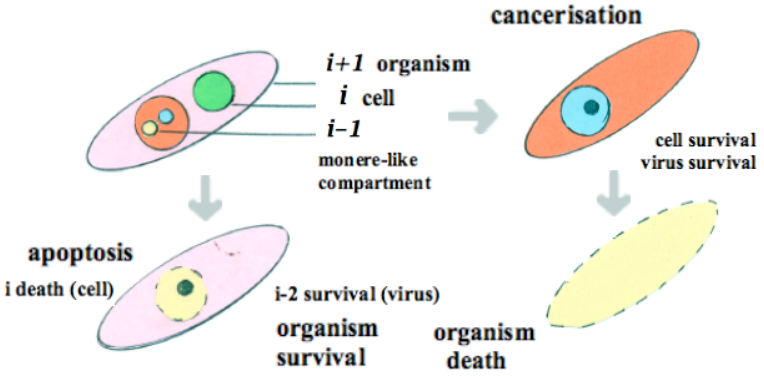


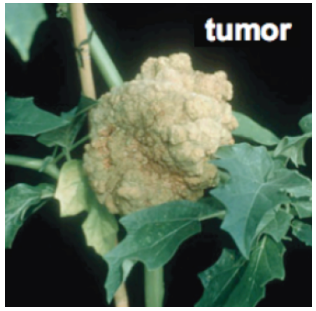
uncontrolled migration





Nature Reviews Cancer **2**; 815-825 (2002); doi:10.1038/nrc924
CENTROSOME ABERRATIONS: CAUSE OR CONSEQUENCE OF CANCER PROGRESSION?

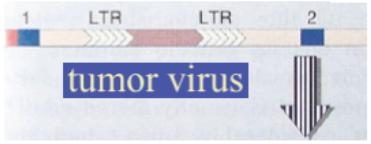




A Viral Culprit in Cancer

Feng H. & al. (2008) Clonal Integration of a Polyoma-virus in Human Merkel Cell Carcinoma. Science Vol. 319, n° 5866, p. 1096-1100.

ecoexotope dangers



A TRANSMISSIBLE AVIAN NEOPLASM.
(SARCOMA OF THE COMMON FOWL.)
By PEYTON ROUS, M.D.

Class	Members
DNA viruses	
Papovavirus	Polyomavirus, SV40 virus, human papillomaviruses (eg, HPV-16)
Adenovirus	Adenoviruses 12, 18, and 31
Herpesvirus	Epstein-Barr virus
Hepadnavirus	Hepatitis B virus
RNA viruses	
Retrovirus type C	Murine sarcoma and leukemia viruses, avian sarcoma and leukemia viruses, human T cell leukemia viruses I and II
Retrovirus type B	Mouse mammary tumor virus

endophysiotope dangers

DNA & RNA VIRUSES

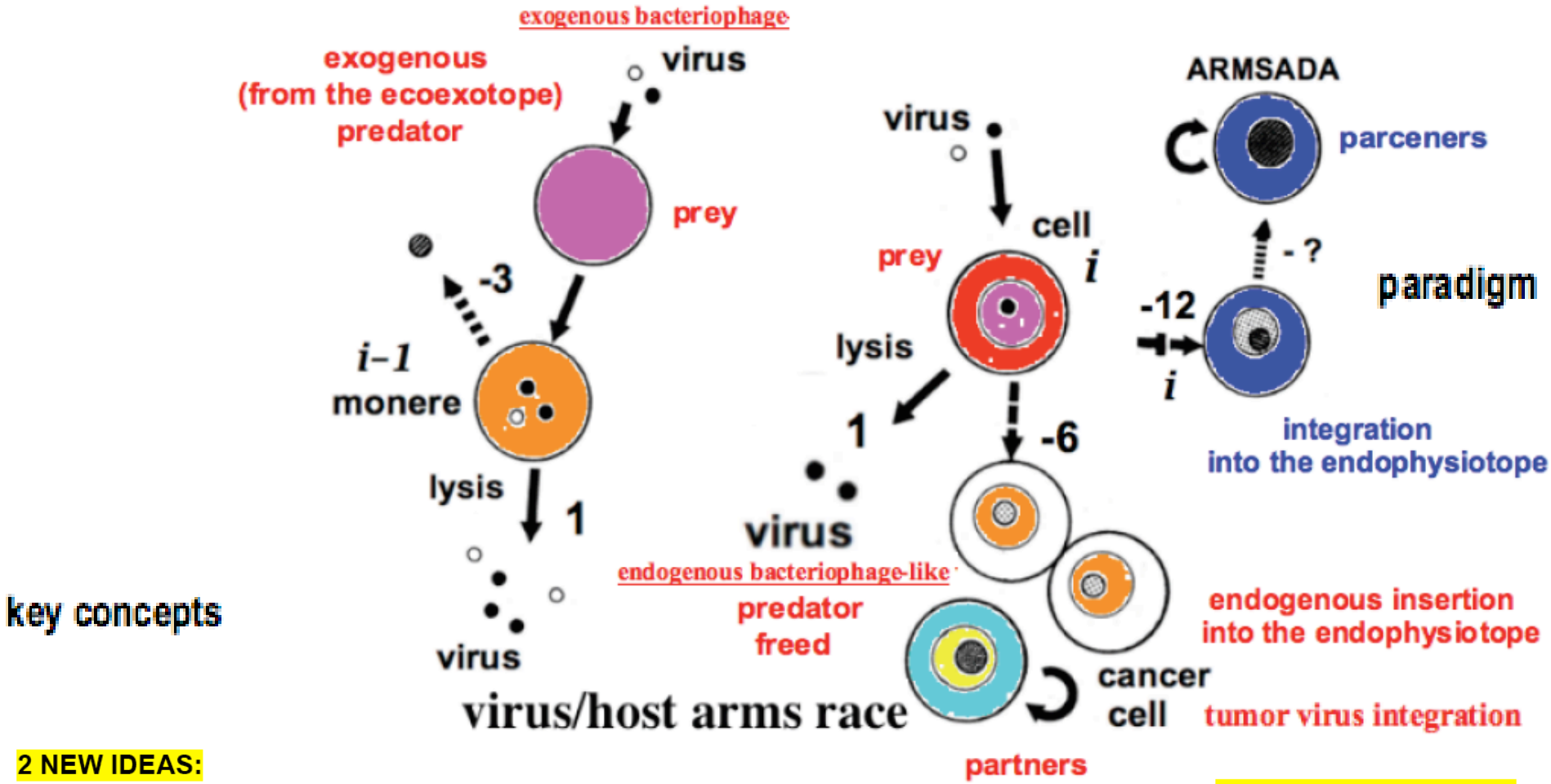
Cancer is a Breaking of the Cell's Association for the Reciprocal and Mutual Sharing of Advantages and Disadvantages Through an Aggression that Results in a Lack of Non-Autonomy.

paradigm

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr



2 NEW IDEAS:

* DANGERS HOSTED IN CELLS, ARE NECESSARY FOR THE SURVIVAL
* VIRUSES ARE REGULATORS & PROTECTORS OF LIFE THROUGH THEIR CONTROL OF THE CAPACITY OF HOSTING OF THE ECOEXOTOPES & OF THE CAPACITY OF TO BE HOSTED OF THE ENDOPHYSIOTOPES.

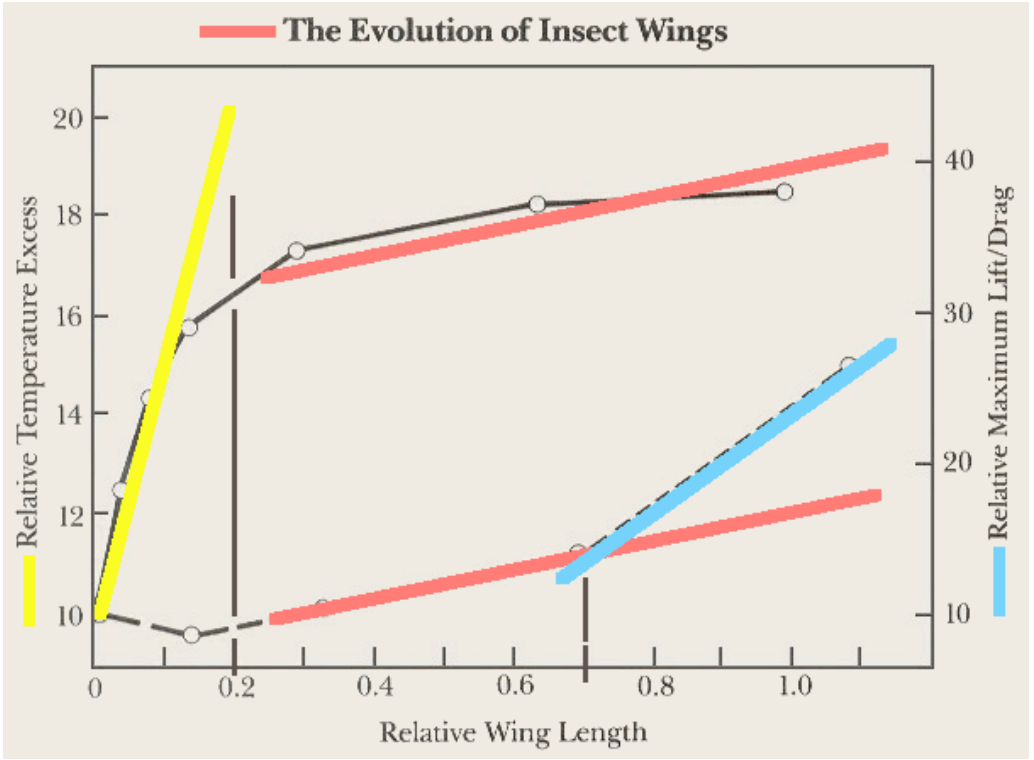
CURATIVE VACCINES

HIV induced AIDS
Curative Vaccine

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

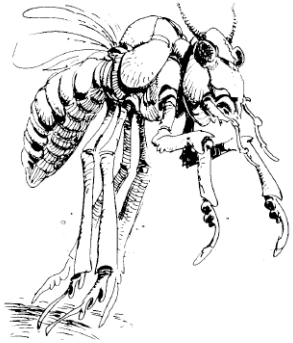
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

model



exaptation

paradigm



advantage

disadvantage

There is never advantages without disadvantages

To survive that is "to avoid advantages turn to disadvantages"

advantage

and "to turn disadvantages into advantages"

reality

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

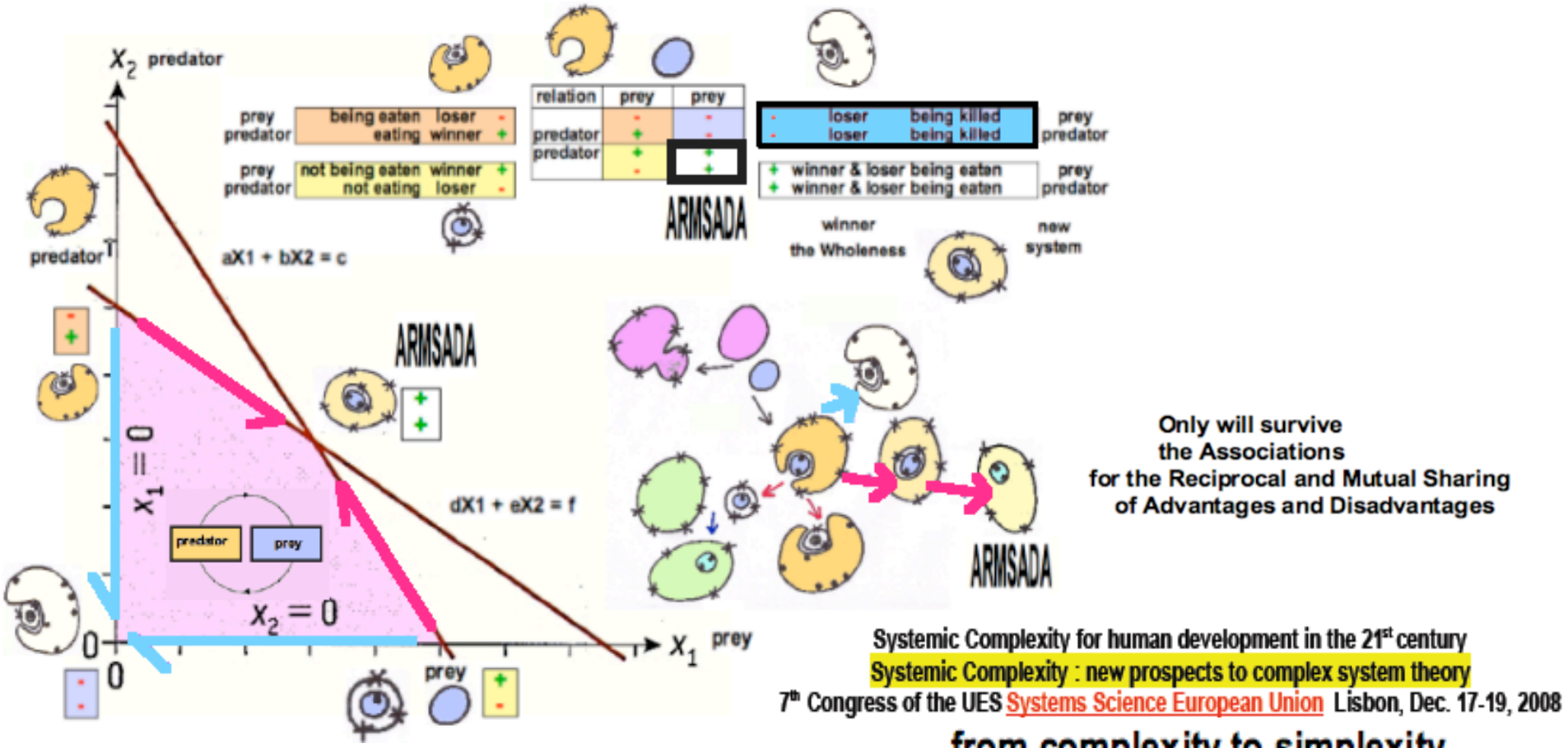
The final states of the predator bacterium)/prey (cell) relationship: the simplex method's solution.

It is a real application of **"the prisoner dilemma"** model (Shermer 2008).

"To survive it is to eat and not to be eaten." (Bricage 2000b & 2003b FIGURE I.1, Bricage 2008c)

But, soon or late, it is impossible not to be eaten! (Bricage & al. 1990), like in **"the game of life"** (Mitchell 2003), where the result converges to a steady state after a great number of iterations.

model



Only will survive
the Associations
for the Reciprocal and Mutual Sharing
of Advantages and Disadvantages

Systemic Complexity for human development in the 21st century

Systemic Complexity : new prospects to complex system theory

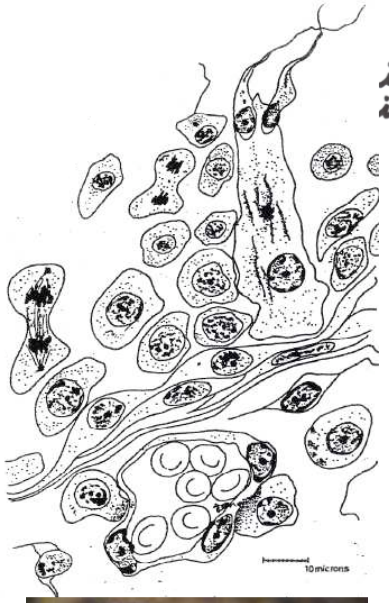
7th Congress of the UES Systems Science European Union Lisbon, Dec. 17-19, 2008

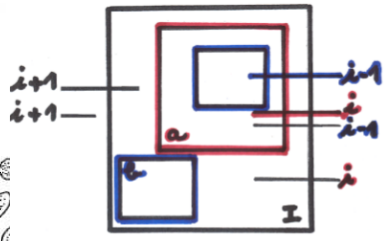
from complexity to simplexity

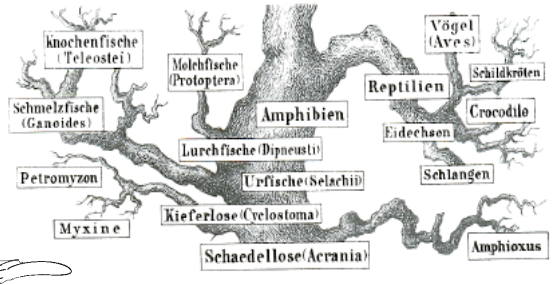
The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

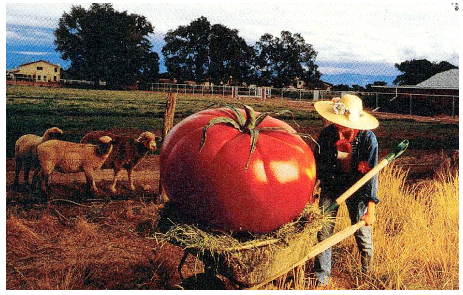
ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

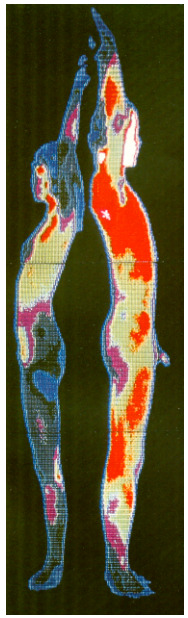
Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

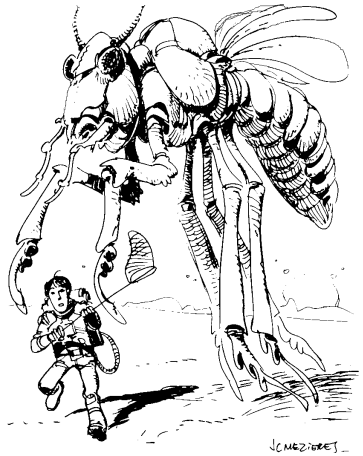


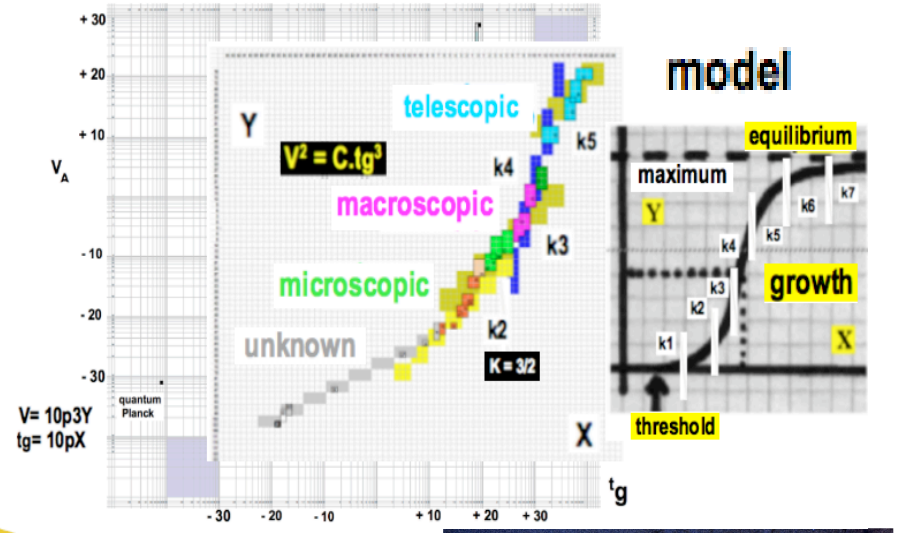




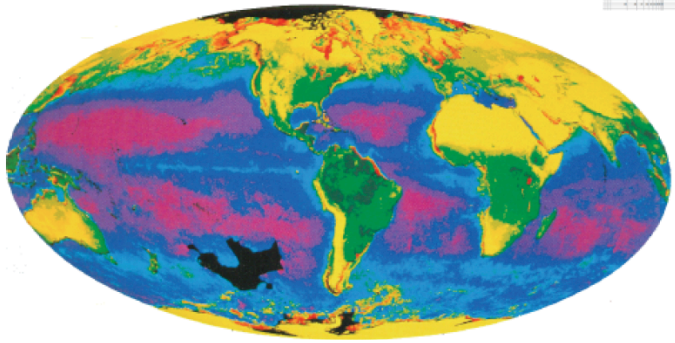


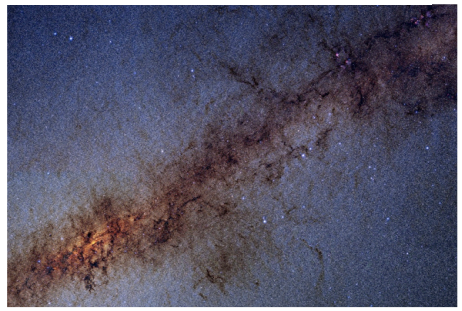






scaling invariance





The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE

ISSS July 18-23, 2010, Wilfrid Laurier University, Waterloo, ON, Canada. Balancing Individualism and Collectivism Chair: Janet McIntyre

Associations for the Reciprocal and Mutual Sharing of Advantages and DisAdvantages. pierre.bricage@univ-pau.fr

2 NEW WORDS : 2 types of time-space-action fields ECOEXOTOPE & ENDOPHYSIOTOPE

3 TRIVIAL BASIC CONCEPTS :

* TO SURVIVE IT IS "TO EAT" & "NOT TO BE EATEN"
* SOON OR LATE IT IS IMPOSSIBLE "NOT TO BE EATEN"
* THERE ARE NEVER ADVANTAGES WITHOUT DISADVANTAGES

1 NEW QUALITATIVE PARADIGM :

SOON OR LATE, ALL NEW LIVING SYSTEMS MERGED FROM AN ARMSADA ASSOCIATION for the RECIPROCAL and MUTUAL SHARING OF ADVANTAGES and DISADVANTAGES

2 ANCIENT EVIDENT FACTS :

* GAUGE INVARIANCE

EVERY LIVING SYSTEM OWNS 7 CAPACITIES :

- To Move Matter & Energy FLOWS, - To Reply To STIMULATIONS, - To Maintain an ORGANISATION, its EndoPhysioTope, - To Be INTEGRATED into an EcoExoTope, - To MOVE Itself, in order to SURVIVE, - To GROW, - To survive but to REPRODUCE ITSELF

* MODULARITY & ERGODICITY

EVERY NEW LIVING SYSTEM IS BUILT THROUGH JUXTAPOSITIONS AND ENCASEMENTS OF PRE-EXISTING ADJACENT SYSTEMS

2 NATURAL QUANTITATIVE PARAMETERS & A NEW QUANTITATIVE LAW

* VOLUME, a measure of the confinement, the LIMITS of an endophysiotope into an ecoexotope,
* TIME OF GENERATION, a measure of the age of acquisition of the capacity of reproduction.

paradigm

2 NEW IDEAS :

* IN A LIVING SYSTEM, "HOSTED" DANGERS WHATEVER THE LEVEL OF ORGANISATION, ARE NECESSARY FOR THE SURVIVAL
* VIRUSES ARE REGULATORS & PROTECTORS OF LIFE THROUGH THEIR CONTROL OF THE CAPACITY OF HOSTING OF THE ECOEXOTOPES & OF THE CAPACITY OF TO BE HOSTED OF THE ENDOPHYSIOTOPES.

1 NEW QUALITATIVE LAW : loi de croissance "exponentielle"

* la loi quantitative de l'inter-relation entre l'espace et le temps : $\log(10p+3Y) = K.\log(10p+X)$ indique que la structure de l'Univers est fractale à toutes ses échelles dimensionnelles.

European Union for Systemics (EUS)
Union européenne de systémique (UES)

http://www.afscet.asso.fr/resSystemica/Crete02/Bricage.pdf
http://www.afscet.asso.fr/resSystemica/Paris05/bricage.pdf
http://www.afscet.asso.fr/resSystemica/Lisboa08/bricageWS1.pdf

AFSCET

http://www.afscet.asso.fr/Decision.pdf
http://www.afscet.asso.fr/heritage.pdf
http://www.afscet.asso.fr/pbAnde03.pdf

CNRS

http://hal.archives-ouvertes.fr/hal-00130685
http://hal.archives-ouvertes.fr/hal-00352578/fr
http://hal.archives-ouvertes.fr/hal-00130218
http://hal.archives-ouvertes.fr/hal-00351226/fr

SOME RIGHTS RESERVED
creative commons

pierre.bricage@univ-pau.fr

http://web.univ-pau.fr/~bricage/

The way, to be resilient and self-sustainable, the living systems run through. Pierre BRICAGE