



**'better HEALTHCARE for better WELFARE'
CHRONOBIOLOGY and LITHOTHERAPY
: SUSTAINABLE SYSTEMIC SOLUTIONS**

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**A better HEALTHCARE for a better WELFARE ?
CHRONOBIOLOGY and LITHOTHERAPY : SUSTAINABLE SYSTEMIC SOLUTIONS.**

I. The temporal organisation of living systems.

1. "the human glycaemia hour touring", an endogenous clock : *a cyber-systemic approach*
2. chrono-types determination *to plan for the best time for performance : the way to avoid scholars' failure.*
3. Individual night sleep awakenings rhythms: *Man is an Earth clock shaped species.*

II. Methodology to evidence temporal organisations of living systems and their physiological responses

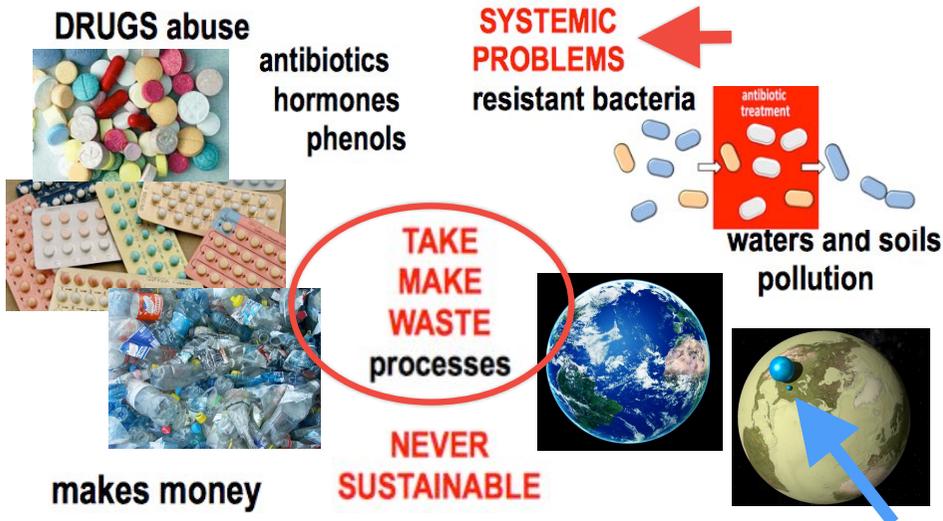
1. Only individual longitudinal measurements. No massive statistics!
2. Controls and latency times to be evidenced and considered first.
3. Stimuli responses tested according to *a double blind placebo controlled survey.*

III. WHAT methodology to evidence lithotherapeutic effects.

1. WHAT mineral to use FOR WHAT to do? A *a priori* complex difficult process.
2. Methodology: WHAT?, WHAT FOR, WHY? WHAT results, HOW and WHEN?
 - 2.a. Scaling of control and placebo records.
 - 2.b. *Minerals properties act the same drugs properties do.*
 - 2.c. *As a whole, a system is defined by unanticipated emergent properties.*
3. Emergency and recovery vs. maintenance and prevention.

Pierre BRICAGE

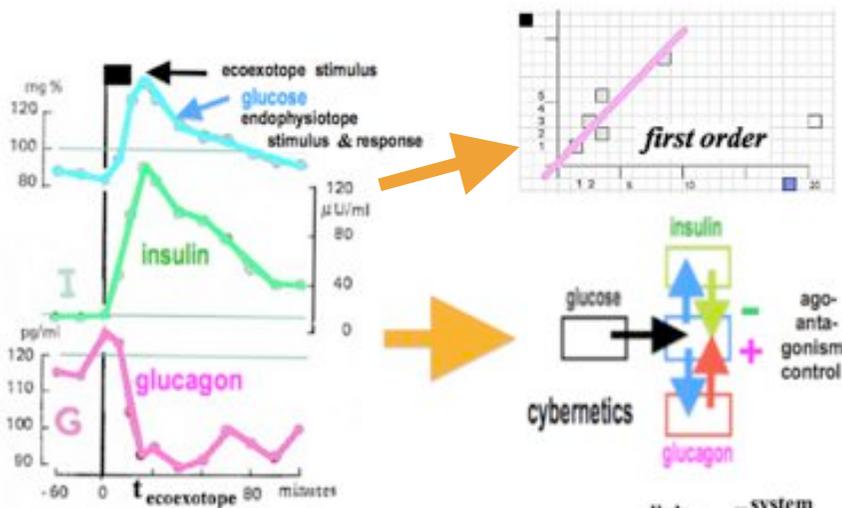
retired Head of Biology department and Co-Director of Health and Social Sciences department,
Faculty of Sciences and Technology, University of Pau et Pays de l'Adour, Pau campus, France



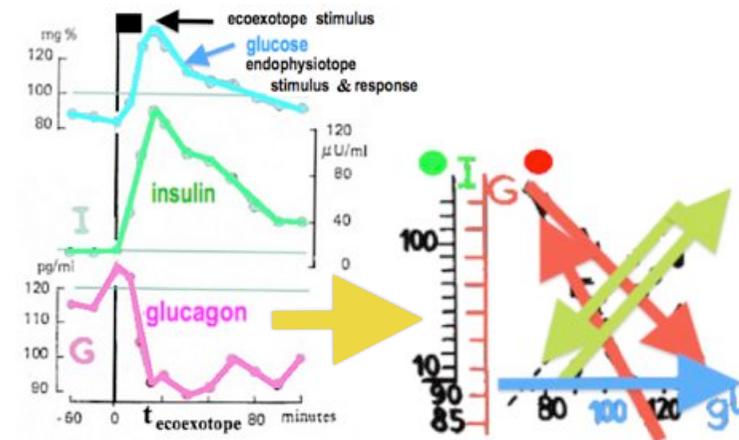
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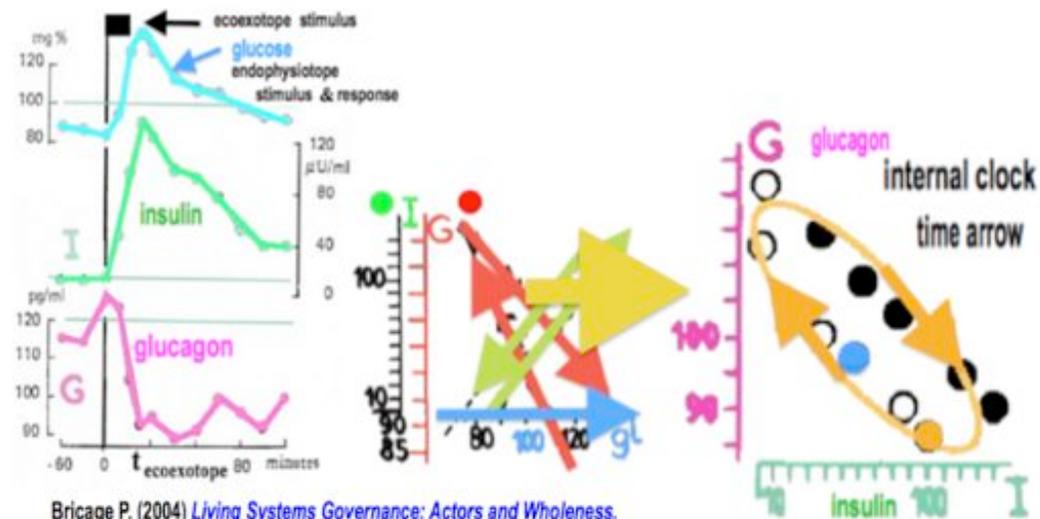
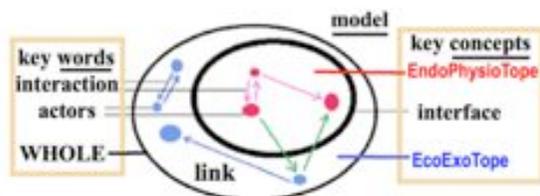
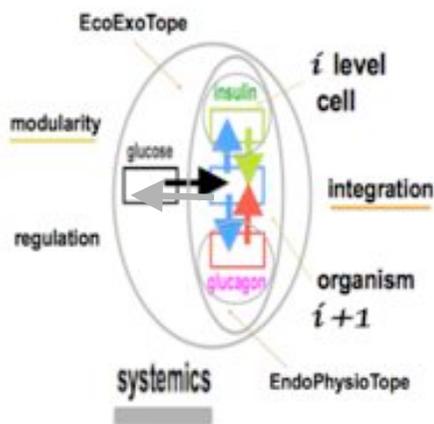
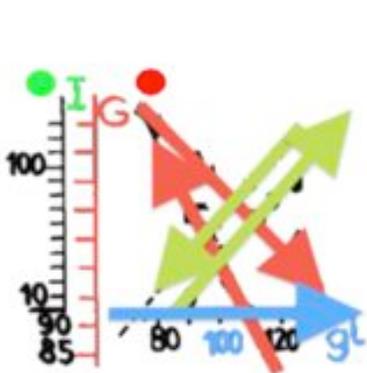
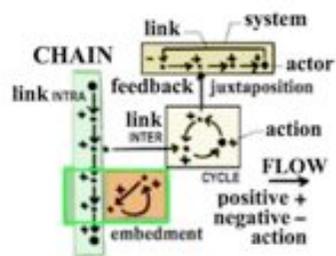
pierre.bricage@univ-pau.fr [Chronobiology and Lithotherapy](#) <http://www.armsada.eu/ARMSADAsystemics.html>



Simultaneous variations in man glycaemia (mg%), insulinaemia I (μU/ml) & glucagonaemia G (pg/ml), external time of the ecoexotope in minutes. (R. Unger, New England J. Med., 1970, n° 282, p. 109.)



Simultaneous variations in man glycaemia (mg%), insulinaemia I (μU/ml) & glucagonaemia G (pg/ml), external time of the ecoexotope in minutes. (R. Unger, New England J. Med., 1970, n° 282, p. 109.)



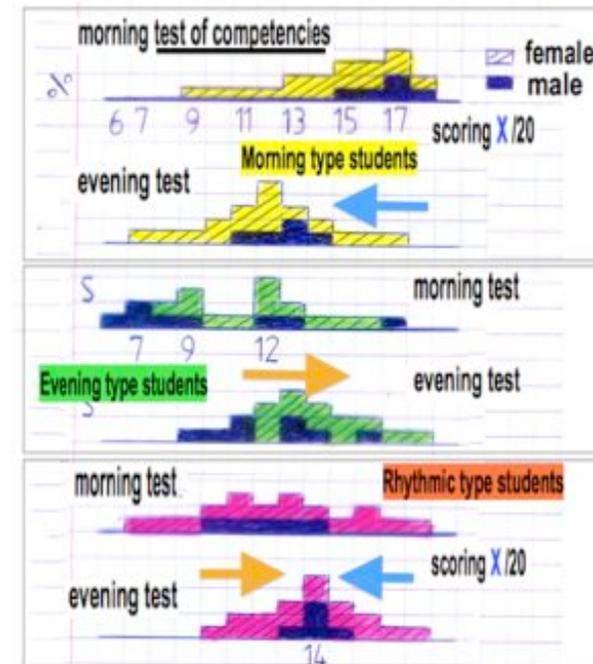
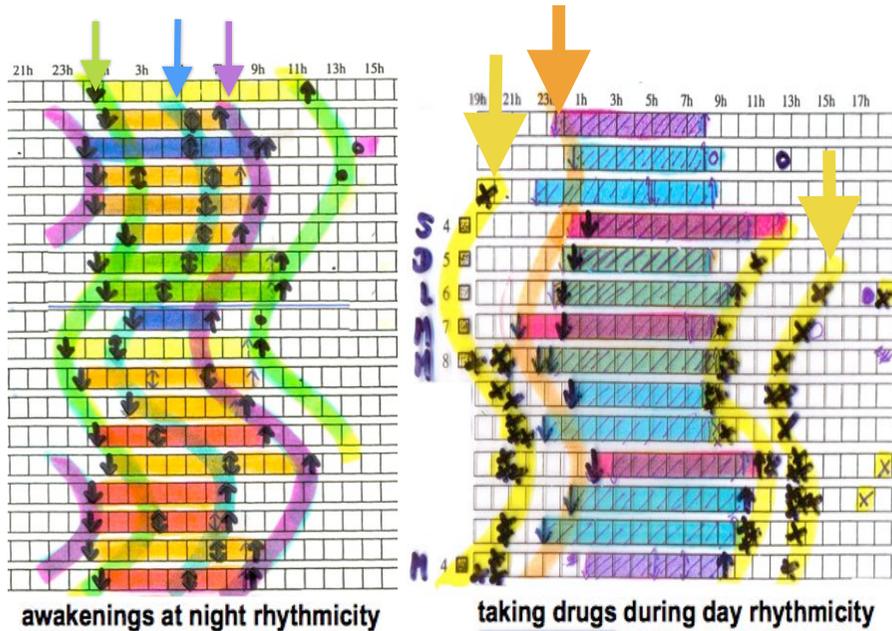
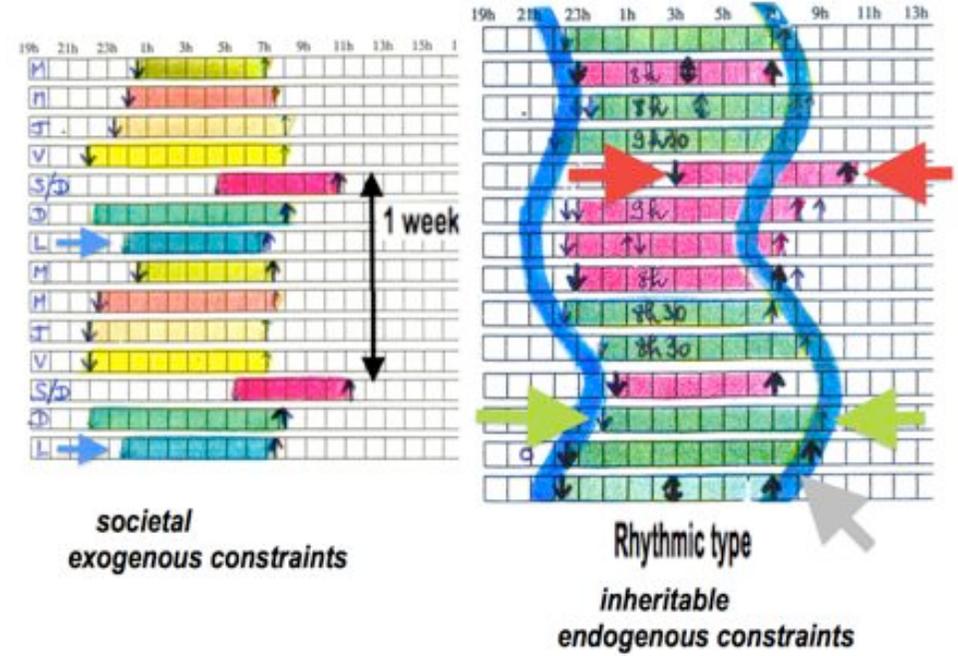
Bricage P. (2004) *Living Systems Governance: Actors and Wholeness*. Coll. Internat. AFSCET "gouvernance systémique", Andé, France, 26 p.

Bricage P. (2013) *Time Management by Living Systems*. Systems Research and Behavioral Science 30: 677-692.

Bricage P., *Massive OnLine Open Course Individual night sleep awakenings rhythms: chrono-types determination.* (2006)
<https://webcampus.univ-pau.fr>



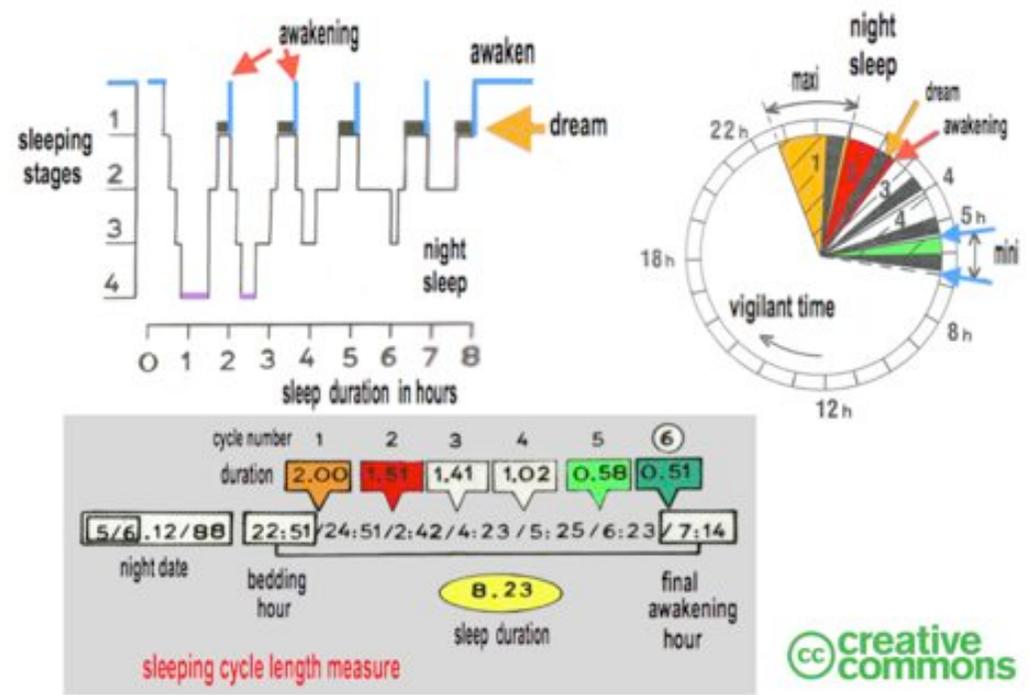
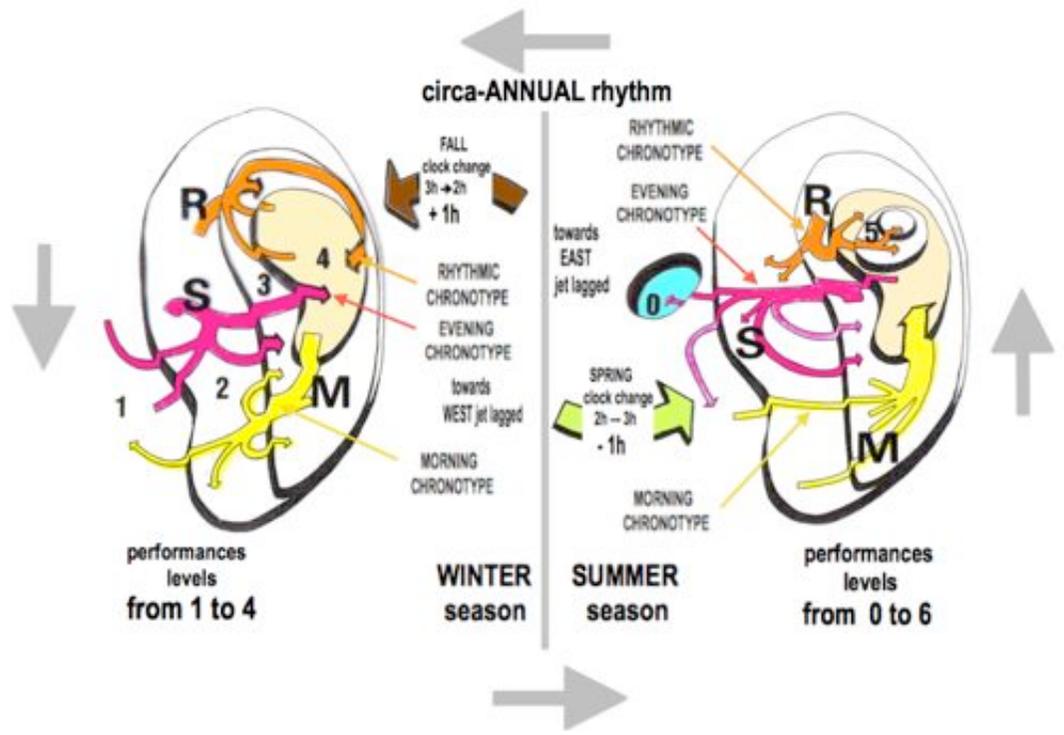
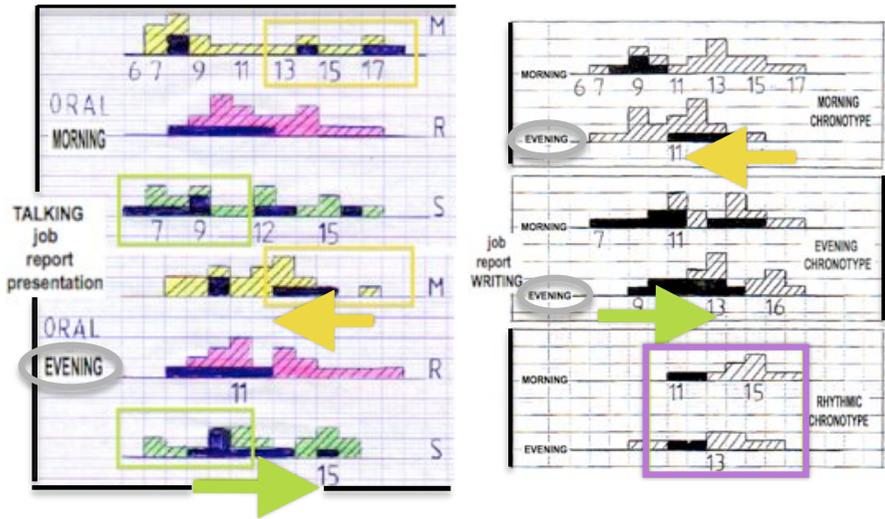
Evening type



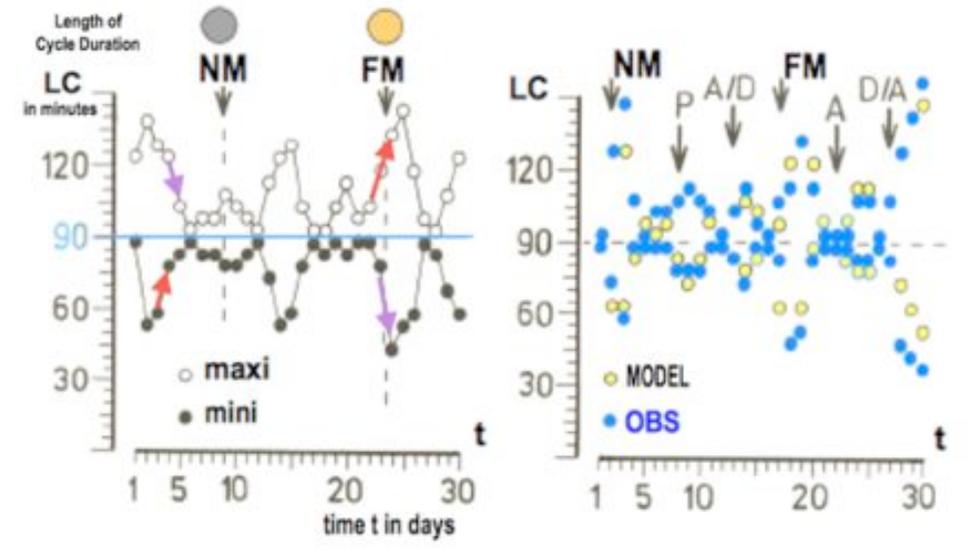
Bricage P. (1998) *For best performance know your sleep schedule.*
 "Physical Activities in Extreme Environments"
 Inter-Armies Sports Institute,
 Paris-Fontainebleau, France, 2 p.

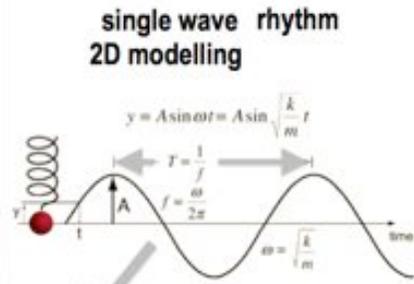
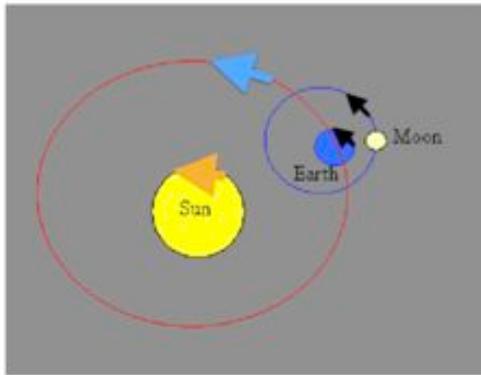
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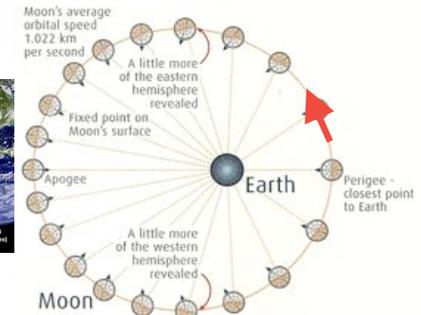
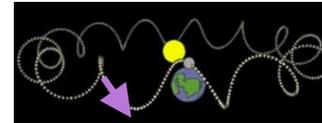
Brigage P. (1993) Lunar cycles responsible for periodic awakenings man night sleep entrainment. *Biological Rhythms: from cell to man*. Polytechnica (Paris, France), pp. 183-190.



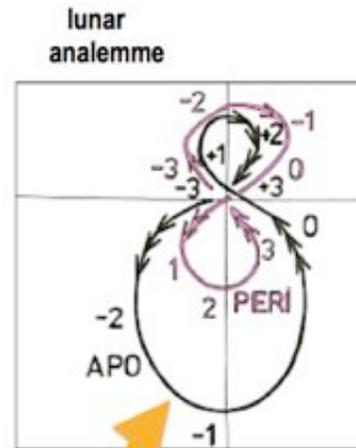
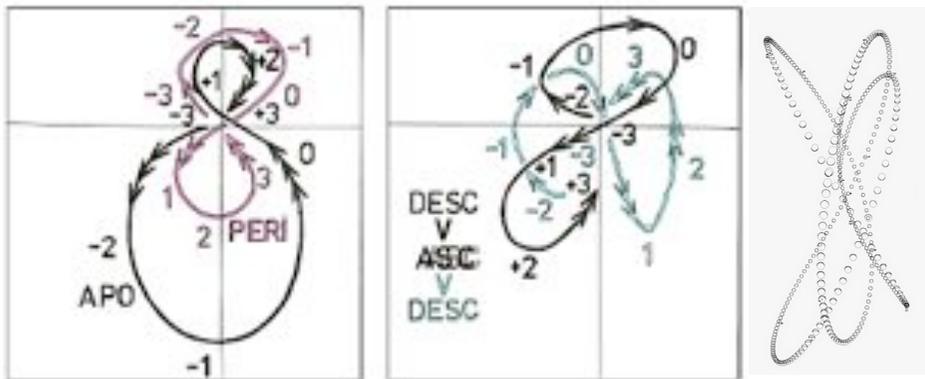


waxing and waning moon
29 days, 12 hours, 44 minutes
29.53059 days (synodic month)

ascending and descending moon
27 days, 7 hours, 43 minutes
27.32166 days (sidereal month)

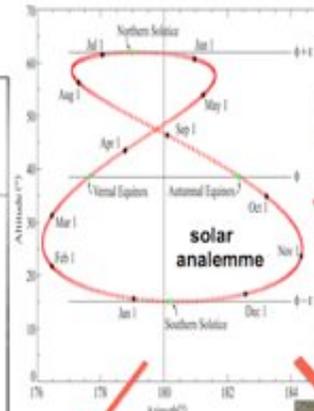


apogee and perigee cycling moon
27.55455 days (anomalistic month)

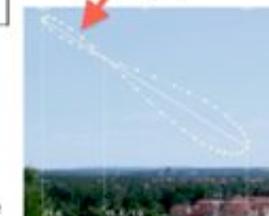
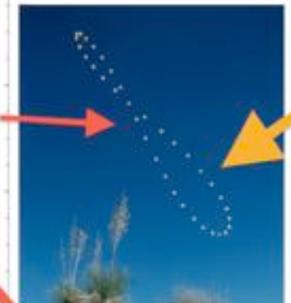


ecological and physiological interactions

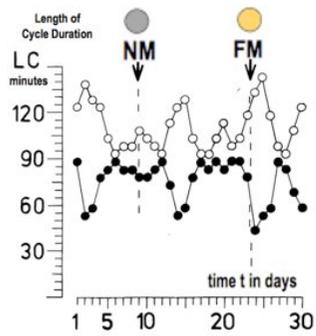
solar analemme



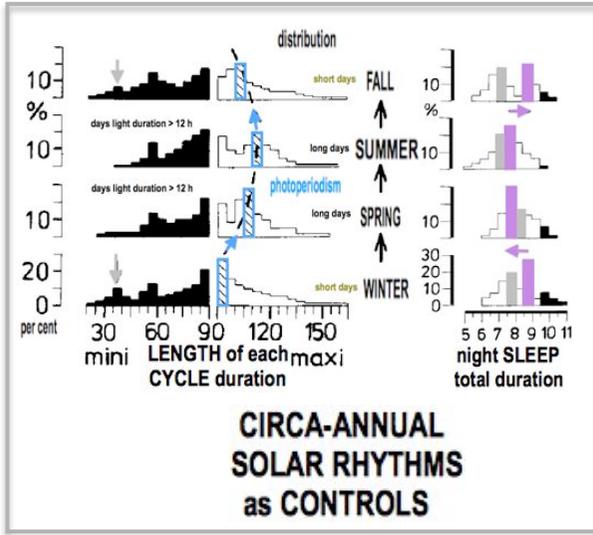
lunar analemme



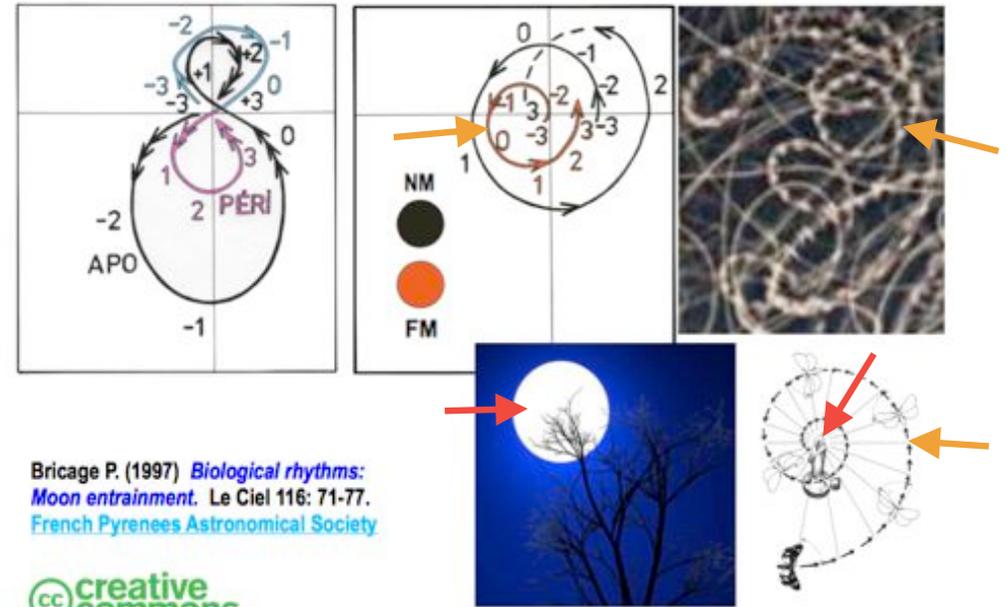
some stars and the analemma solar observatory at King Armand's acre



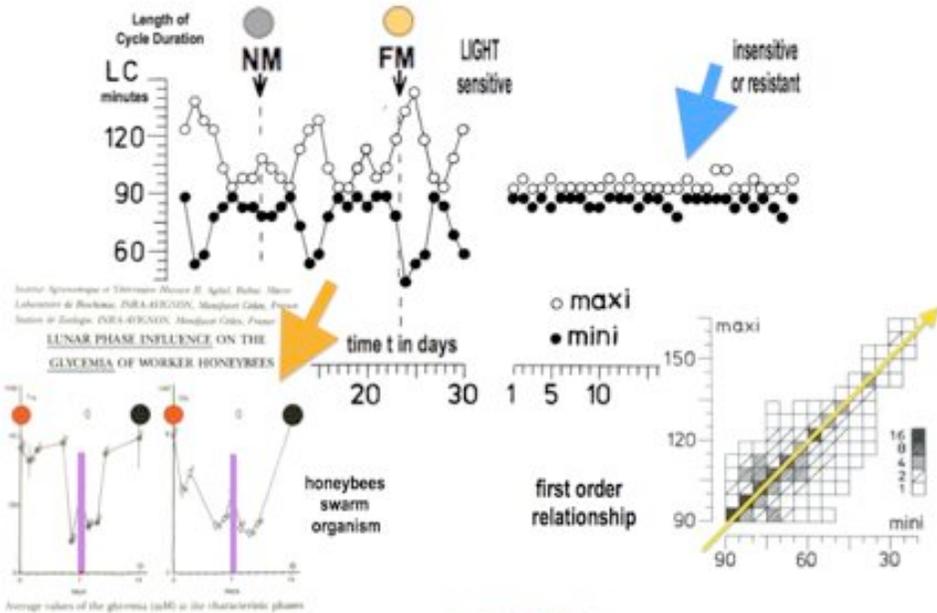
CIRCA-MONTHLY LUNAR RHYTHM



CIRCA-ANNUAL SOLAR RHYTHMS as CONTROLS

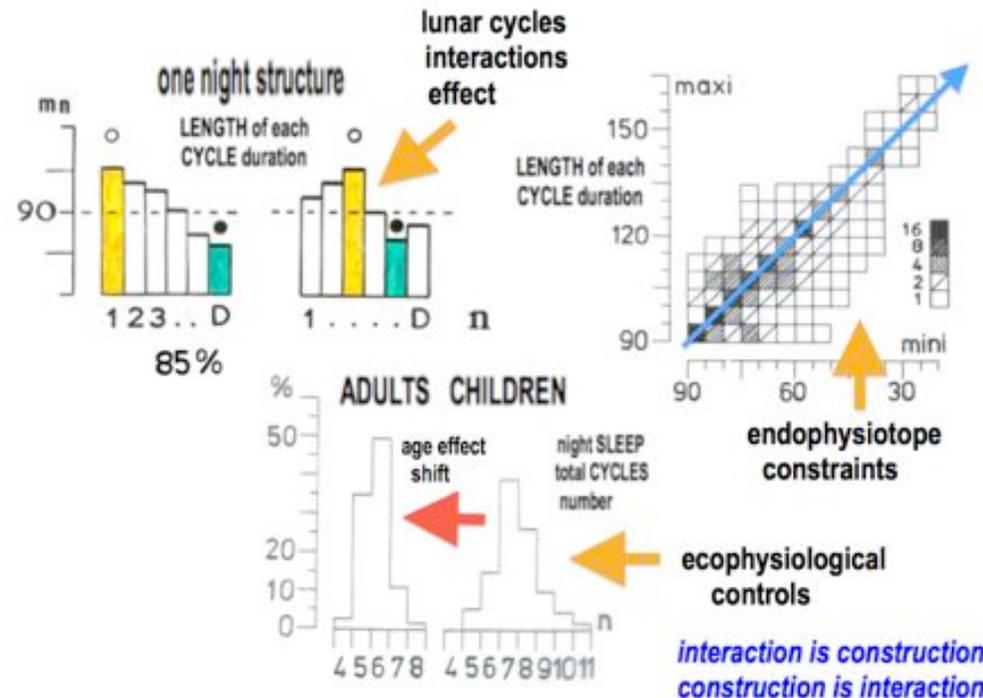


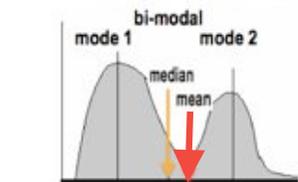
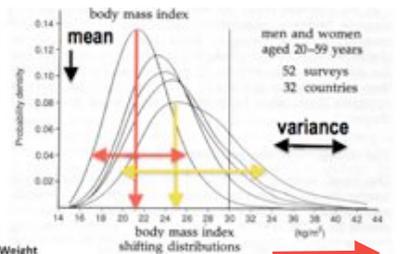
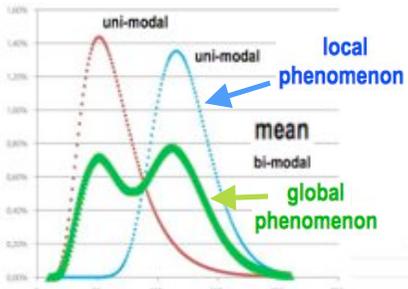
CC creative commons



average values of the glycemia (mM) in the characteristic phases

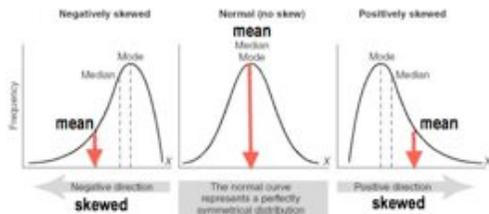
CC creative commons



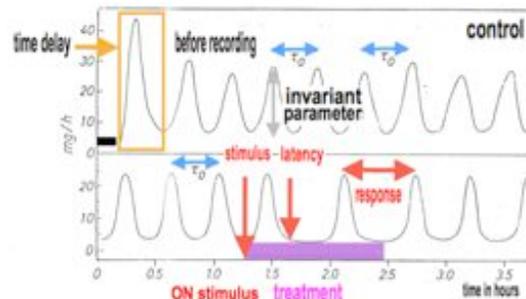


mean is meaningless!

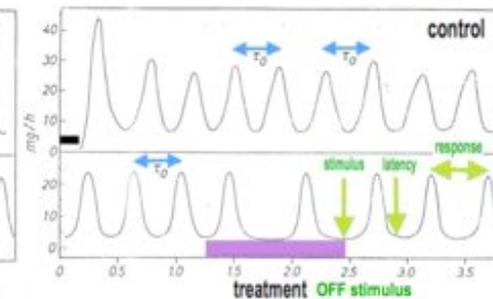
phenotype diversity



physiological reality is skewing



Effect of lithium on stomatal transpiration of the Avena shoot

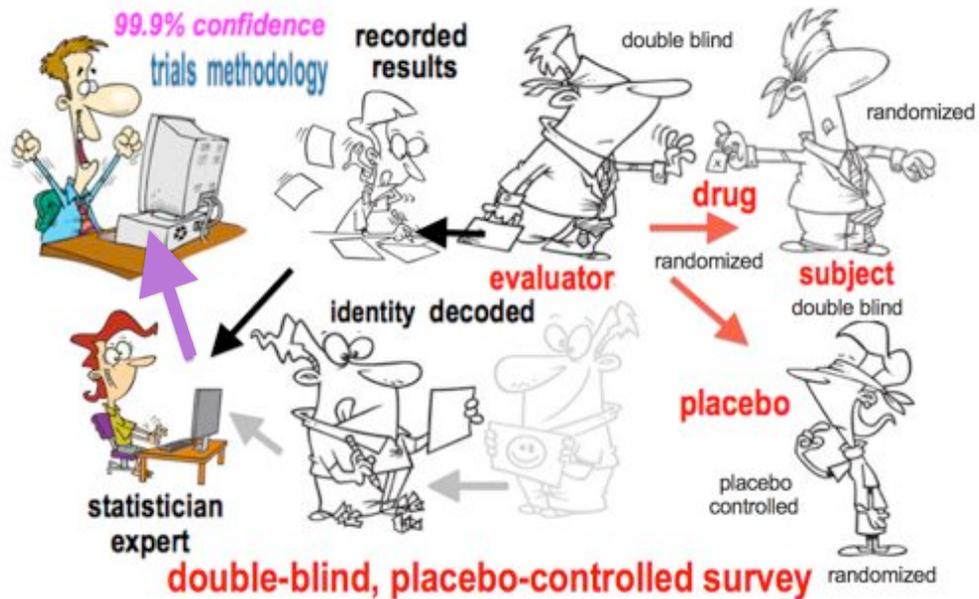


Effect of lithium on stomatal transpiration of the Avena shoot

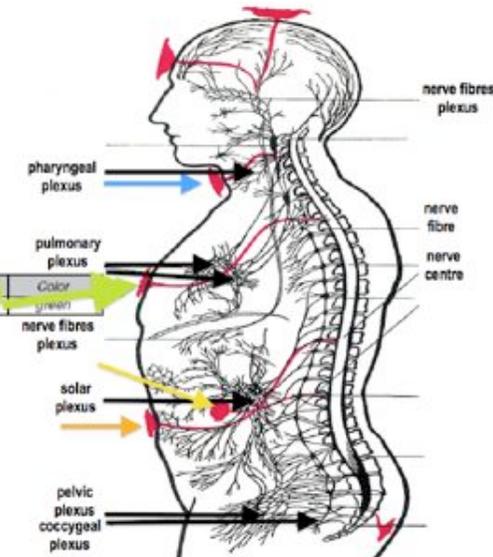
Bricage P. (2005) *Res. Systemica* 5: pp. 1- 11.
Modelling time modularity of living systems.
 European Systems Science World Congress,
 UES-EUS, Paris, France,

time control network of clocks

ON stimulus
 OFF stimulus



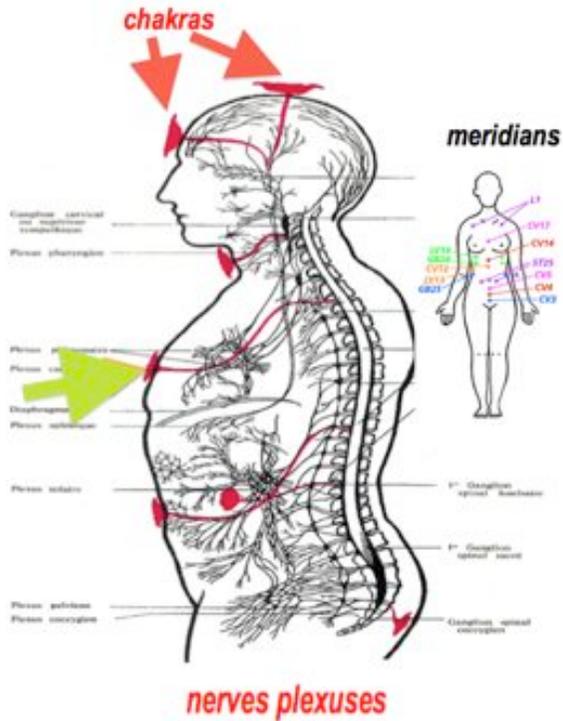
Systemic Solutions for Systemic Problems - IASCYS - University of Sichuan at Chengdu, P.R. China, top 10 University



reflexology



nerves meridians stimulation



The **Pi** or **Bi disk, a flattened torus** (pronounced 'bee', pinyin: **bi**),

璧



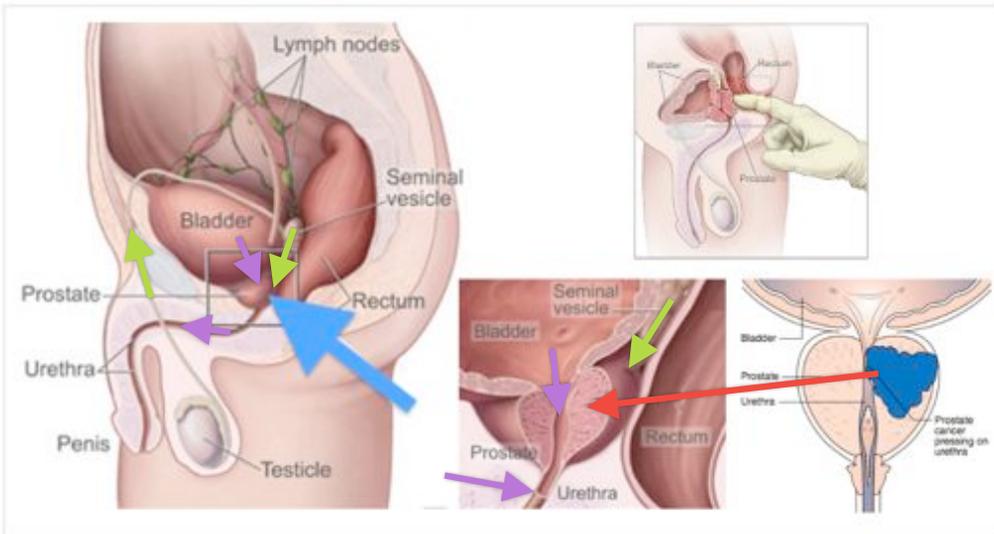
specimen carved from nephrite

body (shī) 尸
hole (kǒu) 口
hard (xīn) 辛 to cut
jade (yù) 玉 (the King's stone)

a flat perforated disk with a circular hole in the centre (a flat donut), is one of the earliest symbolic carvings (Liangzhu culture 3400-2250 BC). The ancient Chinese believed the heart contained the person's intellect. Therefore the heart became the symbol for the "perforated disc".

The object was handled by shamans, the religious leaders of Liangzhu society and the transmitters of cosmological knowledge.

The disks were placed on or near the head of the deceased person and sometimes near the stomach and chest in neolithic burials.

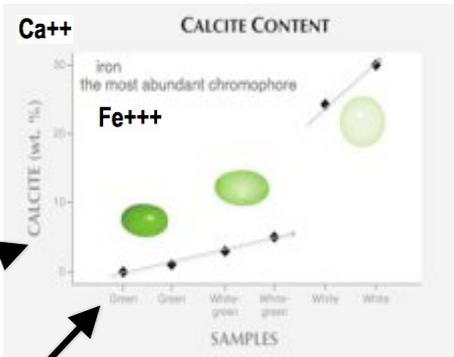


NEPHRITE $Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$	JADEITE more than 50% of sodium and aluminium	green caused by chromium	yellow jade
Canadian jade dark-green stone amphibole group	Chinese jade white jadeite pyroxene group	green JADEITE Cr, Ni, Mn traces	JADEITE SERPENTINITE serpentine group
denser and tougher than nephrite			

Yellow jade is the most affordable

The term *jade* encompasses two tough, compact, fine-grained materials: jadeite and nephrite. The definition of these two materials is difficult, at best.

Strictly speaking, jadeite is a distinct monoclinic mineral belonging to the pyroxene group and having an ideal chemical composition of $\text{NaAl}(\text{SiO}_3)_2$. However, jadeite may be an intimate intergrowth of jadeite with at least one of two closely related pyroxenes: aegirite ($\text{NaFe}_3\text{Si}_3\text{O}_{10}$) or diopside ($\text{CaMgSi}_2\text{O}_6$). The three minerals can form a continuous isomorphous substitution series. The variations in the properties of jadeite are therefore dependent on the proportions of each pyroxene present.



NEPHRITE
Hetian from Xinjiang

Jadeite. In Chinese, Jadeite is called "Fei Cui". And this name is come from a bird's name. This bird has a very colorful and beauty feathers. The male bird has red feathers, and it called as "Fei" bird. The female bird has green feathers, and it called as "Cui". In combination, they called "Fei Cui". There has wide range of variations in color of Jadeite. The color is mostly found in white, green, red, purple, blue, yellow, black and pink.

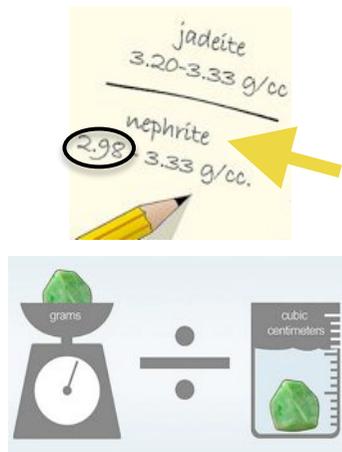
香港玉器商會
HONG KONG JADE ASSOCIATION

Mohs Scale of Hardness

1. Can be scratched easily with a fingernail
Sulphur: 1-1½
2. Can be scratched with a fingernail
Amber: 2-3
Ivory: 2-4
3. Can be scratched with a coin
Pearl: 3-4
Malachite: 3½-4
4. Can be scratched easily with a knife; cannot scratch glass
Rhodochrosite: 4
5. Can be scratched with a knife; can just scratch glass
Lapis lazuli: 5-6
Turquoise: 5-6
Opal: 5½-6½
6. Can be scratched with a steel file; easily scratches window/bottle glass
Moonstone: 6-6½
Tanzanite: 6½-7
Peridot: 6½-7
Zircon: 6½-7½
7. Easily scratches metal, glass and softer stones
Quartz, citrine and amethyst: 7
Tourmaline: 7-7½
Garnet: 7-7½
Emerald: 7½-8
8. Scratches quartz and softer stones
Topaz: 8
Alexandrite: 8½
9. Scratches topaz and softer stones
Ruby: 9
Sapphire: 9
10. Scratches ruby
Diamond: 10



Divide the weight of the substance by the volume.



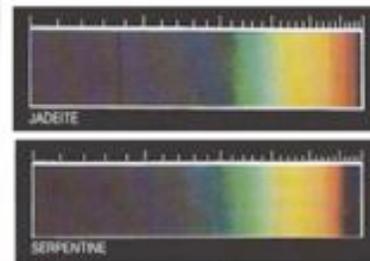
density

From "piedra de ijada" stone of the flank, as it was thought to cure kidney pains.

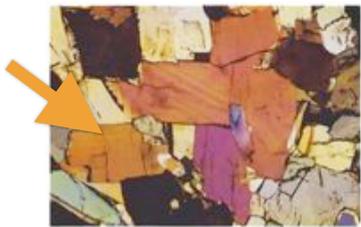


Myanmar jadeite

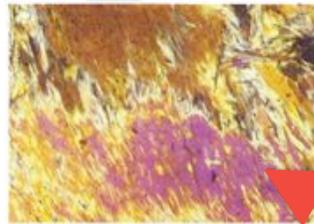
absorption patterns



have been marketed as jade, especially nephrite and serpentinite. Gemmologists restrict the name to just jadeite and nephrite.



A thin section of jadeite shows many interlocking granular crystals.



A thin section of nephrite shows interwoven, fibrous crystals.

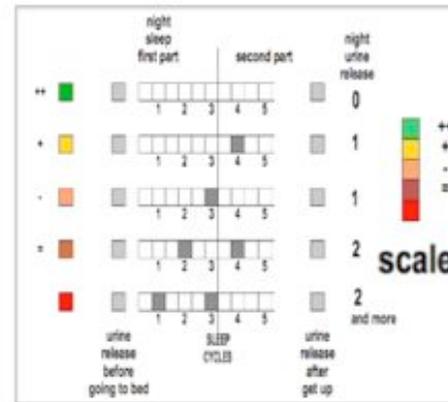
Magnified 100x.

JADEITE



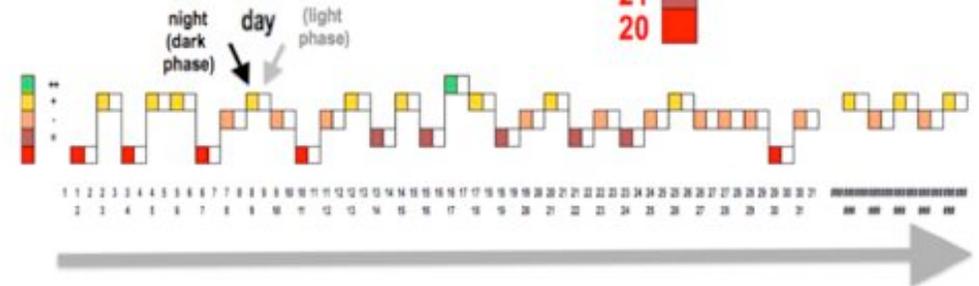
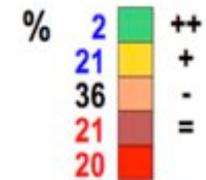
NEPHRITE

X-ray diffraction pattern top, jadeite; bottom, nephrite

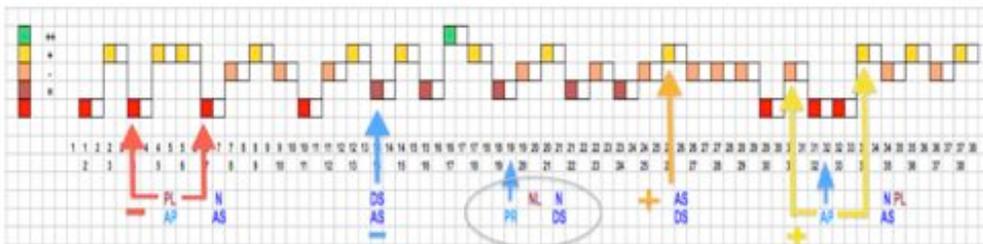
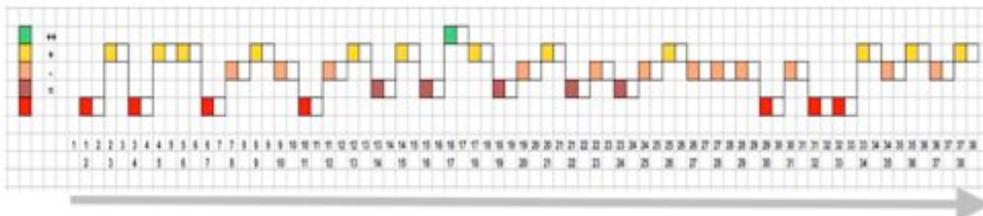


control: no stone, no placebo

longitudinal record: day from day, each day
1 person (65 years old male)
duration: 1 +3 lunar cycles (120 days)



**control (no stone) longitudinal record
lunar phases effects ?**



day from day, each day

interactions

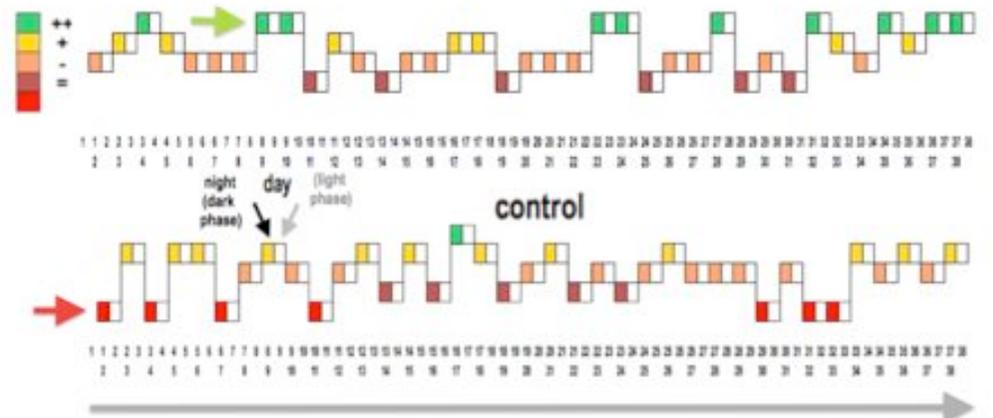
SERPENTINITE effect ?

1 piece



40 mm diameter

longitudinal record: day from day, each day
1 person (65 years old male)
duration: 1 +3 lunar cycles (120 days)

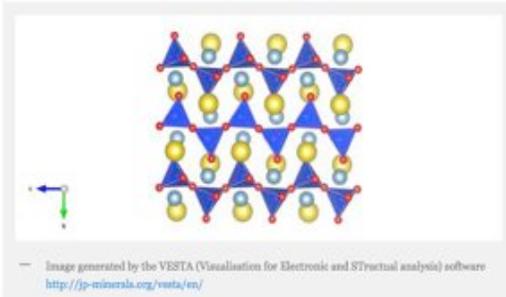


A greenstone – Jadeite

December 7, 2014

What does it look like?

Monoclinic
Crystal System

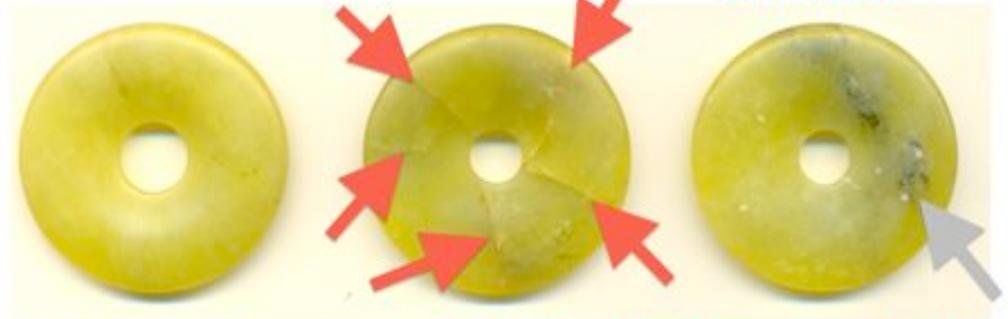


What is it?

Jadeite is from a family of silicate minerals, called pyroxenes, which are distinctive for their single chains of silicate tetrahedra (the blue shapes with red oxygens in the corners). This particular mineral has sodium (gold) and aluminium atoms (light blue) between the layers. Pyroxene minerals are an important part of the Earth's crust and mantle, and are found in many igneous and metamorphic rocks.

SERPENTINITE

striated

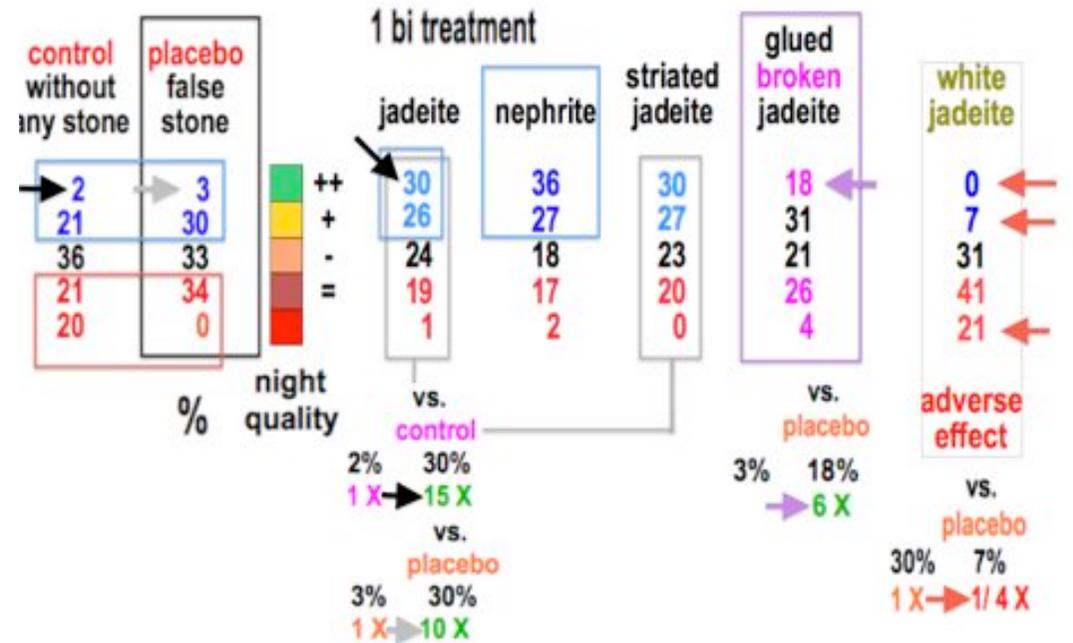


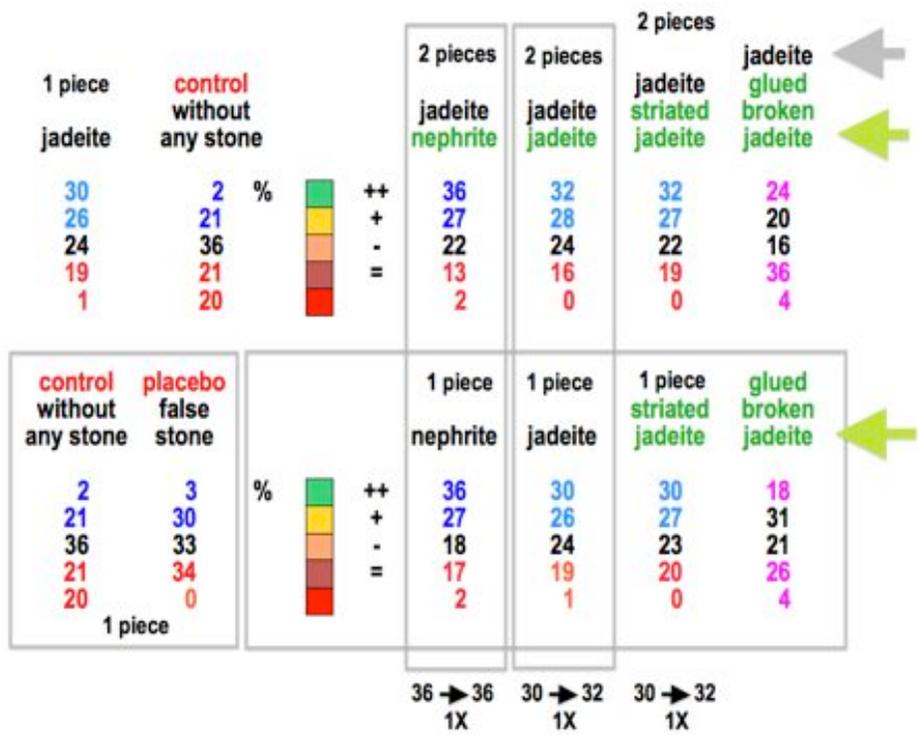
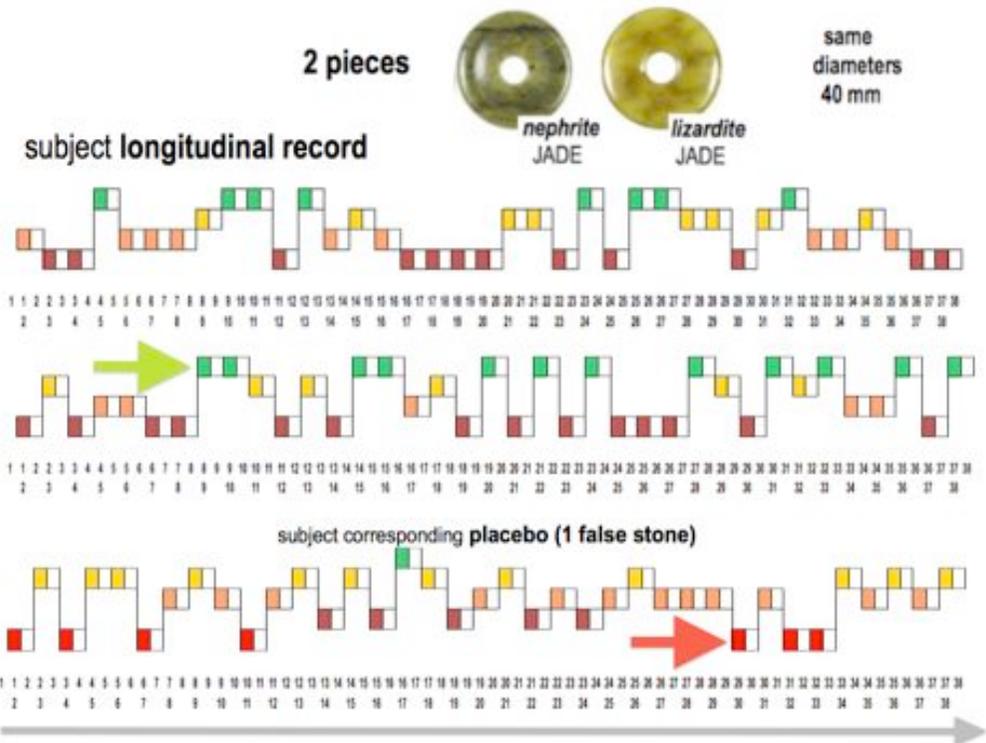
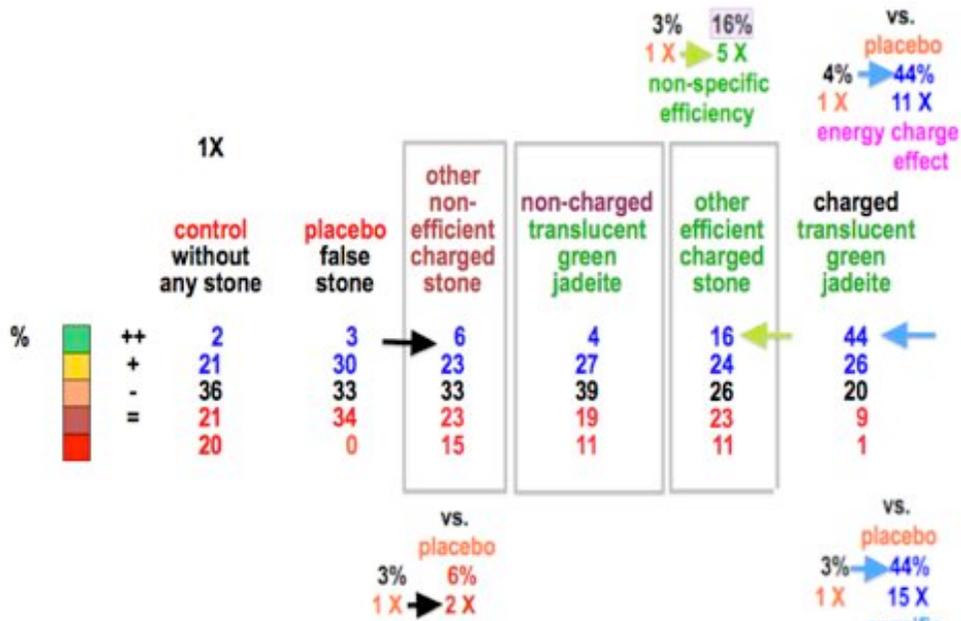
serpentine
group

glued
broken

broken
crystal
lattice

trace
elements





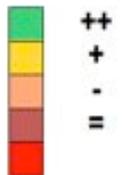
30 mm diameter 40 mm
1,00 X surface 1,78 X 50 mm 2,78 X

control
without
any stone

placebo
false
stone

2	3	%
21	30	
36	33	
21	34	
20	0	

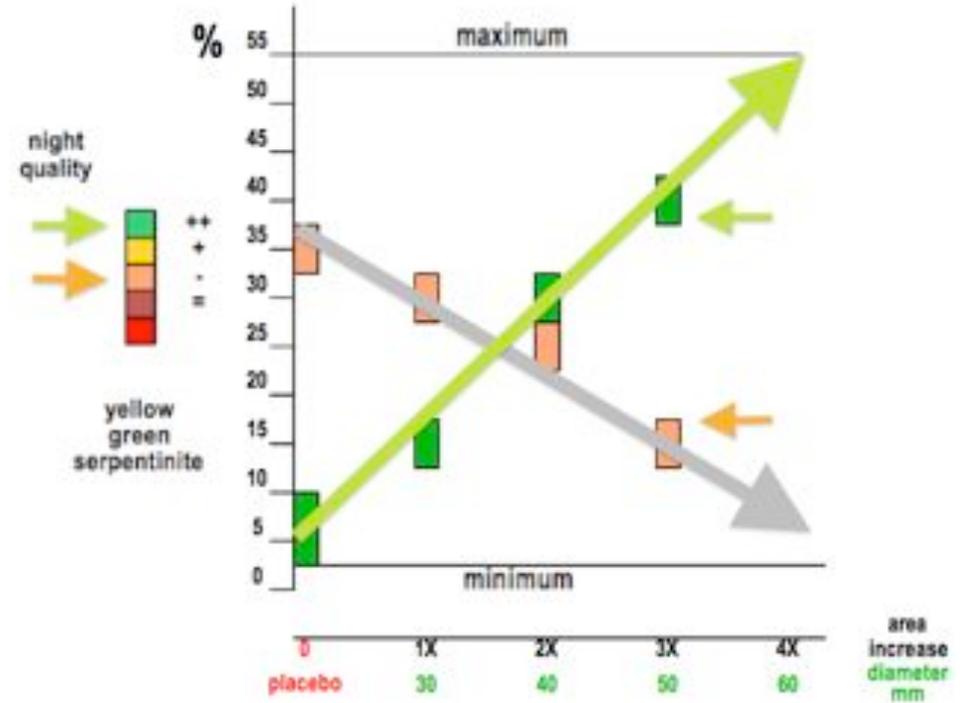
diameter
mm →



sleep
quality
scale

diameter mm	30	40	50	60
++	16	30		
+	35	26		
-	31	24		
=	18	19		
	0	1		

1 piece
serpentinite



1 piece

dark green nephrite	jadeite
36	30
27	26
18	24
17	19
2	1

control
without
any stone

2	%
21	
36	
21	
20	

2 pieces
CONTROL
jadeite nephrite

36	++
27	+
22	-
13	=
2	

2 pieces
serpentine hematite

44	++
36	+
17	-
3	=
0	

1 piece
CONTROL
translucent green jadeite

44	++
26	+
20	-
9	=
1	

1 piece
CONTROL
yellow green veined serpentine

34	++
29	+
25	-
13	=
0	

in sequence composed treatment

3 → 36 (12X)

3 → 7 (2X)

3 → 44 (15X)

hematite effect CONTROL

black hematite

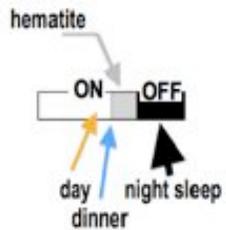
serpentine group: serpentinite, lizardite

day dinner

night sleep

subjects

gender	age				
man	67	65	36		
woman	82	67	65	59	26



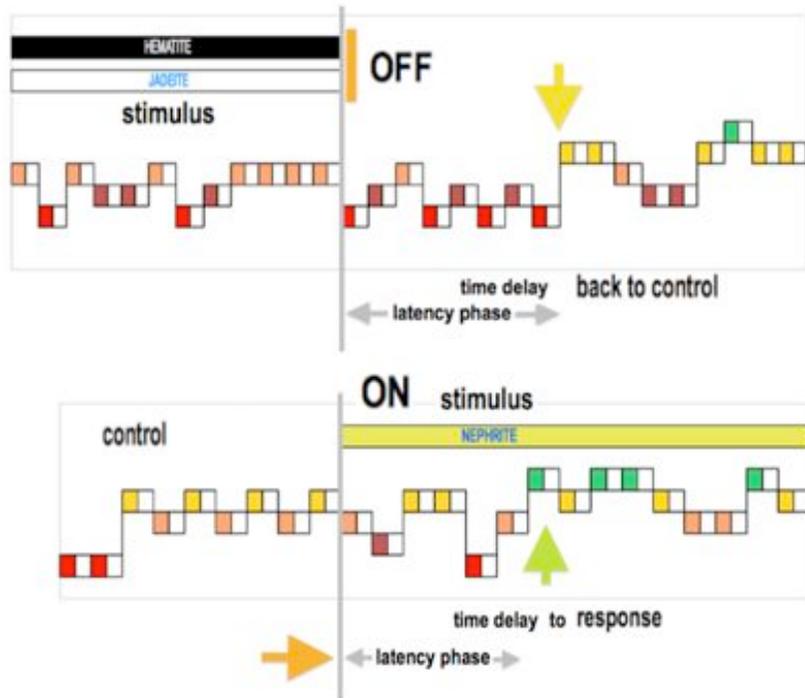
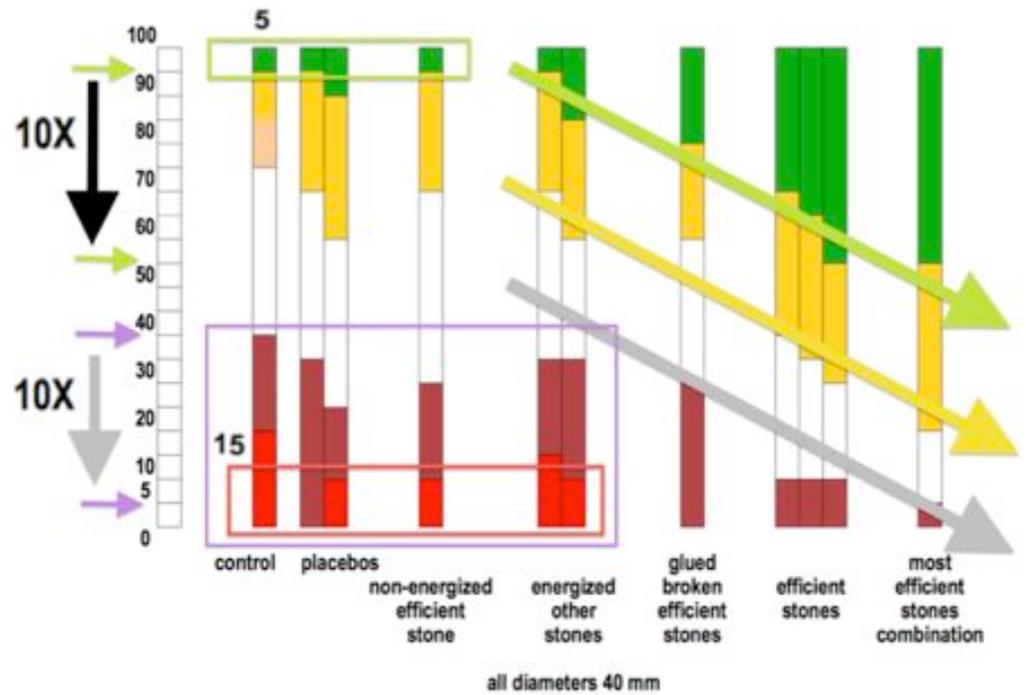
hematite effect CONTROL

old man 1X black hematite	old woman 1X black hematite	young man 1X black hematite	young woman 1X black hematite
7	11	8	8
27	24	24	24
35	30	40	40
21	24	20	20
10	11	8	8

sleep quality sleep quality

sleep quality scale

++
+
-
=



control without any stone	placebo false stone	%	mean placebo effect	non-charged translucent green jadeite	most important placebo effect	yellow green serpentinite	serpentinite hematite
2	3		4	4	7	31	44
21	30		26	27	30	30	36
36	33		35	39	35	29	17
21	34		20	19	18	10	3
20	0		15	11	10	0	0

7 → 31
4X

2 → 31
15X

3 → 31
10X

3 → 44
15X

hematite easy to find

serpentine group: most affordable



Goat-headed basket carved from red jasper. Russian, late 19th century



Goldstone PI Necklace



jasper

an opaque reddish-brown variety of chalcedony, originally denoting any bright-coloured chalcedony other than carnelian

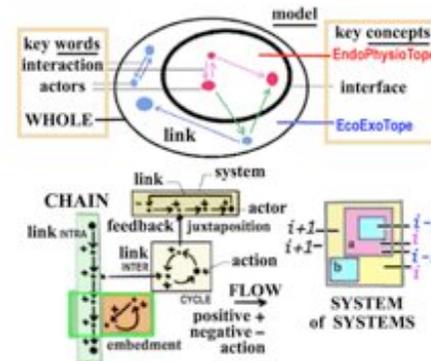
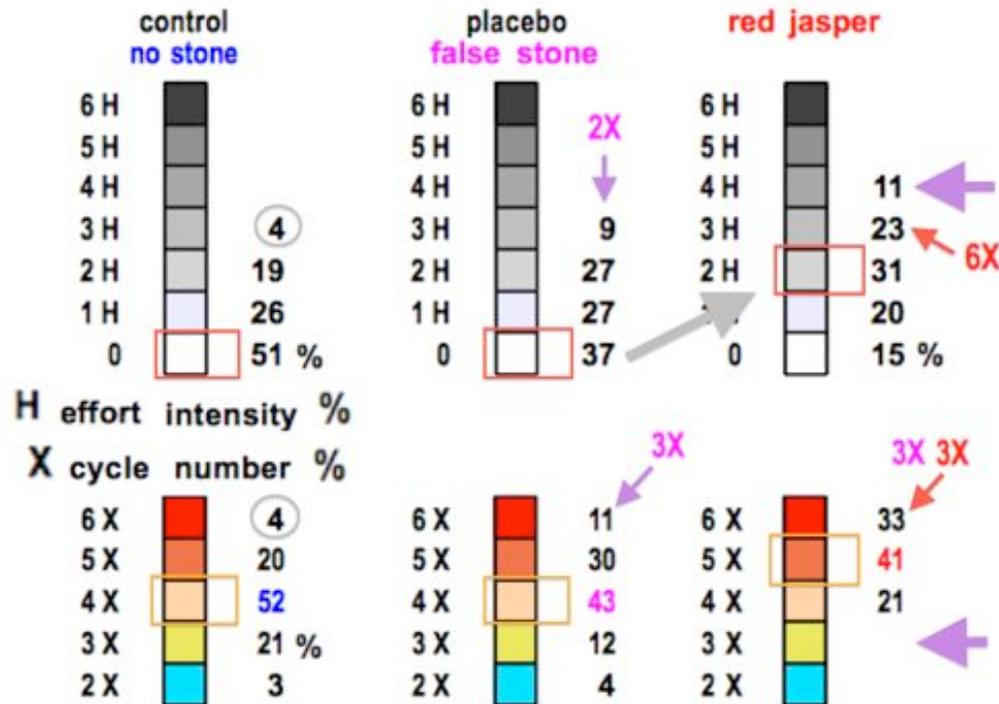
(a kind of hard fine porcelain invented by Josiah Wedgwood and used for Wedgwood cameos and other delicate work)

from Old French *jasp(r)e*, from Latin *iaspis*, from Greek, of Asian origin.

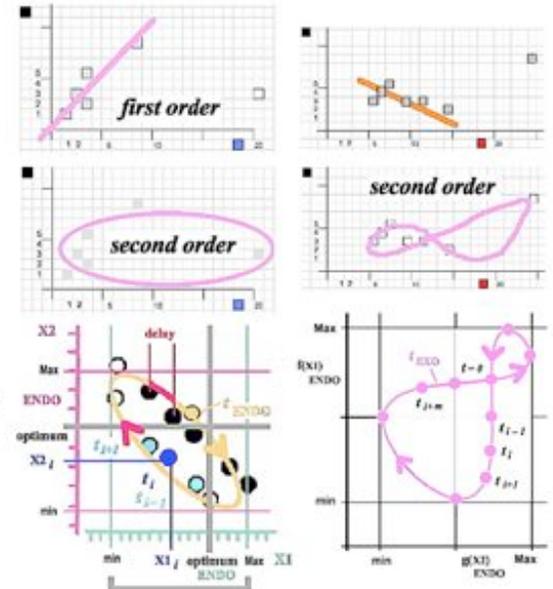
Jasper, an aggregate of micro-quartz and/or chalcedony and other mineral phases, is an opaque, impure variety of silica, usually red, yellow, brown or green in colour; and rarely blue. The common red colour is due to iron (III) inclusions. The mineral aggregate breaks with a smooth surface and is used for ornamentation or as a gemstone. It can be highly polished and is used for vases, seals, and snuff boxes. The specific gravity of jasper is typically 2.5 to 2.9. Along with heliotrope (bloodstone), jasper (green with red spots) is one of the traditional birthstones for March. Jaspilite is a banded iron formation rock that often has distinctive bands of jasper.

carnelian (also cornelian)

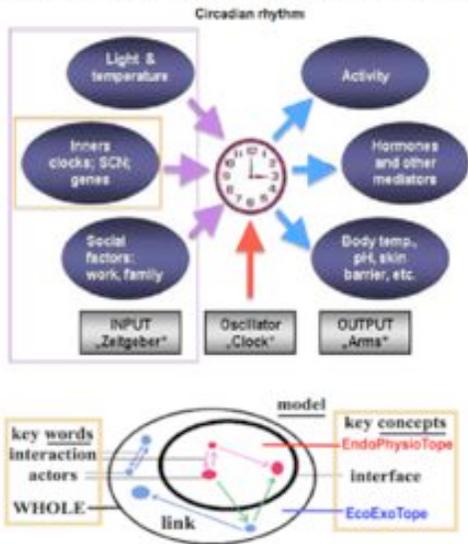
a semiprecious stone, an orange or orange-red variety of chalcedony from Old French *corneline*; car- from Latin *caro*, *carn-* 'flesh.'



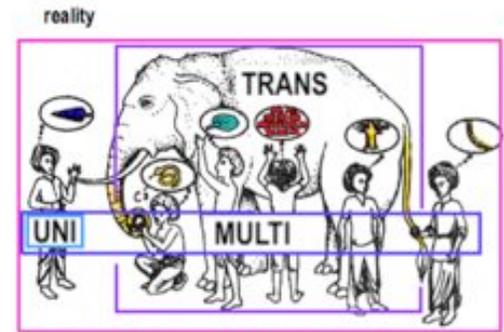
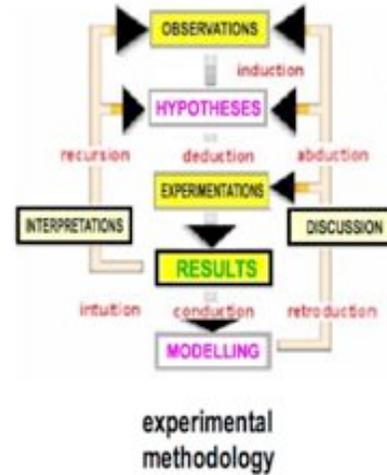
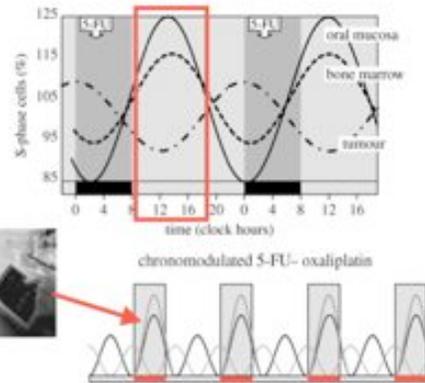
The WHOLE is more and less than the product of its PARTS.
The simplest graphic 2D representations are always conics or assembly of conics.
The usual space trajectory of a mobile in a field of gravity, is a conic.
The same for the time trajectory of a living system.
In its field of space-time-action it is a conic.
Circle $X1^2 + X2^2 = K$
Hyperbola $X1 \times X2 = K$ the WHOLE is the product of the parts
(welcome capacity) x (capacity to be welcomed) = K,
 $X1^2 - X2^2 = (X1 + X2)(X1 - X2) = K$
the WHOLE is the product of the sum and the difference of the parts
Ellipse $X^2 + Y^2 + 2XY = K = (X+Y)(X+Y)$
the WHOLE is the square product of the sum of the parts.



Input and output mechanisms of the biological clock
 adapted from <http://www.eurosvia.org/Archive/Nica/3speakerAbstracts/Lemmer.htm>



CANCER CHRONO-THERAPY



TEACHING SYSTEMS & CYBERNETIC SCIENCES



trans-disciplinary
 holistic
 method of thinking

Cybernetics : " The study of circular causal, and feedback mechanisms"
 (Macy conferences)



Ranulph GLANVILLE

First order Cybernetics :
 " The study of observed systems" (von Foerster)
Second order Cybernetics :
 "The study of observing systems" (von Foerster)

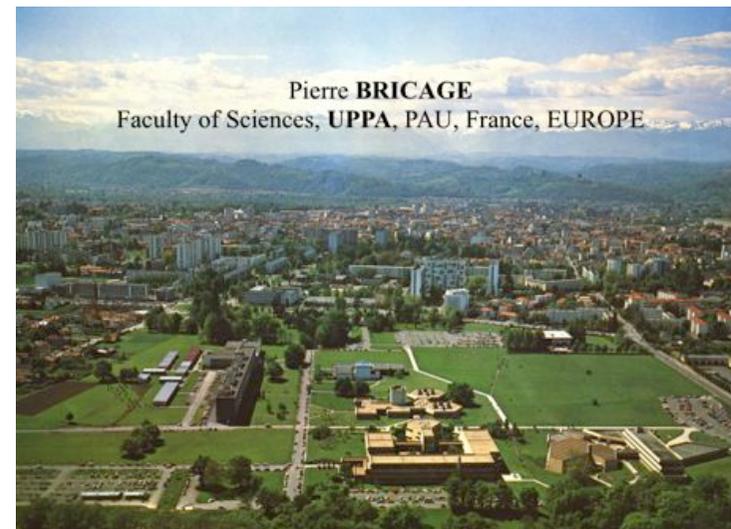
ASC President died on December 20th 2014
 IASCYS Vice-President, founding member



Second Order Cybernetics

<http://www.facstaff.bucknell.edu/jvt002/brainmind/Readings/SecondOrderCybernetics.pdf>

Systemic Solutions for Systemic Problems - IASCYS - University of Sichuan at Chengdu, P.R. China, top 10 University



Pierre BRICAGE
 Faculty of Sciences, UPPA, PAU, France, EUROPE

