

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

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### **Abstract**

Man-made chemicals accumulate in Earth soils and waters: local systematic use of drugs creates systemic problems for our species survival. Our “Take-Make-Waste“ society is not sustainable. Systemic solutions must arise at local and global levels. HOW chronobiology, for a better healthcare, and lithotherapy, for a better welfare, could be useful systemic solutions for prevention of such systemic problems?

The temporal organisation of living systems is evidenced as an innate and inheritable specific network of clocks that cannot be changed. But knowing these endogenous clocks functioning allows to understand WHEN and WHY therapeutic strategies are efficient or not. Sleep agenda recording and individual vigil chronotypes determination and their respect is the best way to avoid scholars' failure. Performance changes are depending on chronotypes and societal time changes. Results of students' competency tests (reports, talks, experimentations) are significantly increased (from 20% to 50%) when done AT THE RIGHT TIME. Man is an Earth clock shaped species. The minimal and maximal durations of all sleep cycles of a night obey a relationship that results from interactions between endogenous clocks and exogenous ones. All Earth living systems share a common ecoexotope of survival that is temporally structured by **solar, lunar and terrestrial rhythms**. These rhythms are synchronisers for our endophysiotope clocks. But some people are more sensitive to them than others and someones are resistant. Man night sleep changes depend on lunar cycles entrainment. Our Earth-hosted organism is physiologically structured with Earth as a fixed point and the analysis of sleep records points to **circa-annual solar rhythms** that can be considered as controls for the evidence of **circa-monthly lunar rhythms**.

WHAT methodology to evidence temporal organisations of living systems and their physiological responses? Only individual longitudinal measurements must be used. Into controlled network of clocks, different frequencies are running depending on responses to endogenous or exogenous changes. Not only “on“ stimuli but also “off“ ones have effects. For 1 clock, its latency phase duration is always equal to at least 1 period of the rhythm. HOW long is the latency of a network of clocks?

WHAT methodology to evidence lithotherapeutic effects? Stimuli responses must be tested according to a double-blind placebo-controlled survey. WHAT mineral to use FOR WHAT to do? It is a *a priori* complex study! WHAT scaling to use?, FOR WHAT treatment?, WHAT mineral to chose and WHY?, HOW and WHEN to treat? The characterisation of jade or jasper varieties, for example, is a challenge. The first difficulty is to identify commercial affordable sources of jade, nephrite and serpentine, for testing for treatment of night urination difficulties.

## Systemic Solutions for Systemic problems

IASCYS World Conference on Complexity in Chengdu (P.R. China), 22-26 October 2015

Each control, placebo or treatment record is lasting at least 120 days. Compared with control, jadeite or nephrite enhances night quality with a decrease of at least 15 fold of awakenings and urinations. Depending on the jade variety, and its trace elements, properties change. Nephrite suits better with a 20 fold enhancement. The highest of all placebo effects was below a 4 fold increase. The mineral crystal structure is evidenced to have an action. The area of contact of a stone with the skin is the limiting factor of an energy transfer. The day phase of our life is structured in cycles as the night phase is. Placebo effects are greater during the conscious day phase than during the unconscious night one, but red jasper treatment enhances significantly the number and the intensity of diurnal physical working. **Minerals act in a dose-dependent manner as drugs do.** Using hematite before serpentinite (jadeite or nephrite), enhances the effect, as with chemical agonists, minerals may act in synergy. Hematite sole gives a placebo effect. But hematite increases serpentinite effect from a 15 fold value to a 22 fold one. Surprisingly, within an interactive network of clocks, the latency phase of the whole is shorter than the shortest latency phase of each clocks, thus enhancing the system reactivity to changes: **as a whole, a system is defined by some unanticipated emergent properties.**

Lithotherapy with affordable, easy to obtain, and not subject to imitation minerals is a *smooth way for an individualised, easy to use, non-violent, and non-invasive therapy* to treat chronic pathologies, *helping people in their today way of life*. Chronobiology is a way of thinking not only for knowing diseases causes and to elaborate treatments, but also for apprentice assisted learning: *the right interaction at the right place and the right time for the right person with the right person.* *New ways of research are emerging.*

**Key words:** chronotherapy, clocks, dose-dependent effect, double-blind placebo-controlled trials, ecoexotope, endophysiotope, latency, lithotherapy, rhythmicity, system of systems, unexpected emergence.

**slides DOI: 10.13140/RG.2.1.2750.4081** filename: pbChengdu2015-hal-slides4X.pdf

**text HAL Id: hal-01211365** <http://hal.archives-ouvertes.fr/hal-01211365> (05 October 2015)

*This work is devoted to Prof. Dr. Ranulph Glanville our late IASCYS Vice-President, and founding member of the International Academy for Systems and Cybernetic Sciences, who died, after a lot of pain, from a ravaging prostate cancer.*