Extended Abstract

Conceptual Framework for Information History Macropatterns

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Introduction

It is possible to identify the geohistorical era (cca 650 million years ago) of appearance and some characteristics of the first multicellular living beings which were capable to intelligently interact with their environment. The birth of neuropsychological information have connected to a newly evolved ability to modify activity patterns concerning to the forecasted changes of the relevant realms of the environment.

So, information behavior was possible with only the simultaneous existence of three insular, specialized modules (group of cells), strongly interconnected by the embrionary nervous system.

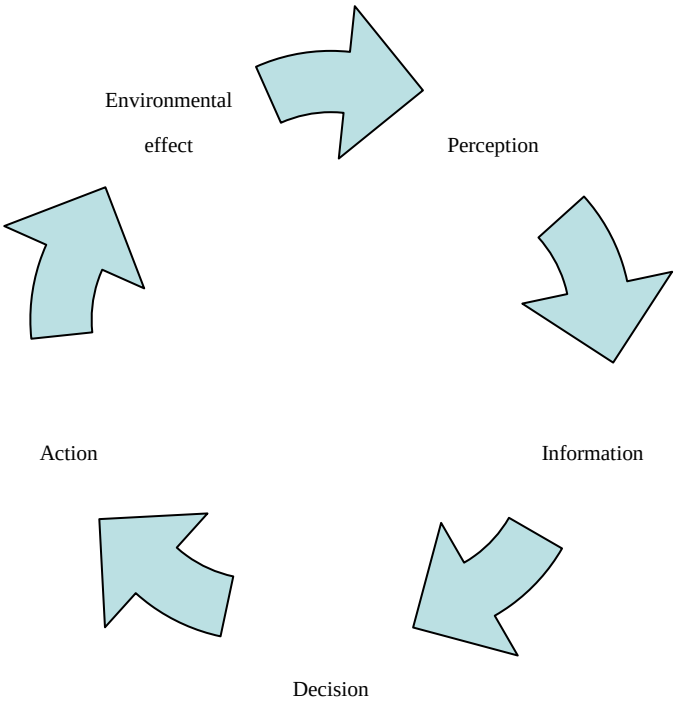
The first one is dedicated to *sensation/representation* performance, the second is responsible for the *semiosis* (constitution of meaning, processing, interpreting, signification, decision making) and the third one controls and directs every intentional *locomotion and body move* (feedbacking the sensory input).

Without these modules there is no information behavior, and without a coexistence of them there is no full information cycle and there is no Big History (1) of Information. Representation without decision/action or decision/action without sensory input are later developments, the same as the perception of effects from the inner world and the locomotion feedback (proprioception).

Elementary information cycle

To construct an elementary information cycle for the first ‘informationable’ beings it was enough to have a sense to perceive the difference between at least two relevant environmental occasions, having mental patterns, referring to these occasions, and an alternative set of motion types, acting upon the animal’s actual needs.

Figure 1. Elementary information cycle



The information cycle of more developed animals and animal communities, Pre-Hominids, the Homo Sapiens and our whole contemporary human civilization (with its overlapping information communities and sensational information technology ecosystems) are fundamentally similar to the original, early rudimentary forms, on individual and group level, too. Of course, there are quantitative and qualitative differences in sensory and memory capacity, complexity, the size of usable *information asset (stock*) and the variety and effectivity of possible (re)actions, but the architecture of information behavior is just the same.

It provides a unique opportunity to define common macropatterns ("laws") and common conceptual framework of (Big) Information History.

Nine Information History Macropattern

Highlighting the following "starter kit" of few, selected macropatterns and concepts would like to iniciate the future enlargement of these opening lists, providing vocabulary for high abstraction level theoretical research and very concrete historical reconstructions at the same time.

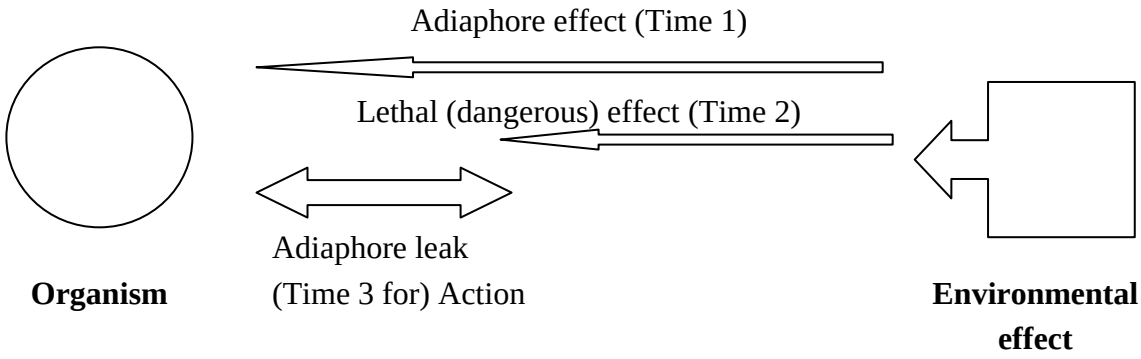
1. *Multidimensional growth of representation power* (sensory organ types, distance, speediness, size, color, resolution, sharpness, etc.). The result is better understanding and mapping of „surrounding reality" (world model), which allows more successful individual and group adaptation/behavior, broadening the channels of possible adiaphore effects, augmenting the anticipation power, maximizing the effectivity of preventive actions. The axes of continuously growing representability are: size (macro and micro level), distance and time-frame. The stages

of extending representation capacity are: sensory evolution, usage of (information) tools, development of (extrasomatic) information technology.

2. The emerging inter-organismic *information games* are about weakening the representation capacity, decision adequacy and action potential of the 'others' for gaining advantage (with colourful and diverse evolutionary technics, developed by preys and predators).

3. *Extension of adiaphore time leak* (the time between *perception* of an event with relevance on future conditions and the *action* made to avoid lethal/unpleasant consequences of this future state). This leak have increased from a nano/picoseconds domain to years, and additionally, in the terms of perceivable space, from nano/picometers to light years. Information was originally developed to maximize individual fitness with conquering the future. Culture – defined as a survival tool by Lotman (2) – makes the same on community level. The *adiaphore determination scheme* was developed by Lajos Kardos (3).

Figure 2. Adiaphoria: Widening Time Leak as Big Information History pattern



4. Since the Light is the most effective adiaphore effect, the history of *augmenting visual representation* became the dominant form of perception, starting with the evolution of eye, following the optical technologies (macro-and microscopes and others). Later, Light also became the most effective way of sign transmission.

5. Cooperation is per se about performing common action. Coordination as an exchange of meanings is a precondition for successful cooperation.

6. The *size of sign-interchanging communities* and the *interconnectivity rate* of individuals is raising to a power the number of possible *transformations*, boosts the *information flow*, creates space for *information innovation*, augmenting the *overall information asset and action capability of the community*. We can observe the same effect every time when individuals' *density* is growing locally (from hordes to the urbanization process).

7. There is a constant pressure on *information accumulation* (memory capacity, length of personal life, intergenerational transfer of meaning, culture, memory expanding technologies).

8. The natural environment (and later: public spaces) are also rich in (meaningful) objects as sources of information. *Information architecture* simultaneously means the enrichment of the environment with information/content, and the design of *exformation* (objectivation of information to physical form as sign on a carrier, for future usage).

9. *Information metabolism* can be *multiplicative* (when the size of information communities or the information asset of a community with fixed size is starting to grow, or separate information communities are merging), *distillative* (when the reproduction and flow of information is narrowing or hampered - information procedures can be reversible) and *invariable*. These moments are coexisting, but their role and proportion determine the adaptive power of a community.

Conclusions

Evolution of information behavior produced more and more complex information cycles and (in the Homo period) complex social environment/culture to multiply the long-time existing and persistent patterns. However, we could identify nine macropatterns, adaptable for not only the human part, but for the whole Big Information History

References and Notes

1. Christian, D. 2011: Maps of Time. An Introduction to Big History University of California Press, First Edition
2. Lotman, Y. M. 1970: Statji po tipologii kulturü Tartu (In Hungarian: Szöveg, modell, típus Gondolat, 1973)
3. Kardos, L. 1984: The origin of Neuropsychological Information Akadémiai Kiadó: Budapest, Hungary