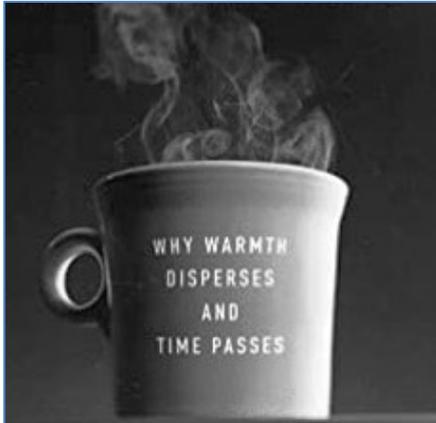


Is the **human brain** governed by **thermodynamics**?

The physics of the **human brain** (read my [website](#)) is my counterproposal to the speculations suggested by many (otherwise smart) people: the reason we experience the *flow* of time, they say, is grounded on **thermodynamics**. As warmth disperses in one “direction”, time passes alongside, also in one “direction”. The Heraclitus’ **flow of events** is *not* present in **textbooks**.



R.K. Sachs and H. Wu, *General Relativity for Mathematicians*, New York, 1977, p. 27: “The requirement of **time orientability** is suggested by our knowledge of thermodynamical processes on the earth, now. The second law of thermodynamics implies that one can distinguish past directions from future directions on earth by measuring the increase in entropy. It seems somewhat reasonable to assume that thermodynamics will smoothly determine future directions in the whole universe.”

One typical example is **Thibault Damour**, who bluntly stated that “the direction of time with respect to which entropy grows, is what determines the sensation of “the passage of time”, through the irreversibility of the process of memorization in the neuronal structures which give rise to the phenomenon of consciousness”.

Read about the so-called “psychological/perceptual arrow of time” at [Wikipedia](#) and the main entry “entropy as an arrow of time” [here](#).

If that was true, the reason you were able to read these lines is that you’re “information gathering and utilizing system” (**Jim Hartle**). Nothing else. If you put together sufficient number of elementary particles and fields, they may decide to **calculate their calculations** and happily **study themselves**.

As Murphy noticed, **complex problems** have simple, easy to understand, wrong answers. As I am getting old, my hair is already completely white. Does this mean that one can suggest some new ‘white-hair arrow of time’? The living organisms are **open systems**. They do not obey the “**arrow**” of entropy and **thermodynamic equilibrium**. Only dead fish go with the flow.

D. Chakalov
chakalov.net

23 June 2022, 08:28 GMT