Current Trends in Biomedical Engineering & Biosciences
ISSN: 2572-1151

Juniper Publishers
key to the Researchers

Mini Review
Volume 14 Issue 4 - May 2018
DOI: 10.19080/CTBEB.2018.14.555894

Curr Trends Biomedical Eng & Biosci

Biorhythm & Chronobiology

Patrice F Dassonville*

Author of the Invention of Time and Space: Origins, Definitions, Nature, Properties, France

Submission: May 05, 2018; **Published:** May 22, 2018

***Corresponding author:** Patrice F Dassonville, Author of The Invention of Time and Space: Origins, Definitions, Nature, Properties, Rue Latour- Maubourg, 06400 Cannes, France, Email: patrice.f.dassonville@gmail.com

Abstract

During previous works, we have shown that time is not a phenomenon; instead, it's a concept [1]. This result leads to legitimate questionings : how time could be involved in biorhythms ? is the word chronobiology appropriate ? are we in the presence of a biological clock ? can we refer to a biological arrow of time ?

Rhythm and Biorhythm

There is a rhythm when a state, or a phenomenon, repeats itself regularly. Moon alternations, return of the seasons, Cesium oscillations, heartbeat, are examples of rhythms. Rhythms produced by living processes, like heartbeat, are called biorhythms.

Causes of Rhythms

A basic alternating system can be modelized by the mathematical function: $A=A_m$ Sin $2\pi Nt$ in which « A » is the amplitude of the alternation, « A_m » is the maximum amplitude and « N » is the alternations frequency. What is « t » ? « t » is time indicated by the clock of the laboratory ; it has no action on the amplitude, because it's not a phenomenon. Let's prove the non-phenomenology of time with the help of the terrestrial rotation: The angle of rotation « α » is such as : $\alpha = \omega t$, in which « ω » is the angular velocity. Therefore $t = \alpha / \omega$. The mathematical function is then written : $A=Am$ Sin $2\pi N\alpha/\omega$. The angular rotation has obviously no action on the amplitude ; an alternative principle does not depend on time.

The frequency of a rhythm have various causes, depending on the system:

The moon alternations will lead the Sumerians to invent the lunar month between 4800 and 4500 years ago [2], which can be considered the first unit of time.

The repetition of seasons is caused by the terrestrial revolution around the Sun; not by time. In primary forests, trees bear no growth rings: under the canopy, the imprint of the seasons is weak. It confirms that dark circles, which are observed somewhere else, are caused by seasonal alternances instead of time. The number of dark rings indicates the number of summer seasons, therefore the age of the tree.

The heartbeat is not due to time either. Spontaneous and extended pulsations of a myocardial fragment in a glucose solute proceed with the same atemporal protocol; namely, we observe the activity of the fragment, with consumption of energy in the form of sugar: without sugar, there is no pulsation. Time is powerless once again.

Biological Clock

The cardiac pulsations are perfectly observable: a pulsation is not a concept, and the confusion between pulsations and time is obviously a mistake. In addition, the biological rhythms do not comply with the accuracy and regularity requirements of a clock. Therefore, we may talk about biorhythm, but in no way about a biological clock.

In 1962, during a two-month isolation in a cave in Hérault (South-West France), the speleologist Michel Siffre has shown that an individual loses time feeling. In spite of its own biological rythms, which are alleged internal clocks, the speleologist was quite soon overwhelmed by the achronic syndrome.

The Biological Arrow of Time

The arrow of time [3] is supposed to make it clear that time evolves in one direction. Unfortunately, this metaphor is introducing a damageable confusion between time and space, because the word direction belongs to the spatial terminology. In addition, evolving time means that time has a velocity ... related to time; which is a sophism.

Chronobiology

The INSERM [4,5] has recently discovered that the cyclic expression of certain genes varies according to the nature of the tissues and the moments of the day (Sciences,). It confirms that these cycles related to time.

Biorhythms come from bio-chemical reactions, driven by genetic programs, by the environment, and by possible potentiation between both. For these reasons, a biorhythm has neither the regularity nor the accuracy of a clock. These

rhytms are not caused by internal clocks. Therefore the word chronobiology is totally inapropriate and mathematically illegal.

Conclusion

It is important not to confuse rhythm and clocks. There is no clock in the organization of living systems. Biological clock, chronological arrow of time and chronobiology, belong to the everyday language, however they are unsuitable. Biorhythm is the exact word.

Specific Lexicon

A. Achrony: lack of temporality. Among the last hunters-gatherers nomadic known, the Penan of Borneo Island in Malaysia live in the dense shade of primary forests. Given that they have no sharp seasons, they do not know the year. In penumbra of canopy, separation between diurnal and nocturnal is confused, they have neither day nor future: the anthropologist McKenzie (4) comes to the conclusion that the Penan are a people without time.

B. Arrhythmia: lack of pace, or abnormality of rhythm.

C. Beat, beat time: rhythm (tempo) beaten by the conductor of the orchestra, which was originally facing the audience and beating the ground with a heavy baton (bâton in French); he is now facing the orchestra and holding (or not) a slight baton (baguette in French), his opposite hand is imposing the nuances of the interpretation. Jean-Baptiste Lully (1632-1687) got hurt a foot with such a baton, which caused his death by gangrene.

D. Chrono-generative: able to produce time. No system is able to produce time, whatever its complexity.

E. Molecular clock: theory developped by the biochemists Emile Zuckerkandl and Linus Pauling, according to which a change in DNA sequences occurs roughly every million years: this is a rhythm, rather than a clock.

F. Recurrence: systematic repetition of a process.

G. Self-chronous: rhythmic evolution of the physical state of a system; v.g. Cesium oscillations.

References

1. Dassonville P (2017) The invention of time and space, ISBN 978-3-319-46040-6.
2. Amiet P (1937) G Contenau La civilisation d'Assur et de Babylone. Parcourir les collections 141 : 91-95.
3. Klein E, Spiro M (1996) Le temps et sa flèche.
4. Greg A, McKenzie I (2008) Les derniers nomades.
5. INSERM: French National Institut of Health & Medical Research.

DOI: 10.19080/CTBEB.2018.14.555894

How to cite this article: Patrice F Dassonville. Biorhythm & Chronobiology. Curr Trends Biomedical Eng & Biosci. 2018; 14(4): 555894. DOI: 10.19080/CTBEB.2018.14.555894.