Time-Hora

Mathematical definitions

Starting from the normalized logarithmic spiral with polar coordinates $(r(\varphi), \varphi)$

with $r(\varphi) = \frac{e^{a\varphi}}{2\pi}$ $\quad \varphi \in [0,\infty)$; *a ≤ 0 (special case circle: a = 0)*

let the time-time intensity of an imaginary time t be defined as

$z(t) = \sqrt{1 + a^2} e^{a2\pi|t|}$

$t \in (-\infty, \infty)$	*imaginary time in the past or in the future, t half-days (12 hours) away from "now"*
$a \leq 0$	*parameter*

particularly for

$t = 0$ and $a < 0$	*$z(t) = \sqrt{1 + a^2} > 1$*
$a = 0$	*$z(t) = 1$ for all t*

as well as the time-time duration of the imaginary time span from time t_1 to time t_2, defined as a definite integral over the time-time intensity, represented as spiral arc length

$Z(t_1,t_2) = \frac{\sqrt{1+a^2}}{a2\Pi}\left(e^{a2\pi|t_2|} - e^{a2\pi|t_1|}\right)$

$\|t_2\| \geq \|t_1\| \geq 0$	*t_1, t_2 two imaginary points in time, both in the past or both in the future, t_1 and t_2 half-days (12 hours) away from "now"*
$a < 0$	*slope parameter of the logarithmic spiral*
$a \to 0$	*$Z(t_1,t_2) \to \|t_2\| - \|t_1\|$; conventional time period*

The slope parameter used for the construction of the Time-Hora is called the "Bürgi parameter a_B".

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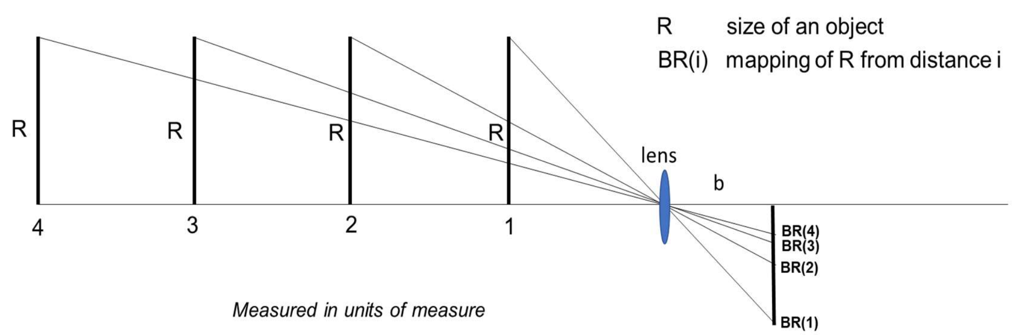
Numerical value of the "Bürgi parameter"

> *Remark:*
> *The numerical determination of the slope parameter of the logarithmic spirals used for the construction of the Time-Hora is to be understood in the sense of a philosophical train of thought, supported by mathematical relationships.*

Essentially, our perspective-based perception of space is physically based on the rules of the intercept theorem.



so $\frac{R}{n} = \frac{BR(n)}{b}$ and thus $BR(n) = \frac{1}{n} BR(1)$

However, the eye does not see one-dimensionally, but rather sees areas within the field of view.

> *Remark:*
> *Spatial perception of the environment only arises via the stereoscopic vision produced by our binocular viewing of objects, together with modelling of the images by the visual centre of the brain. This is not relevant for the numerical value of the "Bürgi parameter".*

The imaginary image $BC(1)$ of a circular area *C* with radius $r = 1$ perceived by our eye through the spatial perspective thus shrinks with increasing distance, $n \geq 1$ measuring units away from the eye, to

$$BC(n) = \frac{\pi}{n^2}$$

On the other hand, according to the formalism of the time perspective, the time-time duration shrinks with increasing distance, n ≥ 1 measuring units away from "now", to

$$Z(n-1, n) = T(a)e^{a2\pi n}$$ *with T(a): auxiliary quantity, independent of n*

Both figures describe a formalization of infinity with $n \to \infty$.

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Assuming that both the physically formulable space perspective and the hypothetically postulated time perspective reflect something of the essence of our cognitive processing of infinity, and therefore exhibit a comparable shrinking quality in this sense, hypothetically, let

$$\frac{\pi}{n^2} \sim e^{a2\pi n} \qquad \sim \text{ there is a heuristic affinity}$$

and based on this the functional relationship

$$a(x) := \frac{ln\left(\frac{\Pi}{x^2}\right)}{2\pi x} \qquad x \geq \sqrt{\pi}\text{, continuous with } \lim_{x\to\infty} a(x) = 0$$

For the slope parameter of a logarithmic spiral, the following applies in general: the larger |a| is, the more separable the spiral arcs are, i.e. the larger the distances between them are.

By the approach $\frac{d}{dx}a(x) := 0$ it is shown that $a(x)$ is a unique minimum

$$\min a(x) = a\left(e\sqrt{\pi}\right) = -\frac{1}{e\Pi^{1.5}}$$

and thus generates a maximally separable spiral in the context of the connection of space and time perspectives.

For $x = e\sqrt{\Pi} = 4.818$ units of measure, respectively units of time, away from the “here” and “now”, the space perspective and the time perspective thus show a formally unique, identical shrinkage of the imaginary perception of space and time under the above assumptions.

The “Bürgi parameter” calibrating the Time-Hora is thus defined as

$$\min a(x) = -\frac{1}{e\Pi^{1.5}} = -0.066066 := a_B$$

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