

# Do we really comprehend time?

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## Abstract:

Traditionally the the problem of time considered the contrast between time (associated with succession) and eternity (associated with simultaneity) (from Parmenides, and via Plato, Aristotle, Plotinus, and Kierkegaard up to Wittgenstein and what theologians presuppose without being aware of it). It may appear as if time measurement can help us to understand what time is. However, the historical development of time measurement alternatively explored different routes – such as *counting* the days, weeks, months and years, establishing *relative* positions (the sundial), employing the constant movement of a pendulum (mechanical clock work), and using the irreversibility of radio-active decay (atomic clocks). However, our awareness of time exceeds the confines of *physical time*. Just think of the *heterogenous* life cycle of living entities (coming into being, growing, maturing, ageing and dying) that differs from (*homogenous*) *physical time*. Likewise *emotional time* is different from physical time, for an hour can *feel* like five minutes and *vice versa*. Since Hegel introduced the concept of “*geschichtliche Zeit*” (historical time) thinkers like Kierkegaard, Jaspers, Heidegger, and many others followed this characterization. It will be argued that *physical time* cannot be elevated to *true* or the only *genuine time*. In order to substantiate this perspective other modes of time will be discussed – such as *jural time*. Since it appears that all definitions of “time” are simply definitions of diverse facets or modes of time, the Augustinian question still remains to be answered: what is time really? A possible answer to this question finally explores the multi-dimensional nature of time – acknowledging that there are indeed multiple *modes of time* and concludes by highlighting the difference between the diverse concepts of time we may have and the *concept-transcending* nature of the underlying dimensions of *cosmic time*, that is, the fact that ultimately we can approximate time solely in a concept-transcending *idea*.

## Time and eternity

When philosophers reflect on the problem of *time* it is customary to refer to Augustine who said: “What then is time? I know well enough what it is, provided that nobody asks me; but if I am asked what it is and try to explain, I am baffled” (Augustine 1983 XI:14). Time is normally associated with what is known as the “passage of time” – based on the implicit presupposition that the future passes through the present into the past.

Augustine also stated here: if the present was *always present* without moving on (to the past), it would not be time but *eternity*. This shows that he stands within the tradition of seeing eternity as the *timeless present*. Already before Augustine the distinction

between *time* and *eternity* was articulated in terms of the difference between *succession* and *simultaneity*. It is found in the B Fragments of Parmenides (520-450) (see Diels-Kranz, B Fr. 8:3-6) and further explored by Plotinus (*Enneads* III:7) where eternity is viewed as the *timeless present* – a view that resounded via Boethius (430-524) in the thought of Kierkegaard (1813-1855) (eternity as the *nunc aeternum*) and Wittgenstein, who said: “If we take eternity to mean not infinite temporal duration but timelessness, then eternal life belongs to those who live in the present” (*Tractatus* 6.4311).

Although the Bible does not explicitly attribute infinity to God, the theological tradition deduces God's infinity from his *omnipresence* and *eternity*, with *immutability* and *timelessness* equally important, and related issues (see Leftow 2005:62 ff.). Eternity is understood in terms of two apparently opposing notions: an *endless period of time* or *timelessness*. These two notions, on the one hand, may be related to the so-called Platonic and Aristotelian traditions, but actually should be appreciated in close coherence with the two conceptions of infinity operative in the history of mathematics (and theology). What I have in mind, is the opposition between what is designated as the potential infinite and the actual infinite.<sup>1</sup>

#### **The (de)limitation of dating an event**

Given the seemingly elusive nature of time, an escape route appears to be available in the idea of *time measurement* (dating an event), for through it our civilization managed to develop more familiar concepts in order to “conquer” time. The history of time measurement provides the following picture. Initially time was “captured” through *counting* – the days, weeks, months and years. *Numerical succession* forms the basis of this practice. Then our awareness of *simultaneity* surfaced, such as employed in sundials where the relative positions of the sun, the dial and the shadows are explored. Subsequently, the constant movement of the pendulum “ticked” off time duration *uniformly* (constantly). Finally, we witnessed the emergence of *atomic clocks*, dependent upon the *irreversibility* of radio-active decay (this irreversibility is also known as the arrow of time). In all four instances of time measurement the implicit presupposition remains that the future passes through the present into the past.

Yet an account of *creation* is impossible in principle, for dating the supposed primordial event (the “Big Bang”) to almost 14 billion years ago appeals to *time measurement* and time measurement always involves the *duration of a process* as determined by a specific *time order*. Any *time duration* is always *delimited by* and *subject to* such a specific (correlated – determining and delimiting) *time order*. Therefore, since dating presupposes this *time order*, the origination of this order itself cannot be *dated*.

#### **Universal constants and units of measurement**

The phases through which time measurement developed, reflecting different modes of explanation, can be correlated with the *units of measurement* identified by Lorenzen in his *protophysic*s. He distinguishes four units which reflect the four *modes of explanation* operative in the just mentioned history of time measurement, namely *mass*, *length*, *duration* and *charge* (Lorenzen 1976:1 ff.). This shows that the generally accepted un-

<sup>1</sup> As alternative designations of the potential and the actual infinite, with a larger intuitive clarity, one may employ terms derived from speculations about God's infinity employed during the 14th century – the *successive infinite* and the *at once infinite*. Compare the expressions *infinitum successivum* and *infinitum simultaneum* (see Maier 1964:77-79). See also Strauss 2009:239 ff.

derstanding of time, linking it with *duration*, is actually embedded within a context embracing diverse modes of explanation.

Heisenberg, for example, accepts two *universal constants* (Einstein's postulate of the velocity of light and Planck's quantum of action). Yet he was looking for a third *universal constant*, namely a *universal length*. He claims that one has to have at least *three* units – be they *length, time* and *mass* or replaced by *length, velocity* and *mass* or even *length, velocity* and *energy* (Heisenberg 1958:165).

However, an analysis of the first four (irreducible) modal aspects of reality would have helped physicists to realize that *four* units are indeed needed. Clearly these four units of measurement reflect the meaning of the four foundational aspects of reality captured in the diagram below, namely *number* ('mass'), *space* ('length'), the kinematical aspect ('*duration*') and the physical aspect ('*charge*'). Weinert mentions even that usually physicists “distinguish fundamental constants from conventional units” – and he then lists the *kilogramme* (number), the *meter* (space), the *second* (the kinematic) and *temperature* (the physical) (Weinert 1998:230; and see also Lorenzen 1989).

	Lorenzen	Heisenberg (a)	Heisenberg (b)	Heisenberg (c)	Heisenberg (d)	Weinert
Physical	charge	quantum of action			energy	temperature
Kinematical	duration	c (velocity of light)	time	velocity	velocity	second
Space	length		length	length	length	meter
Number	mass		mass	mass		kilogram

### **Our time awareness exceeds *physical time***

Moreover, our awareness of time actually exceeds the confines of *physical time* (which is homogenous). The French-American biologist, Lecomte du Noüy, pointed out that the biotic phases of life are accelerating – birth, growth, maturation, ageing and dying – thus showing that the life cycle of living entities is *heterogenous* and therefore differs from physical time. Bergson introduced his understanding of *psychical duration*. Noteworthy is that Hegel and Fichte introduced the concept of “*geschichtliche Zeit*” (historical time) – a theme that was followed up by Kierkegaard, Jaspers, Heidegger, and many others. In 1949 a Dutch professor in modern philosophy, discussing this new fashion, entitled his inaugural lecture as “*De Mensch als Historie*” (The historical nature of being human – Zuidema 1949).

Since it appears that all definitions of “time” are simply definitions of *diverse facets of time*, the Augustinian question still remains to be answered: what is time really? Against the fore-going background an alternative answer to this question will now be explored.

### **Do we live in a “space-time continuum”?**

We are accustomed to mathematicians and physicists speaking of the *space-time continuum* in which we live. What they have in mind is Einstein's theory of relativity where time is added as fourth dimension to physical space.

However, it is only mathematical space that is *continuous*, physical space is not continuous. The similarity between mathematical and physical space is that they are both *extended*, but within this similarity the difference is at once expressed: *spatial extension* is continuous in the sense that it allows for an infinite divisibility, whereas *physical space* is not continuous (since it is determined by the quantum-structure of energy) and is therefore not infinitely divisible. This latter difference was mentioned already in 1925 by Hilbert (see Hilbert 1925:164). Bernays also distinguishes between physical space and mathematical space: “Only through the contemporary development of geometry and physics did it become necessary to distinguish between space as something physical and space as an ideal multiplicity determined by spatial laws.”<sup>2</sup> Since concrete physical things are always quantized they cannot be divided *ad infinitum*. Of course one can revert to an aspectual mathematical *description* of processes involving energy (with reference to a *continuous variable*), but then the concreteness of physical entities is left behind while taking recourse to a *functional* mathematical notion – in which case it is indeed meaningful to hold that such a continuous variable entails infinite divisibility. Maddy implicitly alludes to this distinction: “But it is also true that the appearance of, say, a continuous manifold in our best description of space-time does not seem to be regarded as establishing the continuity of space-time; the micro-structure of spacetime remains an open question” (Maddy 2005:455).

So, strictly speaking, the popular conception of a *space-time continuum* is misplaced for it denies the difference between mathematical and physical space.

#### Time and the impasse of positivism

Positivism holds that the ultimate source of knowledge and truth is found in *sensory perception*. However, as soon as this maxim is tested, for example with reference to time or to the successive descriptions of matter through the history of physics, it turns out that the Achilles' heel of positivism is unmasked. Initially, in Greek culture, matter is described in *numerical* terms (“everything is number”), then in terms of *space* (the starting-point of Greek space metaphysics and the medieval chain of being with God as *ipsum esse*), followed by *movement* as explanatory term (the classical mechanistic world view of particles in motion), and finally concluded in the acknowledgement of the characteristic *physical* nature of material things.

The key question is whether these aspectual terms could be observed in a sensory way. Can these terms be *weighed, measured, seen, touched, tasted* or *smelled*?<sup>3</sup> Likewise we may ask whether *time* can be observed by the senses – and if so, by which one(s)? Can we *touch* time? Can we *see* it? Can we *hear* it? Can we *smell* it? Every affirmative answer to these questions will be absurd, showing that these *functional terms* as well as the meaning of the term *time* cannot be observed by the senses. The reason is that neither time nor the various aspects of reality are concrete things. It is not difficult to realize that aspectual terms refer to a dimension of reality that is different from that of concrete (natural and societal) entities and processes. These entities and processes function within all the aspects of our experiential universe.

2 “Erst durch die zeitherige Entwicklung der Geometrie und der Physik tritt die Notwendigkeit hervor, zwischen dem Raum als etwas Physikalischem und dem Raum als eine ideellen, durch geometrische Gesetze bestimmten Mannigfaltigkeit zu unterscheiden” (Bernays 1976:37).

3 Just contemplate questions such as: What is the *colour* of the numerical aspect? What does the spatial aspect *taste* like? What does the kinematic aspect *feel* like? and What does the physical aspect *sound* like?

Consequently, the first step positivism had to take in order to digest “sense data” theoretically, has already eliminated the restriction of reliable knowledge to *sense data*!

### **Cosmic / Ontic time**

That time cannot be identified with any single aspect also follows from these considerations. It is perfectly meaningful to speak of *temporal reality*, but it does not make sense to characterize reality exclusively in terms of a single aspect (such as the mentioned Pythagorean conviction that *everything is number*, the materialistic belief that *everything is physical*, the historicist claim that *all of reality is historical*, or the post-modern view that *everything is interpretation*).

Dooyeweerd first developed his theory of modal aspects and entitary structures (designated as individuality structures), and only afterwards (probably in 1929) arrived at his first (radically new) understanding of what he called *cosmic time*.<sup>4</sup> Traditional conceptions of time are constantly identifying time with merely one *aspect of time* – for example when “true time” is seen as *physical, emotional duration* (Bergson), that it is *existential* in nature (where existence is understood in a *historical* sense – Heidegger), and so on.

The mere fact that we do speak of temporal reality rather suggests that time is a unique dimension of reality, cutting across the dimension of aspects and entities in its own way. Every attempt to define time invariably results in merely specifying one aspect of time – something repeatedly highlighted by Dooyeweerd in his seminal articles on time. “Understandably traditional philosophy constantly attempted to delimit the time problem in a functionalistic manner. Time and again it identified universal cosmic time, which expresses itself at once in all modal aspects of reality because it provides the foundation for them all, with one of these modal aspects of time” (Dooyeweerd 1939:6).

### **Functional specifications of time**

The first remarkable feature of ontic time is that it manifests itself *within each modal aspect* in accordance with the inner nature and unique meaning of that aspect. What is even more remarkable, is that the history of Western philosophy implicitly reveals an insight into different modes of time without having been able to relate it to a general theory of *functional modes*. Although Immanuel Kant believes that time is a form of (sensory) intuition, this psychological one-sidedness is transcended in his distinction between three ‘modes’ of time. His striking remark reads: “The three modes of time are endurance, succession and simultaneity” (Kant, 1787-B:219).<sup>5</sup>

*Succession, simultaneity, reversibility and irreversibility*

Leibniz juxtaposes time – as “an order of successions,” with space – as “an order of coexistences” (Leibniz 1965:199). Kant also realized that one has to distinguish between succession and causality – for although day and night succeed each other, it is meaningless to say that the day is the cause of the night or vice versa. In the 20<sup>th</sup> century, after modern physics was successful in transcending its mechanistic restriction, it

4 During the disucion of this paper at the PSSA Conference held at Monash University (January 19-22, 2010), Richard Sivil suggested that the term *time* could be used without combining it with the qualification *cosmic*. Since the latter term increasingly acquired a restricted physical connotation, one option is indeed just to speak of the *dimension of time*. Another option is to employ the phrase “ontic time” – the term *ontic* after all retained a broad scope, encompassing whatever exists within the universe.

5 “Die drei modi der Zeit sind Beharrlichkeit, Folge und Zugleichsein.”

was realized that physical time is intrinsically connected with causation, for the effect can never precede the cause. The numerical order of succession is *reversible* – manifested in the plus and minus directions of the system of integers, closed under the operations of addition, multiplication and subtraction.

Saying that these operations are closed means that applying them to the set of integers always yield integers from the same set. When any two integers are added, multiplied or subtracted, the result is always another integer. The symmetry of any spatial configuration – allowing being turned upside down or front-backwards – shows the *reversibility* of the spatial time order, and the same applies to the kinematic time order, for the mathematical description of a constant movement (like the swinging of a pendulum) is equally valid in both directions (a mere switch of the sign provides a description in the opposite direction). Finally, the physical time order is *irreversible*.

Einstein explains the difference between physical irreversibility and kinematic (mechanical) reversibility:

On the basis of the kinetic theory of gases Boltzman had discovered that, aside from a constant factor, entropy is equivalent to the logarithm of the ‘probability’ of the state under consideration. Through this insight he recognized the nature of courses of events which, in the sense of thermodynamics, are ‘irreversible’. Seen from the molecular-mechanical point of view, however, all courses of events are reversible (Einstein 1959:43).

According to Janich, the scope of an exact distinction between *phoronomic* (subsequently called *kinematic* by him) and *dynamic arguments* can be explained by means of an example. Modern physics has to employ a dynamic interpretation of the statement that a body can only alter its speed continuously. Given certain conditions, a body can never accelerate in a discontinuous way, that is to say, it cannot change its speed through an infinitely large acceleration, because this would require infinite force (Janich 1975:68-69).<sup>6</sup>

We have noted above that the distinct manifestation of ontic time within the first four modes is evident, particularly in the history of time measurement, where our general awareness of time concerns *earlier and later*, *simultaneity*, *time-flow* and *irreversibility* – all of them well-known *modalities of time*.

As soon as the meaning of (physical) change is analyzed, its dependence upon the three foundational modes of time is evident, because change presupposes (the modal meaning of) *constancy*, *simultaneity* and *succession*. Heidegger is therefore justified in affirming (in 1924) that the invariance [constancy] of Einstein's equations in respect of arbitrary transformations represent the positive side of his theory.<sup>7</sup> In his work on space and time Grünbaum discusses Einstein's “principle of the constancy of the speed

6 [“Die Tragweite einer strengen Unterscheidung phoronomischer (im folgenden kinematisch genannt) und dynamischer Argumente möchte ich an einem Beispiel erläutern, das ... aus der Protophysik stammt. Die Aussage ‘ein Körper kann seine Geschwindigkeit nur stetig ändern’ kann von der modernen Physik nur dynamisch verstanden werden. Geschwindigkeitänderungen sind Beschleunigung, d.h. als Zweite Ableitung des Weges nach der Zeit definiert. Zeit wird von der Physik als ein Parameter behandelt, an dessen Erzeugung durch eine Parametermaschine (‘Uhr’) de facto bestimmte Homogenitätserwartungen geknüpft sind ... Bezogen auf den Gang einer angeblich so ausgewählten Parametermaschine kann ein Körper seine Geschwindigkeit deshalb nicht un stetig, d.h. mit unendlich große Beschleunigung ändern, weil dazu eine unendlich große Kraft erforderlich wäre.”]

7 “Man übersieht leicht über dem Destruktiven dieser Theorie das Positive, daß sie gerade die Invarianz der Gleichungen, die Naturvorgänge beschreiben, gegenüber beliebigen Transformationen nachweist” (Heidegger 1992:3).

of light” (Grünbaum 1974: 376) and points out that it concerns an *upper limit* that is only realized in a *vacuum* (Grünbaum 1974:377).

Einstein's special theory of relativity proceeds from the hypothesis that one singular light signal has a constant velocity (in respect of all possible moving systems), without necessarily claiming that such a signal actually exists. Stafleu remarks: “The empirically established fact that the velocity of light satisfies the hypothesis is comparatively irrelevant” (Stafleu 1980:89).

#### *Other non-physical modes of time*

Within the biotic aspect, as noted, the *homogeneity* of physical time is absent because the time phases correlated with the biotical time order – such as the duration of birth, growth, maturation, ageing and dying – are accelerated in the sense that the older a living entity gets, the quicker the process of ageing occurs. The above-mentioned French biologist, Lecomte du Noüy, confirmed this accelerated process of biotical ageing experimentally. Even the so-called “moment of death” eludes the scope of the physical understanding of time. Whatever criteria are used by the biologist, only once they have been applied and the living entity (plant, animal, or human being) is declared ‘dead’, the physicist may look at a physical clock and note the (thus externally correlated) “moment of death.” Distinct from biotic time there is also emotional time within the sensitive mode. The latter adds its own unique modal meaning to the experience of time, for whereas it may feel as if a boring event takes hours, something intriguing or capturing one's attention may feel as if time passed very quickly. The next non-physical aspect of time to be considered is the logical-analytical one.

Pursuing an argument in a logical sense is only successful when *conclusions* are reached on the basis of *premises*. Even if the physical sequence of words mentions the conclusion before the premises, the logical time order (*prius et posterius*) will always be such that, in a logical sense, the *premises* precede the *conclusion*.

Similarly, within each of the post-logical aspects, the dimension of ontic time “takes on” the original meaning of that specific aspect. Although the awareness of past, present and future rests upon a “more-than-modal-historical” reality, the demarcation of truly *historical* periods, eras and epochs is dependent on the functional time order within the cultural-historical aspect. Only when truly modal (and typical) historical criteria are applied, is it possible to understand the cultural meaning of historical eras. Such an assessment is always related to what are considered the historically significant events and tendencies that surfaced – to be distinguished from what is historically insignificant,<sup>8</sup> and eventually became direction-giving and dominant within a particular era. If physical time was the only ‘real’ time, it would have been impossible to speak of peoples who are still living in the age of ‘soft’ cultures (predating the stone age) today, or about dwelling places of which one could say that there time “stood still.”

The sign mode in turn reveals the meaning of ontic time in its own way, for the temporal semantic effects of punctuation marks (or pausing in speech acts), are all relevant to what language users intend to convey. Likewise an awareness of social priorities is a reminder of social time – even in the case where one will allow an important person to go ahead in spite of one's own haste. Everyone will immediately understand that *interest* is intrinsic to economic time (not to forget the well-known expression: “time is money”). Within the aesthetic aspect, the dimension of ontic time takes on a

<sup>8</sup> The sources of the historian is captured in what is historically significant: a monument, an inscription, and so on.

nuanced diversity of forms and shapes – depending upon the typical nature of different kinds and genres of art – such as the performing arts (bound to a limited duration and filling this time-span with a unique aesthetical expression), literature, and for example painting. But even in spite of the apparent timelessness of paintings and works of sculpture, they not only objectively endure over time, but in an internal sense, also bring to expression their own aesthetic presence.

But perhaps hanging on to the “merely physical” nature of time receives its heaviest blow from the nature of jural time, for within this sphere, one sometimes encounters a different ‘calendar’, recognizing no public holidays and Sundays in its contractual or legislative “count-down,” and one also has to acknowledge laws with a retroactive effect. Through a declaration of age (*venia aetatis*) or as an effect of getting married, the jural time involved in “coming of age” may differ from the generally specified age of majority in the legal order of Western states.

Courtship and eventually getting engaged and married obey the normative time order of the moral aspect of love – although the duration of these successive events may vary considerably. Finally, within the certitudinal aspect, practically all religions distinguish an order of spiritual growth, correlated with a factual enrichment and maturation in faith. Through the eye of faith, the temporal is appreciated with a view to eternity.<sup>9</sup>

Implicit in the preceding brief discussion of time, is the difference between the law side (*order side*) and the factual side of cosmic time (*time duration*).<sup>10</sup> *Time order* at the law side of the various aspects is always correlated with factual *time duration* or the orderliness of factual relations. For example, although all living entities are subjected to the same biotical time order of birth, growth, maturation, ageing and dying, the individual life-span of living entities may vary from a factual duration of one day up to thousand or more years.

Likewise, the order of succession at the law side (*order side*) of the quantitative aspect underlies the orderliness of the factual succession of natural numbers (1, 2, 3, and so on indefinitely). This explains why the definition of an *ordered pair* proposed by Wiener and Kuratowski is circular. Although the sets {a} and {a, b} appear to exhibit cardinality, the number of members (respectively 1 and 2) hides an inevitable element of *ordinality*: there has to be a first set of the pair (with *one* member) and a second set of the pair (with *two* members). It is therefore not at all surprising that, in their initial formulation of the notion of an ordered pair – namely that for all a, b, c, d, if a, b = c, d then a = c and b = d – Fraenkel et al. had to insert the (circular!) qualifier “taken in that order”: “The ordered pair a, b is an element which corresponds to a and b (taken in that order) such that ...” (Fraenkel et al. 1973:33 – see Strauss 2006:43).

9 Lennox mentions the immunologist, George Klein, who holds that his “atheism is not based on science, but is an a priori faith commitment.” In response to the accusation that he is an agnostic, Klein says: “I am not an agnostic. I am an atheist. My attitude is not based on science, but rather on faith... The absence of a Creator, the non-existence of God is my childhood faith, my adult belief, unshakable and holy” (Klein 1990:203; see Lennox 2007:34).

10 We are familiar with physical laws – such as the *law of energy-constancy* or the *law of inertia*. They hold (are valid) for whatever is factually subjected to them. In general there is a correlation between laws and what is subjected to them. The law side can also be designated as the order side – correlated with law-conformity or orderliness.



### Concluding remark

We have only addressed the most basic nature of time, which manifests itself within each aspect of reality in accordance with the uniqueness of the aspect under consideration, bound to the correlation between time order and time duration. On the one hand this provisional approach pointed out that time exceeds the boundaries of any aspect of reality because it resides within a distinct foundational dimension of the (temporal) world – what Dooyeweerd has called *cosmic time* and what we now prefer to designate merely as the dimension of *time* or as *ontic time*. Owing to this dimension we are entitled to speak of *temporal reality*. However, this possibility implies that we should recognize that the dimensions of time and functional aspects are lying at the basis of the dimension of concrete (many-sided) entities. No single entity is exhausted by any one of its functions because it is embedded in the inter-modal and inter-structural temporality of reality embracing also the just mentioned third dimension of reality. These three dimensions are indeed constitutive for our being-in-the-world, they form the *experiential horizon* of humankind.

It is only within the human selfhood, the human I-ness, that we transcend the ontic diversity because our concrete existence is never exhausted by any mode in which we function. Without claiming that the human I-ness (self-hood) itself is eternal, the central depth dimension in which it participates opens up the ultimate human awareness of and concern for *time-transcendent eternity*. Whether or not we are sharing this perspective is not a matter of rational argumentation, but one of ultimate commitment towards the pretended or assumed Origin of all of temporal reality. Affirming the *temporality* of creation implicitly alludes to the *eternity* of its Creator.

Augustine was right after all – when we do not reflect on time our intuitive (lived-through) experience of time is *integral, natural* and *unproblematic*, but as soon as we attempt to *conceptualize* time we find ourselves confronted by the baffling dispersion of the different ways in which we can distinguish modal aspects of time. Every time concept, albeit that of the numerical time order of succession, the spatial awareness of simultaneity, the kinematic time order of uniform flow, and so on, presupposes the concept-transcending nature of ontic time that lies at the foundation of all our time concepts. The temporal existence (persistence in time) of every individual entity is not the mere sum of its modal functions, since as such it belongs to another unique dimension of reality, distinct from but founded in those of *modal aspects* and *cosmic time*.<sup>11</sup>

Since our *concepts of time* presuppose this integral and distinct dimension of *ontic time* they are always, in a regulative sense, dependent upon our *idea of time* (i.e., our concept-transcending knowledge of time).<sup>12</sup> What is indeed *baffling* about *ontic time* is that it exceeds every possible concept of time we can obtain and therefore ultimately it can only be approximated in a *concept-transcending idea*.

11 This distinction prevents us from either falling prey to a “bundle-theory” or a “substance-theory” regarding the nature of concrete entities. However, analyzing this issue exceeds the confines of this article.

12 Regarding the distinction between conceptual knowledge and concept-transcending knowledge, see Strauss 2009:13, 64, 176, 178, 182, 193, 195, 205, 360, 369, 416, 430, 447, 449, 455, 460, 463-464, 469, 613-614.

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