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Flowing Time: Emergentism and Linguistic Diversity

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Abstract: Humans are complex systems, 'macro-entities', whose existence, behaviour and consciousness stem out of the configurations of physical entities on the micro-level of the physical world. But an explanation of what humans do and think cannot be found through 'tracking us back', so to speak, to micro-particles. So, in explaining human behaviour, including linguistic behaviour on which this paper focuses, emergentism opens up a powerful opportunity to explain *what it is exactly that emerged* on that level, bearing in mind the end product in the form of the intra- and inter-cultural diversity. Currently there is a gap in emergentism research. On one hand, there are discussions in philosophy of the emergent human reality; on the other, there are discussions of social, cultural, or individual variation of these emergent aspects of humanity in the fields of anthropology, sociology, linguistics or psychology. What I do in this paper is look for a way to 'trace' some such diversified emergents from what is universal about their 'coming to being', all the way through to their diversification. My chosen emergent is human time, my domain of inquiry is natural-language discourse, and the drive behind this project is to understand the link between 'real' time of spacetime on the micro-level from which we emerged and the human time devised by us, paying close attention to the overwhelming diversity in which temporal reference is expressed in human languages. The main question is, where does this diversity fit in? Does understanding of this diversity, as well as of what lurks under the surface of this diversity, aid the emergentism story? My contribution to this volume on 'the nature of structure and the structure of nature' thus takes the following take on the title. The structure of human communication is at the same time uniform, universal, and relative to culture, in that it is emergent as a human characteristic, and as such compatible with the micro-level correlates in some essential ways, but also free to fly in different directions that are specific to societies and cultures. I explore here the grey area between the micro-level and the linguistic reflections of time—the middle ground that is emergent itself but that tends to be by-passed by those who approach the question of human flowing time from either end: metaphysics and the philosophy of time on the one hand, and contrastive linguistics, anthropological linguistics and language documentation on the other. I illustrate the debate with examples from tensed and tenseless languages from different language families, entertaining the possibility of a conceptual universal pertaining to time as degrees of epistemic modality. Needless to say, putting the question in this way also sets out my (not unassailable) methodology.

Keywords: emergentism; real time; human concept of time; flow of time; linguistic universalism-relativity debates; tense and aspect; tenseless languages; time as epistemic modality

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1. Emergents and Diversity

I begin with setting the scene. Humans are complex systems, 'macro-entities', whose existence, behaviour and consciousness stem out of the configurations of physical entities on the micro-level of the physical world. The exact nature and degree of this metaphysical dependence (understood as an explanation of the actual gist of how entities develop) has given rise to fascinating discussions in philosophy that focus largely on the degree of autonomy that this emergence-based explanation affords. Emergentism is not a new idea. For Aristotle, humans were emergent arrangements of the four elements of matter. Wilson (2021, p. 47) [1] quotes John Stuart Mill as 'the father of British emergentism', on which emergents are conceived of as capable of producing effects that are novel in the sense

that they do not sum up to the actions ascertained on the basic level. This enables the emergence not only of features but also of objects with a high degree of autonomy—and among them, thinking subjects with their strongly emergent (*qua* autonomous) consciousness and strongly emergent free will.

It is not my aim here to engage directly with the debates concerning the definition or necessary and sufficient characteristics for a relation to count as emergence.[1] For my current purpose, it suffices to point out that the starting point on the micro-level does not pass on the properties to the emergent macro-level. Put simply, an explanation of what humans do and think cannot be found using 'tracking us back', so to speak, to micro-particles. So, in explaining human behaviour, including linguistic behaviour that will be of particular interest to us here, emergentism opens up a powerful opportunity to explain *what it is exactly that emerged* on that level, and also possibly *how and why*, bearing in mind the end product in the form of the intra- and inter-cultural diversity.

But currently there is a gap in emergentism research. On one hand, there are discussions in philosophy of the emergent human reality. On the other, there are discussions of social, cultural, or individual variation in these emergent aspects of humanity. The latter have largely been confined to specialist investigations in the fields of anthropology, sociology, linguistics or psychology. What I aim to do here is to put the two together and look for a way to 'trace' some such diversified emergents from what is universal about their 'coming to being' all the way through to their diversification. In particular, for this purpose, I will look at what humans understand by time—how they live, think and speak *in* time and how they think and speak *about* it. So, my chosen emergent is human time, my domain of inquiry is natural-language discourse, and the drive behind this project is to understand the link between 'real' time of spacetime on the micro-level from which we emerged and the human time devised by us, considered here as the emergent in question, paying close attention to the overwhelming diversity in which temporal reference is expressed in human languages. The main, nagging question is, where does this diversity fit in? Does the understanding of this diversity, as well as of what lurks under the surface of this diversity, aid the emergentism story? My contribution to this special issue on 'the nature of structure and the structure of nature' thus takes the following take on the title. The structure of human communication is at the same time uniform, universal, and relative to culture, in that it is emergent as a human characteristic and, as such, compatible with the micro-level correlates in some essential ways, but also free to fly in different directions that are specific to societies and cultures. The state of the art is that only the two opposite ends of the emergentism story have been focused on in the 'dynamic time' research: the emergentist origins on the one hand (in philosophy) and sociocultural variation on the other (in linguistics and anthropology). I am going to explore here the middle ground, the grey area between the micro-level and the linguistic reflections of time—the middle ground that is emergent itself but that tends to be by-passed by those who approach the question of human flowing time from either end: metaphysics and the philosophy of time on the one hand, and contrastive linguistics, anthropological linguistics and language documentation on the other. Needless to say, putting the question in this way also sets out my (not unassailable) methodology.

The first step in the structure of my argument has been excellently developed in philosophy, among others, by Ismael (2016) [3] and Callender (2017) [4]. The core idea is the emergence of complex systems, such as us humans, capable of self-awareness and of having a view on reality. This self-awareness is of a complex nature, spanning our sense data and involuntary actions, as well as 'full subjecthood'—a story of oneself, one's place in the world, and world view. On the basic level of microparticles, there are 'time-symmetric, deterministic laws' (Ismael 2016, p. 216; see also Price 1996, 2011) [3,5,6]. On the other hand, on the level of human reality—the sense we humans make of the world—we have the freedom to act and a reliable flow of eventualities (events, states, processes) from the future through the present and into the past, allowing for almost equally reliable causal links and causal explanations. In his explanation of the flow of time, Callender (2017, p. 142) [4] sums this up as 'time is that direction on the manifold of events in which we can tell

the strongest or most informative stories'. Now, whether or not we ought to go all the way to the Dennettian view (Dennett 1991) [7] of the self and consciousness and regard them as fiction, or rather insist, with Ismael, that they are emergent but for this not less real, is not going to concern us here (although, *pace* the lack of clarity that permeates these debates, I side with the latter). For our purpose in this article, humans and human languages are a form of reality that constitutes the object of analysis *tout court*. We simply ask how the diversity of ways we think and speak about time in different languages can be reconciled with the emergentist story and how the investigation of this diversity can enrich it. While one can make recourses here to, say, the generativist tradition in syntax or to the truth-conditional dynamic semantics in search for the universals of grammar, or to cognitive semantics for explanations of how we go about conceptualising time as space, the actual dynamicity of time, the search for reconciliation of the static, B-/C-theoretic (McTaggart 1908) [8] universe with the seeming dynamicity of the emergent level is still very much a grey area into which either side, philosophy and linguistics, made only very small recourses. Simply put, we are looking for conceptual universals—universals that span natural-language syntax, semantics, and pragmatics, but also non-linguistic thought, the ability to process sense data, and, in general, all the *ego*-bound characteristics that draw information seeping out of the grey area between micro-level reality and what emerges when we arrange it into our own, human stories, shaped by societies and cultures.

It has to be pointed out as a disclaimer that philosophical accounts of reality are ample, and among them, tensed reality still has its strongholds, some more plausible than others. If metaphysical tense were to be assumed to be real, then either the present would have to be privileged, or, if it is not, reality would have to be either relative or fragmented, with no two fragments summing up to a coherent whole (on the latter see Fine 2005, 2006 [9,10][2]). However, in what follows, we are not going to explore these routes, assuming tenseless, static reality in our ontology.

This paper can be regarded as a sequel to my 'Does human time really flow? Metaindexicality, metarepresentation, and basic concepts' (Jaszczolt 2023a) [12], in which I argued the following. Human time is not only indexical but *metaindexical* in that, being indexed to the *ego*, it inherits its objective as well as subjective aspects. Both have to be represented when we try to relate static (which I assumed) 'real' time of the universe to the dynamic, human, psychological time.[3] The equation in (1) 'puts real time in quotes', so to speak, with the 'disquotation' on the left-hand side providing the human perspective. In so doing, it flags the representational, 'semi-understood' status of propositions concerning time of spacetime from popular physics.

(1) $\text{Time}_{\text{emergent}}$ flows = "$\text{Time}_{\text{micro-level}}$ does not flow"

I reanalysed 'real time' from the right-hand side of the equation using the subjective and the objective qualifiers in which real time is embedded. Next, using evidence from linguistic data from tensed and tenseless languages, I rewrote the human concept of time from the left-hand side of the equation, using the operator of epistemic modality. This reflects the idea that time pertains to degrees of epistemic commitment to eventualities as they are represented in utterances in discourse. (For a full account of this part, see Jaszczolt 2009 [22]). All that remained was to show how this analysis reflects the universal underpinnings of the concept of time: universal epistemic-modal, semantic *qua* conceptual, building blocks that compose and give rise to the complex concept of time—building blocks that can be detected in the semantics of temporal expressions in tensed as well as tenseless languages. The equation then does not have to 'explain' the flow of time on the emergent level; there is no 'something-from-nothing-transformation', to adapt Stephen Schiffer's (2003, p. 2) [23] apt phrase (used by him to explain his pleonastic propositions), in that there is no flow to explain. There is no flow on either side of the equation.

So, we begin there, assuming metarepresentation (to reiterate, incomplete, 'semi-propositional' understanding of the laws that rule reality) and metaindexicality (indexing time to the *ego*, with its vagaries of human errors in judging temporal location and duration but also with intersubjective, attestable ways of measuring—see my two qualifiers above),

and move to our current question of emergence vis à vis diversity, now taking it as given that on the level of basic human concepts, this diversity disappears. There is a lot of room for new research at this juncture in that the equation only shows that it is theoretically possible to 'get rid of the flow', so to speak and that there is empirical support for this move in that many languages foreground mood, aspect, the nature and strength of evidence, relative distance in time (remote, recent) rather than absolute temporal distinctions into past, present, and future. The latter (i) may not be grammaticalised at all, like in tenseless languages, of which there are many. Examples include Yucatec Maya, Mandarin Chinese, Paraguayan Guaraní, Burmese (Sino-Tibetan), Dyirbal (Australian Aboriginal, Pama-Nyungan), West Greenlandic (Kalaallisut, Eskimo-Aleut), Hopi (Uto-Aztecan), or Hausa (Chadic, Afroasiatic) and I will have more to say about them in Section 3.2. Or, (ii) expressing temporal location can be optional in languages with grammatical tense when the context or the default presumption pre-empt the need to express temporal reference explicitly (see, e.g., Jaszczolt and Srioutai 2011 [24] on communicating the past in Thai). But not grammaticalising or not expressing temporal location does not yet mean not *thinking in terms of* temporal location—the equation in (1) works for all languages alike. However, it does not trace the emergentist story all the way through. This is precisely what we want to do now: to unpack, deconstruct thinking *in* and *about* time[4], asking how the primitive semantic *qua* conceptual building blocks, pertaining to various types of modality, aspect, emotional attitude, and other relations to eventualities we humans bear, combined with the gradability of the relevant concepts, help tell the emergentist story.

The question of the conceptual status of this dynamicity tends to be either by-passed, or even its validity is implicitly denied. Ismael (2017, p. 35) [14] appears to take it for granted that there is 'the *constant tension*[5] in the human between the transcendent and embedded viewpoints, which is in its turn the product of the peculiarly human form of mindedness.' And here is where our project kicks in. My earlier defence of the theory of modal underpinnings of human time confined the 'constant tension' to the level of complex concepts (TIME, FUTURE, PAST, PRESENT), disposing of it on the level of their primitive (epistemic-modal) building blocks. We now want to award this lack of 'constant tension' a definitive epistemic status, and therefore we still have some explaining to do. Most notably, there is the Big and Slightly Outrageous Question(BSOQ):

BSOQ
Is it justifiable to assign to the basic modal, aspectual and other relevant primitive concepts the role of 'stepping stones' in the emergentist story? More specifically, are we perhaps complex systems that exist as *egos—not because* we embraced the experience of continuity and, as such, have 'made up' the flow of time, but instead *quite independently of the take on the dynamicity of time*?
That is, the hypothesis is that we endure, to use the term from the endurance/perdurance (/stage theory) debates[6], but flowing time is not the 'glue'. We will begin closer to home and, having identified the right candidates, ask what role these basic concepts play in human thought. What kinds of meanings do they represent? Are they conscious, or are they entirely absent when we compose thoughts for the purpose of their externalisation—the so-called 'thinking for speaking' (Slobin 1996)? [27].

2. Humans and Their Time

> '. . .humans have always had, and continue to have, an "uneasy" relationship with time. . .' Joseph (2020, p. 913) [28]

Cultural outputs, social interactions, and, on the level of argumentation, philosophical literature continue to corroborate the conviction that it is in the essence of human nature to think of time as flowing. Arguably, we conceptualise time as flowing because of the feeling or experience of either a flow, or at least of a change, or of the effects that eventualities have on each other—or perhaps *something else altogether* that has the power of eliciting such a concept of passing time. Here, views and explanations abound.[7] What we cannot

do is leap to saying that the reason for this (illusion of) the experience of the flow is that we are committed endurantists about the *ego*. In fact, it is not unquestionable that we are committed endurantists about the *ego* in the first place. Perhaps the micro-level leaves more traces of the emergent reality than we allow ourselves to admit. I will leave the latter to a separate emergentist enquiry and focus precisely on the *ego*'s construal of time *not* as a by-product of the enduring *ego* but as a concept that we, through our growing understanding of popular physics, are able to grasp by going beyond such illusory construals.

Put simply, the explanation that we want to further deconstruct is that time appears to be dynamic because this is our way of trying to make sense of static reality. But 'trying to make sense' of something entails not fully understanding—trying to live with something that is, at least currently, beyond comprehension. This is what I called earlier an explanation through metarepresenting and what Sperber (1985, 1996) [29,30] also calls 'semi-propositional beliefs': we put a proposition 'in mental quotes', so to speak, storing it for future understanding—be it a proposition 'God exists' or 'Time is a dimension of static spacetime'. The awareness of such a 'deficit' in understanding opens a window a lot wider on what it is that we are trying to understand in the first place. Note that the general population is becoming increasingly more widely aware of the tenets and significance of Einstein's theory of special relativity. For over a century, Einstein's (1920) [31] own 'popular exposition' (to use his own title) of the theory has been creating a stir among the lay population. Nowadays, there are charismatic popularisers (e.g., Rovelli 2018, 2021; Ismael 2021 [32–34]), as well as other popular science accounts, say, in *Scientific American*, or, if one prefers, digested ideas that provide foundations for SF literature and films. As a species, we are in a position to embark on self-reflection and begin to doubt our alleged A-theoretic nature; we are, as a species, capable of shedding these 'mental quotes' in (1) above, to the extent that even metaphysical emergentism is not always a given.[8] We accumulate evidence: to reiterate, philosophers of time emphasise that we do not *observe* objective time flow. That is, we do not observe that time flows in a particular absolute (non-deictic) direction, and neither are we able to observe, let alone measure, the rate of time passing. We marvel over time speeding up when life is uneventful or happy, and slowing down when it is packed with action or full of horror expectations (a dental appointment is here a standard example in the philosophy of mind and language).[9]

Moreover, if events do not actually last the amount of time that the experience tells us they do, then perhaps experience *of* time and experience *in* time (Phillips 2014) [41] ought to be clearly distinguished? As Phillips (2013, p. 227) [42] aptly puts it,

> 'Our experiences, at least in their subjective aspect, do not have colours or shapes, pitches or intensities. On the other hand, our experiences *do* manifestly have temporal properties, being processes or events which persist through time and occur before and after one another. This raises a special question which fails to arise in other cases of perception, namely, how do the temporal properties of experience relate to the temporal properties of what is experienced? Or, in more traditional terminology, how does act time relate to object time?'

As was mentioned, the jury is still out on the question as to what it is exactly that we feel and experience (if it is not the flow of time), but the fact remains that experiences are not round or yellow, but they have duration. Their time is intrinsically *ego*-induced. All in all, the entrenched picture of flowing time begins to unravel and appear wrong on several different counts.[10]

Now, cross-linguistic differences between ways languages express temporal concepts are a well-known fact, but a fact that is not sufficiently deeply exploited in the philosophy of time. For one, temporal directions encoded in expressions such as 'the past is behind us' and 'the future is ahead' are not determined by the human brain. They are culturally conditioned and depend on what is foregrounded: the known (the past lies spread out in front of us) or the unknown (the future is what we anxiously await to face). And it is precisely this difference in what matters, what is foregrounded in different cultures,

that sheds the most light on how the construct of flowing time comes into being. Next, to reiterate, grammatical tenses not only vary between languages but can be optional or non-existent in a given language. The inventory of temporal nouns and adverbs is also largely language-dependent: not all concepts are lexicalised in all languages. Take, for example, Polish 'doba' or 'pojutrze', translated periphrastically as 'twenty-four hours' and 'the day after tomorrow', respectively. Moreover, when temporal concepts *are* lexicalised, they are not always identical matches. Superimposing (near-)equivalents from different languages in the search for conceptual universals is here an important source of data. When performed for terms for spatial concepts, and most notably for adpositions (that is, pre-positions such as English *in*, *on*, *under*, or post-positions that are common in some other languages), it revealed that

> '[t]he differences between the languages turn out to be so significant as to be incompatible with stronger versions of the *universal conceptual categories* hypothesis. Rather, the language-specific spatial adposition meanings seem to emerge as compact subsets of an underlying semantic space, with certain areas being statistical *attractors* or *foci*.' Levinson et al. (2003, p. 485) [44]

Such postulated universal conceptual categories consist of simple, widespread concepts such as containment (*in*), contiguity (*on*), or proximity (*under*, *over*). Yet, as this and other analyses conducted by the Language and Cognition Group at Max Planck Institute for Psycholinguistics show, if there are conceptual universals (or semantic primitives), they are to be found on a sub-lexical, 'sub-atomic' level of *tendencies* in 'making sense of' the space, so to speak. Not only do the terms not translate easily, but it proved difficult to discern universals in the ways that space is conceptualised. Tiriyó, for example, a Cariban language native to Brazil, has an 'aquatic adposition' *hkao* 'in-water', and an adposition *pë(kë)*, 'attached to', that testify not only to different granularity in conceptualising space but also to different principles in doing so (see Levinson et al. 2003 and Levinson 2003 [44,45]).

It goes without saying that this poses the question as to whether our thinking and speaking about time has to be brought to a similar sub-atomic level of conceptual primitives in the exploration of the grey area between the bottom level of micro-laws and the emergent human world. As I have argued and demonstrated elsewhere (e.g., Jaszczolt 2009, 2023a [12,22]), it does. While acknowledging linguistic relativity itself is not yet a step towards resolving metaphysical issues (see, e.g., Dyke 2022 [46]), taking this relativity on board and probing into what 'lurks under the surface' of cross-linguistic variation until we reach the level of sub-atomic (*qua* sub-lexical) conceptual (*qua* semantic) universals can reveal a lot about human universal concepts and, arguably, their universal metaphysical as well as ontological underpinnings. But the search for what exactly constitutes such underlying conceptual universals is not complete—here we push it forward a little, in the specific domain of time.

On the positive side, there are ample descriptive studies of temporal reference in contrastive linguistics to draw on. More controversially, there are also, at best, theoretical debates concerning universals and relativity in the domain of grammatical tense. To take an example of a (failed) attempt to apply tensed morphology to tenseless languages, Matthewson (2006) [47] proposed the existence of phonologically null elements that amount to covert tense in what she calls 'superficially tenseless' languages. In particular, she took on board the case of St'át'imcets (Lilloet Salish), a language spoken in southern British Columbia, that has no overt tenses. A standard sentence form refers to non-future eventualities, and the clitic *kehl* ('will/would') is added to refer to the future. On Matthewson's account, this clitic conveys future-time reference because it combines with an unarticulated (covert) tense morpheme. However, the proposal does not generalise: it has been convincingly demonstrated that it does not apply to Paraguayan Guaraní, Mandarin Chinese or Yukatek Maya; there is no independent justification for a covert grammatical category.[11] Indeed, explanations that draw on the characteristics of human discourse are, arguably, more psychologically plausible; the fact that in tenseless languages, or in tensed languages where grammatical tense is optional, the tenseless construction is no less easy to understand testifies to the trade-off between the lexicon, grammar, and pragmatics in constructing the

interpretation (or even semantic content), as assumed in contextualist theories of meaning.[12] Universalism-relativity debates often stop at hypotheses pertaining to universal grammar without delving deeper into the fabric of linguistic communication at large. But by putting together the insights from the research on conceptual primitives in the domain of space and the deconstruction of the time construct (drawing on what differs from culture to culture and what the significance is of what the specific culture foregrounds and hides), I want to show here that linguists can shed a lot of new light on the very central question concerning time, namely the meaning of time flow. Looking at the role that time flow plays, in full view of the ever increasing popular understanding of the 'Essential Staticity' I discussed above, will reveal the meaning of the conceptual equation sign in (1), repeated below.

(1) $\text{Time}_{\text{emergent}}$ flows = "$\text{Time}_{\text{micro-level}}$ does not flow"

So, we move on to some selected examples of cross-linguistic diversity that provide us with evidence of the underlying concepts.

3. Temporality Deconstructed

3.1. The Status of the Diversity

To reiterate, there are (i) languages with grammatical tense that is (i.a) obligatorily or (i.b) optionally expressed; (ii) tenseless languages (ii.a) whose grammatical tense can be argued to be there in the structure but remains unpronounced; and tenseless languages (ii.b) for which the covert tense theory does not work. (Arguably, this appears to reduce (ii.a) and (ii.b) to (ii) simpliciter.) There are also differences between what temporal distinctions are grammaticalised in a language. For example, it is debatable as to whether English has a grammaticalised category of the future, in view of the arguments that *will/shall* may be considered to be a marker of modality rather than tense and not even ambiguous between the two (see here Enç 1996 [51] and for a discussion Jaszczolt 2009 [22]). Swahili has a so-called 'consecutive tense' marker, *ka*, to signal that an eventuality happened or will happen after another eventuality—that is, the marker caters both for the past and the future (see, e.g., Givón 2005, p. 154 [52]). The concept does not conform to the strict definition of grammatical (*qua* absolute) tense[13], but it is there, a grammaticalised temporal concept, a relative tense, and as such, serves us well as an example in the search for what languages foreground as their lexicon and grammar. What is foregrounded is the sequence, often conveying causation, which, we have to remember from our initial setup, is another emergent, not to be found in the underlying matter of the universe. To give another example, Matses, a Panoan language spoken in the Amazon region, has what Fleck (2007) [53] calls 'double tense', where the concept of a distant past with inferred evidence is combined with the concept of a recent past of a directly experienced eventuality. This example offers a very different kind of insight into the fabric of human time in that it uncovers the importance of the strength and kind of evidence, as well as of the duration rather than temporal location. To compare, let us first take the English sentence in (2), uttered, say, by one tourist to another while sightseeing in the ancient Roman site of Oplontis in south Italy. Say, they are standing in front of the famous Villa Poppaea.

(2) The Romans built a magnificent villa here.

The only overt, grammatical marker of temporality is the Simple Past tense form. But the addressees can infer more: from the situation of discourse, shared background knowledge, or/and perhaps the earlier introduction by the guide or a guidebook, they will infer that ancient Romans had built the villa. So, they will infer that it happened a long time ago (some will be able to be more precise). The addressee may also tacitly assume that this is fairly newly acquired information for the fellow tourist who is not an expert on Ancient Rome. They will also understand that the speaker is talking about the very villa they can both see with their own eyes at the time of speaking: it is there, spread out in front of them. So, we have one simple grammatical marker of a Simple Past and yet a lot of temporal information conveyed in the situated utterance of (2).

We now move to Matses and consider an equivalent, also culturally immersed, example in the form of (3). ERG stands for ergative case marker.

(3) mayu-n biste-wa-**nidak-o**-ş.
non.Matses.Indian-ERG hut-make-**DIST.PAST.INF-REC.PAST.EXP**
'Non-Matses Indians (had) made a hut.' (adapted from Fleck 2007, p. 590 [53])

Matses contains a marker *nidak-o*, which overtly conveys information that the Indians *had apparently built* the hut a long time ago, as evidence or cultural assumptions suggest, but the speaker *discovered it only recently*. What Fleck (2007) [53] calls double tense, that is, the juxtaposition of distant-past-inferential (DIST.PAST.INF) and recent-past-experiential (REC.PAST.EXP), overtly expresses that (i.a) the event of building the hut took place a long time ago; (i.b) the source of evidence is inference; (ii.a) the speaker learned about the event a short time ago; and (ii.b) the source of evidence is experience. Altogether, what is expressed is that the non-Matses Indians had apparently made a hut a long time ago and that the speaker discovered (saw) it a short time ago. As before, not all grammaticalised information falls under the label of grammatical tense, but the relevant fact remains that we have here a culture-specific concept that sheds more light on time as a human way of ordering reality. Here, the judgement about the temporal location (past) is conflated with the judgement about the time interval assessed from the reference point (distant, recent) and with the source of information (inference, perceptual experience). The *origo*, the deictic centre, is the *ego*, and the components of the double tense are the tools that combine to help the *ego* make sense of reality—tools that, for our purpose, help explain the emergence story in that time itself can be taken to be such a conceptual tool.[14]

Next, there are languages with grammatical temporal markers on a noun, sometimes called nominal tenses. They function either alongside or instead of verbal tense, so this is a rather diversified phenomenon. In Paraguayan Guaraní, a tenseless language, nominal temporal markers are independent of the temporality of the verb phrase, as in (4), where the tenseless construction is translated as having past-time reference, while the nominal 'wife' bears the future marking *rã*.

(4) O-ho peteĩ arriéro o-jeruré-vo la h-embireko-**rã**-re.
go one man ask.for-at his-wife-**rã**
'A man went to ask for his *future wife*.' (adapted from Tonhauser 2007, p. 833 [49])

Nominal tense and aspect are common in languages of the Americas. Tariana, an Arawak language spoken in the Amazon region, has clausal tense as well as nominal markers that carry temporal and aspectual information. Nominal phrases in *completed past* can have three meanings: the so-called decessive ('his late/deceased wife'), former state ('his ex-wife'), and commiserative or deprecatory ('his poor wife' after Aikhenvald 2022 [56]). Pomak, a tensed Slavic language spoken in Greece, has deictic suffixes that can provide temporal information either in the presence of verbal tense or in its absence (see Adamou and Haendler 2020 [57]). Nominal temporal markers are interesting for us here because they foreground the *ego* perspective in yet another way by deictically locating *just the referent* in the past, present or future. What is at stake here is not the location of the eventuality but rather the status of a referent with respect to the *ego* as the deictic centre (including emotional evaluation, viz. commiserative/deprecatory)—including *ego at a given time*, as in clausal past plus nominal future combinations.

One could continue, delving into philology and contrastive linguistics and benefitting from language documentation. I will not have much more to say about this rather sensationally compiled list of examples, but if the list *is* haphazard, it is so with a purpose: to show that if one is to find a common denominator in the form of universal human concepts that function as semantic primitives, one must not look for those that are grammaticalised or lexicalised in all languages. Rather, recalling the quotation from Levinson et al. (2003) [44], they will lurk under the surface of language and often under the surface of conscious thought. In the order of explanation, they are situated somewhere in between the micro-level of reality and emergent time. They are to be found there because, as I argued

elsewhere (Jaszczolt 2023a) [12], time is best seen not as a merely indexical category but rather as metaindexical: 'yesterday' or 'tomorrow' are not indexed to times on a timeline but rather are indexed to the *ego* that is itself an indexical category. Grammaticalised and lexicalised expositions of temporal reference show precisely that, and, as such, permeate the universal and the culture-specific levels of human reality. We have also flagged that time is metaindexed in a complex way that allows not only for intersubjectively verifiable measurement and location but also for subjective distortions in the assessment of (i) time passage or (ii) temporal location, as in the cases when time flies and 'shrinks' when we are busy or happy, or when we wake up and remain under the influence of the nightmare that the invention of COVID-19 vaccine is still in the future, exemplifying (i) and (ii), respectively.

So, let us try to deconstruct this metaindexical time a bit more to show how the mechanism of its emergence is to be understood. Having flagged the diversity, we will now search for the facets of universal conceptual building blocks.

3.2. Relations to Eventualities

People think and speak about eventualities that are or are not real but that *may* be real for all they know or that they *wish* were real. In linguistics, this property of language is called modality. Saying that it may rain is an example of epistemic modality; saying that a guest may help themselves to the cake is deontic. Modality can be expressed by modal auxiliaries and other verbs (*need to*, *ought to*), adverbs (*maybe*, *possibly*, *necessarily*), modal adjectival modifiers (*certain*, *probable*), as well as by constructions such as conditionals. Arguably, evidentiality also fits into this category in that it expresses the speaker's grounds for making a claim, such as direct observation or inference—a category that is highly grammaticalised in some languages (exemplified in (3) above). As such, it is clearly epistemic in nature.[15] To quote Kratzer (2012 [1977], p. 8 [61]), the forerunner of the formal semantics of modals, '[m]odals are inherently relational': they require a restriction, for example, when the context gives the reason for a 'must' (say, 'in view of what we know'), and scope, or what the relation is to (about). Conversational backgrounds establish a relation, such as what is normal, what is encoded in laws and regulations, what is wished and desired, or what is aimed at. These backgrounds provide a principle of the ordering of accessible possible words, resulting in graded possibility. This provides us with what Kratzer calls a *modal base* (delimiting accessible worlds), as well as ordering sources for grades of possibility. For example, 'a proposition is a necessity just in case it is true in all accessible worlds that come closest to the ideal determined by the ordering source' (Kratzer 2012b [1981], p. 40 [62]).

Now, if we were to present a classification of such 'attitudes to what may not be real', we would quickly run into the principle-of-classification problem. As before, we notice that the question has only been nibbled at from both ends, with the middle left untouched. First, philosophers tend to focus on the unity of the concept of modality. Grice (2001) [63] attempted to unify modality under one general concept of accessibility, focusing on 'the practical/alethic divide', distinguishing between reasons for believing and reasons for action, and, following Kant, bringing judging and willing under a common denominator. (This is, however, an unfinished project.) At the other end, linguists, predictably, focus on the diversity: epistemic modality in (5) is distinguished from dynamic, where the latter can pertain to ability (6), opportunity (7) or disposition (8), all to do with volition, as well as to quantification (9); deontic in (10) can be distinguished from boulomaic (also known as bouletic, to do with wishes and desires) in (11) and teleological in (12).

(5) Lidia may/must be in Oxford by now.
(6) Lidia can row a boat.
(7) One can open the gate from the inside.
(8) Lidia will always spend the weekends rowing on the river.
(9) Smoking can/will kill you.
(10) Dogs must be kept on a lead.

(11) I should visit Peru.
(12) I could make this explanation simpler.

To this, we have to add the levels at which modality is expressed: sub-sentential, sentential, or discourse, as well as the modal senses of generics and habituals, PRO constructions (or what Portner (2009) [64] calls covert modality) as in (13), the modal sense of tense and aspect with respect to the certainty of the situation (cf. here future *will*, or progressive aspect signalling incompleteness), verbal mood, such as subjunctive, and the modal sense of propositional attitude constructions as in (14).

(13) Lidia knows how to play the piano (>Lidia knows how she *can* play the piano.)
(14) Nigel believes that whales are fish.

Different languages will add different items to this list, for example evidentials, whose modal function we discussed above.

Needless to say, modality is directly associated with speech actions, so it is abundant on the level of discourses. Attitudes and opinions present themselves as operators, so to speak, on an expression of fact, formalised as Austin's (1962) [65] illocutionary force with a proposition in its scope (as in F(P), see Searle and Vanderveken 1985 [66]). Some of these are expressed as moods, which can variously mean encoding in verbal morphology (viz. indicative or subjunctive) or alternatively sentence types (declarative, interrogative and imperative).[16] As Portner (2009, p. 137) [64] says, a modal is performative. . .

> '. . .if, by virtue of its conventional meaning, it causes the utterance of a declarative sentence to perform a speech act in addition to, or instead of, the act of assertion which is normally associated with declarative clauses'.

All these are encodings of the ways that humans take situations to be—as certain, expected, desired, requested, enquired about, deemed to be typical, common and recurring, and so forth. Location in the past or in the future is only one of such ways that contribute to the assessment of the degree of commitment—we may be more, or less, certain of a future prediction, or we may remember something with more, or less, conviction and accuracy. Specious present is not exempt: one can be more, or less, committed to the certainty of an extended state, action or process, in that their construal is an entirely human, emergent, and often arbitrary affair. Whether eating two ice-creams one after the other constitutes one or two events depends on the conceptualisation, and then remembering or not remembering how many ice-creams exactly one has eaten follows suit: one can simply be engaged in the activity of ice-cream eating *tout court*.

The classification referred to above is only one example of a typology of necessity and possibility—there are many others.[17] While details are not of paramount importance for the point I am making here, what is important is the clear association between this variety of senses we humans express in relation to something that may or may not be real—as well as the association, crucial for us here, between that unreality and the location in the past, present or future. Markers of futurity and the past are systematically associated with markers of *irrealis* across languages—far beyond any speculation that the link might be accidental.[18] I propound that it is precisely the gamut of relations and attitudes towards the asserted, suspected, desired, etc. reality of an eventuality that shapes the human emergent flow—events present themselves to us as real or unreal, suspected or desired, positioning themselves in an order of some kind, and they do so because of the past experience that provides epistemic grounds for such relations. Time flow is the best story we can weave (recall the quotation from Callender 2017 [4] in Section 1) when these aspects of eventualities are put together.

This gamut of perspectives on, and relations to, reality, constructed on the emergent level as situations, revolves around what linguists often split into modality and aspect, but almost as often find themselves conflating. Aspect, a concept that stands for temporal properties that are *internal to the situation*, naturally associates itself with modality in that conceptualising an eventuality as a single whole ('perfective') or as having an internal constituency ('imperfective', such as 'continuous', including actively 'progressive',

or 'habitual') is a subjective matter and is one of the exponents of the graded concept of possibility—a modal take on what is taking place.[19] In practical application, relations to eventualities do not yield themselves to clear grammatical or even semantic classifications. Tenseless languages have markers that combine aspect and mood that can convey the sense of relative tenses (say, prospective, but without specifying if prospective in absolute past or future). In Yucatec Maya (following Bohnemeyer 2002 [69]), some aspect-mood markers convey (i) temporal distance (proximate, immediate, recent, remote), that is, degrees of remoteness, others (ii) modality (obligative, necessitive, desiderative, assurative, penative (cf. 'almost', failure to realise an eventuality), predictive), and yet others (iii) aspect (terminative, prospective, progressive). In addition to aspect-mood predicates, there are also aspect-mood prefixes to signal perfective or imperfective, that is, completed or uncompleted status. For example, desiderative (DES) foregrounds the wish, backgrounding the information as to whether the object of the wish was, is, or will be the case, as in (15). 'INC' stands for 'incomplete' (read: uncompleted) status marked on the verb, '1/3Sg' for grammatical person and number, and 'DEF' for definiteness marker.

(15) **Tàak** in xok-**ik** le periyòodiko-o'
DES 1Sg read-**INC**(3Sg) DEF newspaper
I want/wanted/will want to read the paper.' (adapted from Bohnemeyer 2002, p. 6 [69])

Temporal distance works as in (16), where 'REM' stands for 'remote' relative past and 'SUBJ' for the subjunctive status marker on the verb.

(16) **Úuch** in xok-**ø** le periyòodiko-o'.
REM 1Sg read**(SUBJ)**(3Sg) DEF newspaper
'I read/had read/will have read the paper a long time ago.' (adapted from Bohnemeyer 2002, p. 9 [69])

Although in Yucatec Maya there are no grammaticalised expressions to signal absolute time, absolute time, nevertheless, emerges effortlessly for speakers. Relations to events, to do with modality or aspectuality, convey what is needed for expressing the intended meaning in a given context—meaning that has to do with absolute time only insofar as it has to do with the *ego* and with the way, to quote Callender (2017, p. 142) [4] again, 'we can tell the strongest or most informative stories' and create time as a 'direction on the manifold of events' on the level of our emergent reality.

Next, it is important to flag the emotional component of such relations. Emotions are indeed part of some of the grammaticalised distinctions. One earlier example was the commiserative/deprecatory sense of nominal markers of the past in Tariana (Amazon region) discussed in Section 3.1. To take another, Australian languages, for example, have so-called avertive-frustrative markers, which, as the title of Caudal's (2023) [70] paper suggests, testify to 'blurring the boundaries between aspectuo-temporal and modal meanings'. Such markers, common in the indigenous languages of Australia and the Americas, capture what the subject *almost* did or *was going* to do but did not. Example (17) is from Ngarla, a Pama-Nyungan language from the coast of Western Australia, where *pilyparr* is a specialised negative avertive particle 'in vain'. 'ERG' stands for the ergative case marker, 'CAUS' for causative, and 'PST' for past inflection.

(17) **pilyparr** ngaja yarni+ma-rnu pirrjarta.
unsuccessfully 1Sg.ERG repair[+CAUS]-PST vehicle
'Unsuccessfully I repaired (the) vehicle.' ('I failed to repair the vehicle.') (adapted from Caudal 2023, p. 137 [70], after Westerlund)

Although there is an overt past-tense marker here, Caudal argues that such patterns suggest that the flow of time is realised jointly by these tense-aspect-modality markers and, as such, that the flow of time is simply the flow of events. Absolute tense is merely a component of this complex time construal—note, a construal that is present in some languages while absent in others without creating an information gap. The avertive/frustrative mark-

ers combine modality (deontic, epistemic, volitional, counterfactual or hypothetical), an aspectuo-modal marker of proximative distance (cf. our recent discussion of Yucatec Maya), a marker of a negative, unrealised status of the event, and a marker of an expression of failure (avertivity). Altogether, they exemplify a human take on events and their flow that helps us track further the relevant conceptual primitives. This is emergent reality condensed into expressions that grammaticalise and lexicalise what matters most.

3.3. Attitudes and Degrees

Gradable concepts are central to human life. We evaluate things as good, better or best, as certain or probable to some greater or lesser degree, as being in the remote or near future, or as being 'kind of orangey red' rather than 'reddy red'. Languages grammaticalise and lexicalise gradability quite profusely through gradable adjectives, adverbs, as well as various, including degree, modifiers, but also through semantic scales on which lexical expressions can be arranged. Gradation can also be inferred from pragmatic scales where concepts are ordered according to some contextually relevant criterion—say, on the scale of preference.[20] As far as temporal reference is concerned, we employ gradation galore. Not only can we (i) allocate events to points or intervals on a timeline with our subjective 'now' marked on it, but within these 'points' or intervals, we exercise a lot of freedom in (ii) conceptualising their length (aided by degree modifiers, 'a *very* long time') and also their (iii) boundaries, so vagueness also makes an important appearance. Sometimes boundaries are clear, such as in the case of 'Friday 24 March'; at other times they are not, such as in the case of 'nowadays'. Specious present is *locus classicus* for this gradation of boundary rigidity. Next, we perform this allocation with (iv) different degrees of epistemic commitment: as far as I know, my dog *did* eat my roast, or he *must have* done it (there are no other potential culprits), or it *may* have done it (perhaps a wild animal sneaked in). Further, to reiterate, we (v) locate events in the past, present or future and (vi) assess their length—both with different degrees of self-trust: my nightmare that we have no vaccine for COVID-19 may slowly give way to reality as I wake up and may assert itself as a fear from the past; my feeling that I have been waiting for hours for a wisdom tooth extraction can be checked against reality when I look at my watch and see it has only been 20 minutes, respectively. Arguably, (vii) aspectual distinctions, such as the completeness status of an event, also testify to a gradation in that they allow for adverbial modification, as in (18).

(18) I have almost finished the paper.

Finally, (viii) the very existence of an eventuality *tout court* may present itself as hazy: I may wonder if the COVID lockdown was only a bad dream (not to be confused with (iv) above).

Languages reflect such gradation much better than they do temporal reference. Gradability is a phenomenally unquestionable characteristic of human experience (whereas 'experiencing time' or 'feeling the passage of time' is not). Regarding (iv) for example, tenseless languages demonstrate that what is foregrounded is the relation to the eventuality: Yucatec Maya prioritises aspect-mood markers, as in (15)–(16) above, and, needless to say, gradation is present throughout the entire taxonomy as degrees of remoteness, degrees of modal commitment, and even, arguably, gradable status of the reality of the situation, such as its completeness, in aspect markers. Tensed languages may appear to default to *certainty* as the modal status in their use of grammatical tenses, but when past tenses such as the Simple Past are juxtaposed with epistemic necessity past and epistemic possibility past on the one hand (attenuation of epistemic certainty: *must have V-ed*, *may have V-ed*), and past of narration as in (19) on the other—or, in the case of the Simple Future, with futurate progressive as in (20) or tenseless future in (21) that express the strengthening of certainty, the fundamental status of gradation (here: graded epistemic modality) becomes apparent.[21]

(19) Do you want to know what happened yesterday? This guy *walks* into my office and *says*...

(20) Tomorrow I *am writing* a paper all day.

(21) On Monday I *go* to Brussels.

In the argument I am developing here, this gradability is a reflection of the metaindexical nature of human time, where the semantic primitives, time's conceptual building blocks, reflect its perspectival essence and, as such, the inherently human take on eventualities. Degrees of epistemic commitment, degrees of remoteness from the *ego* as the deictic centre regardless of the temporal direction (into the past or future), degrees of freedom in conceptualising something as a self-contained event, degrees of freedom in establishing its boundaries, and also degrees of completeness of the eventuality, are amply grammaticalised as aspectual distinctions in many languages and are also aided by modifiers. We thus propose that if the objective is to search for putative universal human concepts in the domain of temporality, they are best searched for within these *ego*-centred domains that reflect human phenomenology, with human limitations of judgement, doubts, errors, emotional and other physical and mentally induced distortions.[22] They provide the subatomic universal concepts and a path through the grey area between the micro-level and emergent diversified reality.

4. Phenomenal Modification or Phenomenal Building Blocks?

In the philosophy of time, some of the B-theoretic explanations of the apparent flow are that the experience of time passage reduces to the experience of something else, most notably of change (something passes, but it is not time that passes), or that the illusion comes from our attitude towards content. Torrengo's (2017) [21] deflationism falls in this category of views. He proposes that there is no experience, feeling or sensation of the passage of time; we merely form a *belief* that time passes. This is so because the sensation of the passage has the status of a 'primitive phenomenal modifier' (here, PPM) that 'modifies' the representational content of experience, which in itself does not contain flow. But what does it mean exactly that sensations 'modify' the content of experience? It means that we are bound by the human take on reality—the human way of experiencing that fits well with the emergentist explanation. It fits, but, like other explanations in this camp, it focuses on the divergence between human time and B-theoretic real time—divergence as a fact to be explained. To reiterate, the argument I am developing here foregoes the need for assuming this divergence. The flow is not part of the essence of human time. It is merely a by-product of the fundamental characteristics of human experience, such as epistemic commitment with its linguistically foregrounded departures from epistemic certainty (realised as epistemic modals, evidentials, a gamut of grammatical moods), or the effects on the *ego*—again, often encoded in mood and aspect markers. Next, we added emotional attitudes to eventualities. This is just the beginning of the unpacking of what the 'phenomenal modification' can contain.

In view of the significance of the *ego*-centred relations to events that 'sum up' to the flow, so to speak, as was argued above, it appears that instead of an operator (PPM) that allows us to reconcile the emergent flow with the micro-level no-flow as in (22), perhaps it is more accurate and promising to 'unpack' $\text{time}_{\text{emergent}}$ itself and forego the assumption of the divergence, as crudely summarised in (23).[23] 'Σ' stands for summation, and 'r' for a relation very preliminarily unpacked in the box that follows. Human relations to eventualities have the status of operators, but operators on an eventuality rather than on real time.

(22) $\text{time}_{\text{emergent}} = \text{PPM}\ (\text{time}_{\text{micro-level}})$

(23) $\text{time}_{\text{emergent}} = \Sigma$ r [r: modal-aspectual (r); emotional attitudes (r)] $(\text{eventuality}_{\text{emergent}})$

Note that in (23), we remain on the level of the emergents, going only 'slightly underneath' in the sense of online awareness but substantially qualitatively underneath in the order of explanation to subatomic conceptual primitives that, arguably, explain human time and explain away the flow. This construal departs from divergentism and embraces convergentism: emergent time does not flow when it is deconstructed into its basic phenomenal components. The equation sign does not obfuscate any mysteries à la Sperber's semi-propositional beliefs, 'constant tensions' between flow and no flow à la Ismael, or contradictions between thinking *in* time and thinking *about* time à la Hoerl and McCormack discussed earlier.[24] It leads to (24), with the disquotation in (1) explained as the right-hand side of (23).

(24) $\text{time}_{\text{emergent}} = \text{time}_{\text{micro-level}}$

There is no flow *of time*; there is a composition of conceptual primitives into a complex concept that produces the illusion of flow. If you like, Σ is precisely where the flow emerges.

We have smuggled here a shortcut that requires an explanation. Looking at cross-linguistic data, even in the form of our small but diversified sample, it appears well-justified to deconstruct the *concept of time* (TIME) in this way. However, it does not automatically follow that we have also deconstructed phenomenal *experience* ($\text{time}_{\text{emergent}}$) using linguistic evidence. Yet, we can do both.

First, the conceptual-semantic primitives allow us to account for people's increasing awareness of the theory of static time in spacetime in that they are themselves 'static'. But beliefs are not tacitly composed out of such subdoxastic primitives. On our methodology, looking at linguistic data, beliefs are confined to the fabric of 'thinking for speaking': we compose thoughts in a way that allows for conveying them to others in discourse. So, our primitives account both for beliefs that time flows simpliciter and that time does not really flow. On this level, '$\text{time}_{\text{emergent}}$' in (23) applies to the concept of emerging time ($\text{TIME}_{\text{emergent}}$).

Next, we go further. The conceptual building blocks serve not only to build up complex concepts but also give us a window on experience. It is precisely the human experience of eventualities that is reflected on this subatomic level. As such, (23) *explains the experience that leads to beliefs about time*—as flowing or not, depending on the degree to which the subject understands and embraces statements such as (25) and (26).

(25) Time is a dimension of static spacetime.
(26) The universe is governed by symmetrical laws.

In short, 'r' in (23) unpacks on two levels: as (i) phenomenal components (experience) and (ii) conceptual-semantic components (beliefs and their linguistic expressions), where the latter have to be taken as having phenomenal origin. For example, the *belief* that an occurrence is sad or unwelcome (viz., frustrative markers discussed earlier) originates in the *feeling* of anger or frustration. But time itself, a complex concept, is not a component; it is a complex outcome, both on the level of living in time and thinking about time. It is the Σ, the composition, that 'flips it' to make it appear dynamic.

Needless to say, not all phenomenal components will have their counterparts in the grammar or lexicon of natural languages. But the very fact that natural languages foreground these phenomenal building blocks of the human concept of time, often in preference to grammaticalising temporal distinctions themselves, strongly suggests their primitive status. Moreover, the fact that in languages where temporal distinctions *are* grammaticalised

we can also deconstruct them into such primitive phenomenal (*qua* experience-driven) concepts further strengthens the argument.

5. Some Loose Ends

5.1. Semantic Primes: Emergentism or Reductionism?

Human consciousness and its metaindexed time have been described here as strongly emergent phenomena, that is, phenomena with a high level of autonomy with respect to their physical micro-level underlay. Common scepticism surrounding strong emergentism aside, the question that arises here is whether the area in-between in the order of explanation, linking the emergent properties and objects on the one hand and the micro-level of reality on the other, is sufficiently well explicated by the strong emergentism story.

In my earlier work (esp. Jaszczolt 2009 and 2013 [22,76]), I argued that temporality (temporal location in the past, present and future, *not* the time flow) reduces to, or is supervenient on, epistemic modality; degrees of epistemic commitment to the proposition translate in our conceptualisation of eventualities into temporal locations. That story forms an important part of my current construal in that epistemic modality is one of the exponents of the human construction of reality we identified here under 'r'. But supervenience is a reductionist explanation—and by analogy, on the picture developed here, there is a smuggled tacit conclusion that $\text{time}_{\text{emergent}}$ reduces to some combination of its exponents (*r*s) in a way that can be algorithmically encapsulated. And yet, proposed supervenience of this kind operates on the emergent level, so it fits within the overall emergentist picture. All this means is that there will necessarily be elements of reductionism within the emergentist story, but reductionism that is only 'as deep as the conceptual primitives'—reductionism that allows us to get under the surface, from the level of linguistic relativity to the subatomic level of semantic *qua* conceptual building blocks. Identifying all the exponents, let alone working out algorithms, is a task far beyond this paper and also beyond our current concerns. But it has to be flagged that, in the flow of explanation, there are some necessary reductionist moves and many yet unanswered questions.

5.2. Consequences for Semantic Theory

The complex concept of human time requires complex semantics. It is not a novel idea in the 2020s that semantic theory ought to depart from the traditional Montagovian programme of representing sentence meaning and instead aim at capturing 'naturalised' meaning—meaning that pertains to speakers' and addressees' cognitive states. The theoretical choice to assign truth values to mental states permeates various trends that fall under loosely described labels of expressivist semantics or psychologistic semantics (see Hawke and Steinert-Threlkeld 2021 [77] for a recent overview) where '...a psychologistic semantics represents a sentence's semantic value as an assignment of truth values to mental states' (p. 481)—a move that has made its career by shedding light on the semantics of modals for example, where assertability and deniability are the concepts we need instead of the traditional truth and falsehood. Such naturalisation also permeates the camp of post-Gricean contextualism (see, e.g., Recanati 2005; Jaszczolt 2022, 2023b [78–80] for an overview) that relinquishes the sentence as its unit of truth-conditional analysis in favour of an 'enriched' or 'modulated' proposition that stands for thought, as in the theory of Relevance (Sperber and Wilson, e.g., 1986/1995) [81], Truth-Conditional Pragmatics (Recanati, e.g., 1989, 2010) [82,83], or Default Semantics (Jaszczolt, e.g., 2005, 2010) [84,85].

What has to be flagged here concerning these groups of approaches is their interpretation of compositionality: meaning is still compositional, but the truth value is now the state of mind expressed by the sentence in a discourse.[25] We interpret an utterance in a certain way because this interpretation is dictated by a wide array of discourse factors, including background assumptions, shared knowledge of cultural and social conventions, the way humans normally draw inferences, and many others (some of which are foregrounded as sources of information in Default Semantics that together lead to what I now call a *functional*

dynamic proposition—the main meaning agreed on by the speaker and the addressee in the course of the conversation (Jaszczolt 2021; Elder and Jaszczolt 2022) [86,87].

We also assume *coherent bodies of knowledge and information*: an utterance of a sentence in context means *p* because people do not (normally) hold contradictory beliefs.[26] This understanding of compositionality, the compositionality of naturalised propositions that capture intended, recovered, and often dynamically, jointly constructed meaning, is what lies behind the understanding of how temporality is expressed in natural-language discourse: through a combination of different lexical, grammatical, pragmatic, including extralinguistic methods. Needless to say, the compositionality of such a naturalised unit of meaning has to remain a methodological (and ontological) assumption until experimental neurolinguistics or other empirical methods, such as computational methods of extracting generalisations from large corpora, give it sufficient support. AI research and neurolinguistics research come close to this goal, but for now, it is only fair to point out that the multimodal expression of the human concept of time tacitly smuggles this 'naturalised compositionality' as an assumption.

6. Conclusions

The aim of this paper was to show that emergent human reality fragmented into cultures, languages and societies does not necessarily presuppose a conflict with the properties of real, static metaphysical time. Philosophers have gone only part-way, searching for an 'equaliser' between B- (or C-) theoretic, static reality and human experience of the dynamic world, to mention only the illusion caused by the experience of objects enduring (e.g., Prosser 2012) [18], the 'cognitive illusion' of the passage as a 'phenomenal modifier' of the content of experience that does not reflect time's true nature (Torrengo 2017) [21], or, even, an 'illusion of an illusion', reducible to experiences of change (Hoerl 2014) [15], to select just three, out of many, seminal accounts. Equally, linguists have gone part-way, investigating the expression of temporality across various languages from different typological groups and stopping short of finding semantic-conceptual universals. I have here put together theories and observations to the effect that just as human experience does not foreground flowing time, so natural languages do not foreground absolute temporal distinctions into the past, present and future; where they do, these distinctions are decomposable into conceptually primitive *ego*-centred building blocks, standing for various relations to constructed eventualities—most notably degrees of epistemic commitment, but also other modal-aspectual, sometimes emotionally loaded, attitudes. At this level, between the determinism-free, causation-free and (dynamic) time-free physical reality and the emerging cultural, social, political, and linguistic diversified reality where conceptualisations seem to follow different routes, we find the emergent level of conceptual universals that help explain how '$\text{time}_{\text{micro-level}}$ does not flow' becomes '$\text{time}_{\text{emergent}}$ flows' without a need for postulating a 'black box' where the negation flip is executed. We *do* live in a fundamentally static reality, and human languages, with their plethora of grammaticalised means of human reflections on events, are the best proof of it -- and so is the progressing understanding of the proposition put in quotes on the right-hand side of the equation in (1). If the modal-aspectual deconstruction holds water, then $\text{time}_{\text{emergent}}$ does not flow; merely what goes on around us affects us: states, events and processes are the product of our way of making sense of the world and, as such, engender attitudes and relations that, on the surface, result, among other things, in the passage of time.

All in all, there is a flow of time, and it is real—more 'real' for some situations than for others, but it is only real on the very surface of the emergent reality, on the tip of the iceberg that we are aware of when we think and speak. The answers to how humans construe the time flow fall somewhere in-between the basic level of reality and time as an emergent—in the grey area of the *ego* as an emergent to which, to reiterate, time is only metaindexed and which we have here only begun to systematically deconstruct.

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Data Availability Statement: No new data were created or analyzed in this study. Data sharing is not applicable to this article.**Dedication:** To Roddy, my working cocker spaniel, who thinks fast in time but probably not at all about time and yet was a perfect companion in writing what follows.

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Notes

1 For an introductory overview see O'Connor 2020 [2].

2 See also Iaquinto and Torrengo 2023 [11] on 'flow fragmentalism' that focuses on external and internal points of view regarding facts: for them, facts obtain only in a fragment, not absolutely.

3 This stance is compatible with McTaggart's (1908) [8] B-theory but also with his allegedly 'atemporal' C-series. Unlike A-theory, B-theory denies the reality of time and depicts it as a series of static relations of precedence and following, arranged on a timeline with a clear direction. Taking away the time arrow results for McTaggart in taking away the concept of time (the C-series). However, not for us, and not for the defenders of a symmetrical universe (see Price 1996, 2011; Ismael 2016, 2017; Farr 2023 [3,5,6,13,14]). Defenders of static reality are ample—running the risk of subjective picking, see, e.g., Mellor 1998; Prosser 2012, 2013, 2016; Hoerl 2014; Mozersky 2015; Torrengo 2017 [15–21].

4 This apt phrase comes from the title of Hoerl and McCormack's (2019) [25] article briefly discussed in Section 2.

5 My emphasis.

6 For an excellent comparison of the views see Hawley 2001 [26].

7 See note 4 for some references.

8 See here Baron, Miller and Tallant 2022 and Baron and Miller 2019 [35,36].

9 See here, e.g., Cossins 2019; Flaherty 2018; Csikszentmihalyi 1990; Piata 2023 [37–40].

10 Hoerl and McCormack (2019) [25] attempt to explain the flow of time in terms of a clash between two kinds of representations: the 'living in the present', given to us by what they call the primitive *temporal updating system* that we share with other species, and the ability to represent eventualities as past, present or future, using the more (or perhaps entirely) human *temporal reasoning system*. On their construal, we live in time and *represent* it as the present moment, and we also think about time and *represent* it as flowing. I do not subscribe here to the clash-of-representations hypothesis (after all, the flow, change, dynamicity of some kind permeates them both—see Callender 2019 [43]), but hypotheses like this one further corroborate that dynamic, flowing time is a moot concept.

11 See here for example Jaszczolt and Srioutai 2011 [24] on Thai or Bochnak 2016 [48] on Washo. On Paraguayan Guaraní see Tonhauser 2007, 2011 [49,50].

12 I return to this topic in Section 5.2.

13 A language is tensed when it has grammaticalised expressions that stand for temporal reference which are absolute rather than relative. (The coding time has to constitute the default deictic centre.)

14 Moving to the domain of metaphysics, in this vein, Banfi and Deasy (2021) [54] develop a view of times as propositions—higher-order entities. See also Deasy 2022 [55] on modal reductionism of tense operators within A-theory.

15 However, see, e.g., Aikhenvald 2004 [58] and Murray 2017 [59] on the *grammatical* category of evidentiality that they consider to be separate from modality in that, as they argue, the marking of information source is logically independent of the commitment to truth, that is the degree of certainty with which the speaker expresses the proposition. I adopt here a more philosophically angled view expressed by Palmer (1986) [60], according to which '[i]t would be foolish to deny the name of "epistemic" to such features, for not only are they clearly concerned with speakers' knowledge and belief, though a little more indirectly, but also they often occur in the same formal system as Judgements'.

16 Classifications and associated criteria are ample—see here Palmer 1986 [60] and Portner 2018 [67].

17 I used mainly Portner 2009 [64].

18 See, e.g., discussions in Palmer 1986 [60] and Portner 2009 [64].

19 This particular distinction is based on Comrie (1976, p. 25) [68].

20 See Hirschberg 1991 [71] on *ad hoc* scales.

[21] I discussed this topic extensively, and developed a formal semantic account of temporality as epistemic modality, in Jaszczolt 2009 [22].

[22] For recent discussions of graded modality see also, e.g., Lassiter 2017 [72] or Del Pinal 2022 [73].

[23] This is the view that I have been developing throughout Jaszczolt 2009, 2013, 2016, 2020, 2023a [12,22,74–76].

[24] Less controversially, instead of a clash between two kinds of representations, we can talk about the clash between 'living in the present' (without *representing* time as such) and 'thinking about different times' (representing the past, the present and the future). See also peer commentary on Hoerl and McCormack 2019 [25].

[25] Note that for Recanati, this is truth-conditional *pragmatics*.

[26] For an example of an implementation see, e.g., Hawke and Steinert-Threlkeld's (2021) [77] formal 'assertability semantics'.

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