

(A)Symmetry in Language: *Seit* and *Bis*, and Others¹

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What immortal hand or eye
Could frame thy fearful symmetry?

Blake

1 In search of symmetries

Daß die Elektrodynamik Maxwell's - wie dieselbe gegenwärtig aufgefaßt zu werden pflegt - in ihrer Anwendung auf bewegte Körper zu Asymmetrien führt, welche den Phänomenen nicht anzuhaften scheinen, ist bekannt. Man denke z.B. an die elektrodynamische Wechselwirkung zwischen einem Magneten und einem Leiter. Das beobachtbare Phänomen hängt hier nur ab von der Relativbewegung von Leiter und Magnet, während nach der üblichen Auffassung die beiden Fälle, daß der eine oder der andere Körper der bewegte sei, streng voneinander zu trennen sind. Bewegt sich nämlich der Magnet und ruht der Leiter, so entsteht in der Umgebung des Magneten ein elektrisches Feld von einem gewissen Energiewerte, welches an den Orten, wo sich Teile des Leiters befinden, einen Strom erzeugt. Ruht aber der Magnet und bewegt sich der Leiter, so entsteht in der Umgebung des Magneten kein elektrisches Feld, dagegen im Leiter eine elektromotorische Kraft, welcher an sich keine Energie entspricht, die aber - Gleichheit der Relativbewegung in beiden ins Auge gefaßten Fällen vorausgesetzt - zu elektrischen Strömen von derselben Größe und demselben Verlaufe Veranlassung gibt, wie im ersten Falle die elektrischen Kräfte.²

These are the introductory sentences of the most famous article ever published in physics, Albert Einstein's 'Zur Elektrodynamik bewegter Körper' (1905), in which he developed what has become known since as the '(special) Theory of Relativity'. What makes this passage so interesting far beyond physics is the perplexing fact that it was neither new empirical findings nor the fact that existing theories, such as Maxwell's equations, could not account for the observable phenomena that motivated Einstein: it

¹ We wish to thank Claudia Maienborn and an anonymous reviewer for critical comments and a number of additional suggestions. We have tried to comply with all of the former and to integrate at least some of the latter; a full discussion would easily have made this paper twice as long.

² It is well-known that Maxwell's electrodynamics - as usually understood at present - when applied to bodies in motion leads to asymmetries that are apparently not inherent to the phenomena. Consider, for instance, the mutual electrodynamical action between a magnet and a conductor. The observable phenomenon depends in this case only on the relative motion of conductor and magnet, whereas according to the commonly held view, both cases, i.e., that either the one or the other body moves, must be strictly kept apart. Thus, if the magnet moves and the conductor is at rest, then an electric field with a certain energy value arises in the environment of the magnet, producing a current wherever parts of the conductor are. But if the magnet is at rest and the conductor moves, then no electric field arises in the magnet's environment, but an electromotoric force in the conductor to which there is no directly corresponding energy but which - if the relative motion is the same in both cases considered - brings about electric currents of the same strength and the same course as the electrical forces in the first case.

was a deep dissatisfaction with the notion that existing theories assumed asymmetries where there were no such asymmetries in the phenomena themselves. This want for symmetry is not accidental. Three out of the seminal five papers which Einstein published in that year in the ‘Annalen der Physik’ start with very similar considerations; in each case, the existing accounts are able to ‘salvare apparentia’ - to use the old phrase for ‘cover the observable facts’. But nature is not like that: there are more symmetries in heaven and earth than are dreamt of in our philosophy.

If we were to state it in one of the slogans nowadays so popular in linguistic research, we might say that Einstein, when constructing a theoretical account of nature, consequently follows a cognitive principle ‘Avoid asymmetries!’.³ He was neither the first nor the last one to adopt such a principle. Everybody from the Babylonian astronomers up to Galilei considered it beyond discussion that the planets must move in circles, and in a way, Kepler’s laws are a stronger deviation from the sacrosanct tradition than the ‘Copernican revolution’; it is quite telling that Galilei violently advocated the latter, but never accepted the former. In the case of Einstein’s ‘Elektrodynamik’ and its various follow-up articles up to the general theory of relativity in 1916, the rigid application of ‘Avoid asymmetries!’ has led to a theory of time and space, which (a) was and still is in agreement with the available empirical evidence, (b) predicts other empirical observations, many of which could be verified since, (c) avoids undesirable asymmetries, and (d) is completely at variance with our familiar intuitions about time and space. The reason that people have been so beriddled for almost a century by the twin paradox⁴ and similar perplexing consequences of the theory of relativity is not that they have any reasonable argument against this theory; it just leads to consequences which are not compatible with everyday ideas of time and space. Why?

In this paper, we will show that the notions of time and space, as they have found expression in human language, are fundamentally characterized by *asymmetries*. This will first be done in a somewhat global way first for space and time (section 2); these considerations concern very general features of the two notions. In the main part of the paper (section 3), we shall have a more detailed look at a specific type of time expressions - the apparently symmetrical German temporal prepositions *seit* (roughly ‘since’) and *bis* (roughly ‘up to’). The paper concludes with some general considerations.

2 Time and space in human language

Space and time are two equally fundamental categories of human cognition, and it would be very surprising, indeed, if they had not found rich expression in human language. All natural languages that we know of show rich and elaborate means to express temporal and spatial relations. These means include, for both categories,

³ The anonymous reviewer points out, quite correctly, that Einstein’s attitude is more complex than that. In particular, a distinction should be made between the ‘want of simplicity’ and the ‘want of symmetry’, which often go hand in hand, but may also be at variance (see, e.g., Schilpp 1969).

⁴ Ironically, one of the reasons why the twin paradox is so hard to accept to the naive observer is the fact that it is *not* symmetrical.

- the lexical meaning of words (e.g., *long vs short*),
- inflectional marking (e.g., tense marking on the verb, locative case on the noun),
- adverbs (e.g., *here, now, leftwards, afterwards*),
- prepositions (e.g., *within, after*), and
- various complex syntactic constructions (e.g., verb periphrasis such as *will have left* or combinations of preposition and case, such as in German *in den Tierpark* ‘into the zoo’).

At the same time, we note a fundamental asymmetry between the expression of time and the expression of space: in all Indoeuropean languages, in fact, in most (though not all) languages of the world, the verb carries an *obligatory* temporal marking.⁵ This marking may indicate tense or aspect; sometimes, it indicates both. In these languages, it is not left at the speaker’s discretion to express temporality - the structural properties of the language require it. By contrast, there is no language, in which purely structural reasons force the speaker to express space: the speaker may, but need not, say where something happened or was the case. It seems, therefore, that time is much deeper rooted in the structure of natural language than space.

There is no ready explanation for this striking asymmetry. Various speculations come to mind. Thus, the process of speaking as well as the process of hearing is temporal but not spatial - one word is processed after the other.⁶ But this fact does not explain why the *expression* of temporality is obligatory in so many languages. So, while time and space may well be equally fundamental to human cognition, there is a fundamental asymmetry in the way in which human language, being an essential part of human cognition, treats these categories. We shall now see how this preference for asymmetries is continued within each of them.

2.1 Space

Spatial expressions describe where something is or takes place.⁷ In the most straightforward case, they locate some object in relation to some other object, as in (1). But as (2) shows, the situation may be more complex, since there is no object to be located:

- (1) The bill was under a book.
- (2) It was hot under the roof.

Hence, it is more appropriate to say that a place with certain properties - for example the property that there is a bill or that it is hot there - is spatially related to a place with

⁵ The most salient exception is Chinese; but even here, sentences normally carry an aspectual particle, and unless special contextual conditions are met, sentences without such a particle are somehow felt to be incomplete.

⁶ This also applies to written language, of course. Linguists tend to speak about ‘left dislocation’ or they would say, for example, that ‘scope goes to the right’. But of course, the process of writing as well as the process of reading is temporal: one sign is processed after the other.

⁷ The following argument essentially follows Klein (1991).

some other property - for example the property that it is under a book or under a roof.⁸ This pattern is found in all languages, although its morphosyntactical realization varies considerably across and even within languages. In each case, however, it presupposes some kind of spatial structure, on which the relations between the two places - the one which is located, and the one in relation to which it is located - are based. In (1) and (2), the underlying spatial structure is what one might call the ‘normal perceptual space’, as experienced by human beings in everyday action and perception. As any structure, this space can be characterized by its elements - these are the *places* - and by the relations which obtain between these elements. In the normal perceptual space, these relations are of two types. There are, first, the ‘three dimensions’, as exemplified in spatial expressions as *A is to the left of B*, *A is behind B*, *A is beneath B*, and, second, there are ‘neighbourhood relations’ or ‘topological relations’, as exemplified by *A is in B*, *A is out of B*, *A is at B*, and similar ones.

An examination of spatial expressions in any language rapidly shows that this twofold structure may be subject to a number of modifications. It can be strengthened, for example by adding a metric (*two meters behind the tree*); and it can be weakened, for example by reducing the three dimensions to two, one or possibly even zero, as is illustrated by (3a-c):

- (3) a. Boston is above New York (on a map)
 b. ... a point on a straight line (in mathematics)
 c. ... a flaw in the argument

Each of these cases - and there are many other examples - raises a number of descriptive problems. Why, for example, is Boston ‘above’ New York, why is the point ‘on’ the line, but the flaw ‘in’ the argument? But even in the simplest case, the normal perceptual space, successful spatial reference requires more than the mere existence of three dimensions. These dimensions must be kept apart and individually characterized in such a way that they can be identified in the given speech situation: how do we know what is ‘vertical’, what is ‘horizontal’, and what is ‘transversal’? Languages have found various ways to solve this problem. But the most common strategy, again found in all Indoeuropean languages and in most (though not all) others, is to exploit the *asymmetries of the human body*. The basic orientation point, the ‘origo’ of the system of spatial reference, is given by the canonical position (standing, body and head upright) of some person. Most often, this person is the actual speaker in the given communicative situation; but it may also be the actual addressee, or it may be the imaginary position of a person (for example the canonical position of a

⁸ Note, incidentally, that this assignment of properties to abstract places normally involves a temporal component: at some other time, the place where the bill was may have been occupied by something else, and similarly, the place where it was hot might not have been hot at some other time. So, it would be more accurate to say that a place with certain properties - for example the property that there is a bill *at some given time* or that it is hot there *at some given time* - is spatially related to a place with some other property - for example the property that it is under a book or under a roof. This again demonstrates the inherent time-space asymmetry in natural language: the expression of spatial relations involves time, but not vice versa. This fact is nicely reflected in the ‘temporal dimension’ of spatial adverbials such as *In Leipzig, we had an accident* in the sense of ‘When we were in Leipzig, we had an accident’. Note that the initial adverbial also suggests a temporal contrast - i.e., in contrast to a time when we were or are not in Leipzig.

car driver, which then defines what is left and what is right in a car). With this person as a basic anchoring point, the three dimensions are characterized in terms of six vectors: up and down, front and back, left and right. Up is given by the position of the head, down is given by the position of the feet. Front is defined by the direction of gaze, back is the opposite direction. Left and right is by far the most problematic half-dimensions, as reflected, for example, by the fact that children, and sometimes adults, often confuse them. But there are also body asymmetries in this regard: left is that side, where most people have their heart, and right is the opposite side (if this sounds silly, try a better definition of 'left'!).

Body asymmetries are not the only way to characterize dimensions such as to make them fit for spatial reference. The 'vertical' dimension, for example, is often interpreted in terms of the 'direction of gravity', which, when the orientation-giver is in canonical position (on earth!), more or less coincides with the head-foot asymmetry. But when these two definitions are at variance (for example when the speaker is lying in bed), either the one or the other may be used, and the speaker's choice depends on a number of criteria. As a rule, the body asymmetry is normally given more weight than gravity, but there are situations in which gravity wins out. Similar body-independent definitions are hardly possible for 'left-right' and 'front-back': there is no physical force, no general factor that would allow us to define that some place is 'left' rather than 'right'. What is possible, however, and in fact used in many languages, is the use of other asymmetrical objects, a possibility which is extensively discussed in Lang (1990, 2001). A typical example would be a house with its 'front side' and its 'back side', its 'roof' and its 'cellar'. Note, however, that houses have no intrinsic left-right asymmetry, and hence, do not offer themselves for a characterisation of this dimension with its two half-axes. If we talk about the left side or the right side of a house, we do it in relation to a certain direction of gaze, hence we again use body asymmetries.

There are other, and more complicated, possibilities, which we will not examine here. The crucial point should be clear: *The structure of space, as it underlies spatial expressions, is fundamentally characterized by asymmetries.* This fact has many repercussions in the concrete meaning of spatial terms. A clear example are 'dimensional adjectives': *long* and *short*, *thick* and *thin* are symmetrical, but only at first glance; as Bierwisch & Lang (1987, 1989) have demonstrated in detail, their functioning is crucially based on an asymmetry. This is perhaps the best-investigated case of asymmetrical spatial terms, but it is surely not the only one. German, for example, has two spatial prepositions for the 'upper' side of verticality: *A war auf dem Tisch* and *A war über dem Tisch*; both of them locate A 'higher' than the table, the difference being whether A is in contact with the table or not. The corresponding term for the 'lower' side of verticality conflates these two spatial constellations: in *A war unter dem Tisch*, A might be in contact with the table or not; it is only required that it is lower than the table (or actually, some relevant part of the table).⁹ These are only two out of the many asymmetries in the meaning of seemingly parallel terms, as we find them in all languages. But they are not mandatory; French, for example, has *sur* and *au-dessus de* as well as *sous* and *au-dessous de*, hence is completely symmetrical for both half-axes. The underlying asymmetries of the three dimensions, however, as

⁹ Note that each of these prepositions may also have other functions, see, e.g., Nüse (1999).

discussed above, are mandatory: there may be various ways to characterize them - but they are indispensable for the expression of space in human languages.

2.2 Time

One wonders whether there is more than a vague family resemblance among the various notions of time across disciplines, such as, for instance, biological time, time of modern physics, time as Kantian "Form der inneren Anschauung" and hence a necessary precondition of all human cognition, and subjective time, as influenced for example by drugs (see, for example, Whitrow (1980), Butterworth (1999)). It is even doubtful, whether the expression of time across languages - and this is what we are interested here - is based on the same concept of time. Life in modern societies is organized around metrical calendar time, and we take calendaric expression such as *in the year of 1942, for three hours and twentyfive minutes*, etc., for self-evident. But many cultures do not have such a concept of metrical time, nor the notion of one historical reference event to which everything can be related. Even where calendaric time in this sense exists, it is a fairly recent cultural achievement. But there are some features of temporal structure that, as far as we know, are reflected in all languages. These include:

- (a) Time, whatever it is, can be divided into smaller segments - time spans or intervals.
- (b) Temporal intervals by themselves have no qualitative properties; they are neither green nor blue, and they don't have handles. They are just after each other or contained in each other.
- (c) Time intervals may be long or short in duration.
- (d) There are topological relations between time spans: If A and B are intervals, then A may be (fully or partly) included in B or in the neighbourhood of B.
- (e) There is an order relation on temporal intervals: If A and B are intervals, which are not (fully or partly) included in each other, then either A precedes B or B precedes A.
- (f) There is a distinguished interval, the 'origo' which we may call "the time of present experience". Everything before that is accessible to us only by memory, everything later only by expectation.

There are two sources of asymmetry in this list of time features. First, not all time concepts have a 'distinguished moment of present experience', as mentioned under (f); in the time of physics, for example, it plays no role. But such a 'temporal origo' is crucial to the way in which languages encode temporal relations - and just as in the case of the normal perceptual space, it leads to a fundamental asymmetry. For us humans, past time - the time before this moment - is essentially different from future time - the time after this moment. The former time - or more precisely, whatever is associated with the time intervals of the past - is fixed, and whatever was the case at some time span in the past cannot be changed; the only access to them is in memory. Future events or states only have a certain likelihood; they only exist in our expectations. The second fundamental asymmetry in this time concept results from the

precedence order stated under (e); it gives rise to the ‘non-reversability of time’ in human experience. Note that these two kind of asymmetries must be clearly kept apart. Biological aging is, judging from our experience, not reversable, and hence crucial to the biological concept of time, just as it is for some philosophical concepts of time, such as Heidegger’s. But the notion of ‘aging’ is very different from what counts as past, present or future. In other words, there is the ‘earlier-later asymmetry’, which is related to the linear order of events, and there is the ‘past-present-future asymmetry’, which is related to memory, perception and expectation. Both of them are crucial to the expression of time in natural language, and all languages on the world systematically exploit them. This is minimally done by a number of adverbials in the lexical system; all languages have a rich repertoire of simple or compound adverbial constructions. Most often, it is also done in the grammatical system itself, thus giving rise to the verbal categories of tense and aspect.

In whichever way the expression of time is organized in a particular language, the two fundamental asymmetries have, just as in the case of spatial structure, numerous repercussions in the meaning of individual items. Thus, it appears that the system of past reference is always richer, or at least as rich, as the system of future reference; like old people, languages prefer to talk about the past. Intuitively, such an asymmetry in the system seems to make sense: the future is uncertain, and there is not so very much to be said about it (although: why not?). But we also find asymmetries where there seems to be no such reason, for example with respect to temporal precedence. Many languages have a grammatical ‘perfect marker’, which refers to a ‘posttime’; thus *to have slept* relates to some interval after some sleeping interval (see Musan (2000)). The opposite case, i.e., the grammatical marking of some ‘pretime’, is extremely rare. It is not obvious why languages have this preference; after all, we are as often in the pretime of sleeping as in the posttime of sleeping. In the next section, we will have a close look at another such case of asymmetry in the expression of time.

3 The case of German *seit* and *bis*

3.1 The apparent symmetry of *seit*- and *bis*-adverbials

Seit-adverbials and *bis*-adverbials are limit-specifying temporal adverbials, that is, they introduce time intervals by specifying their beginning and their end. But both *seit*-adverbials and *bis*-adverbials name only one of these temporal limits explicitly; the other limit is left implicit. Thus, while the explicit complement of the preposition *seit* (‘since’) names the beginning of the introduced time interval, the complement of the preposition *bis* (‘until’) names the end of the introduced time interval.¹⁰ This is shown in (4). While in (4a) Maria’s presence in Berlin is asserted to have begun yesterday,

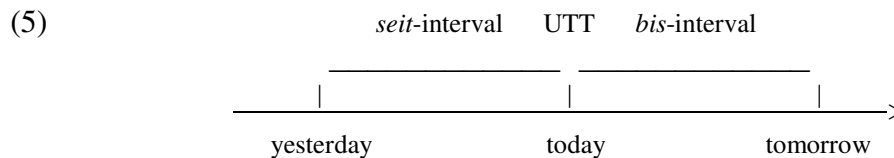
¹⁰ There are two types of *seit*-adverbials: first, those in which *seit* is combined with an expression that denotes a (possibly instantaneous) time interval directly or indirectly by referring to a (again, possibly instantaneous) situation covering a time interval and second, those where *seit* is combined with a duration expression. In this paper, only the first case is considered because *bis*-adverbials have only positional complements and they define the comparison class. For presentational reasons, we will also disregard occurrences of *seit* as a conjunction of temporal subclauses. For more details on *seit*, the reader is referred to Musan (2000, to appear).

her presence in Berlin is asserted to end tomorrow in (4b).¹¹

- (4) a. Maria ist (die ganze Zeit) seit gestern in Berlin.
Maria is (the whole time) since yesterday in Berlin
 b. Maria ist (die ganze Zeit) bis morgen in Berlin.
Maria is (the whole time) until tomorrow in Berlin

Moreover, *seit* and *bis* also seem to make use of the time of utterance in a symmetric way: (4a) asserts that Maria's presence in Berlin lasts until now, i.e. until the time of utterance (and leaves open whether it reaches beyond the *seit*-interval);¹² (4b) asserts that Maria's presence in Berlin starts now, i.e. at the time of utterance (and again leaves open whether it reaches beyond the *bis*-interval).

In this sense, *seit*- and *bis*-adverbials seem to be symmetric, viewing the time of utterance as the axis around which the symmetry is centered. The picture in (5) sketches this roughly.



This, however, is only the very first impression. *Bis*-adverbials in fact differ in several respects from *seit*-adverbials. Thus, their use of the time of utterance is not the same (cf. the discussions in Fabricius-Hansen (1986:223ff), Rathert (1999), Musan (2000, to appear)). The aim of the following is to explain in detail why the semantics of *seit*- and *bis*-adverbials leads to the impression of symmetric behavior and why this impression is in fact misleading.

3.2 How *seit*- and *bis*-adverbials make use of the time of utterance

3.2.1 *Seit*-adverbials don't

Let us start by taking a closer look at the claim that *seit*-adverbials introduce an interval that starts at the time given by the complement and that ends at the time of utterance.

For the sake of this presentation, we will adopt a simple system of tense interpretation that uses three time parameters: the time of utterance or speech time UTT, the situation time or event time SIT, and the tense time or topic time TT. According to common standard assumptions, these time parameters are taken in this paper as time

¹¹ The English glosses are only approximate; *seit* and *since*, and similarly *bis* and *until*, differ in several respects.

¹² Schipporeit (1971) assumes that the intervals introduced by *seit*-adverbials in general end at the time of utterance.

intervals rather than points of time. Simple tenses and periphrastic tense constructions are described as relations holding between the three time intervals.¹³

The notions of utterance time and situation time are intuitively clear. For the purpose of this paper, we assume that the tense time or topic time refers to a time that is set by the morphological tense of a clause and we ignore some issues concerning the future tense.¹⁴ According to the present account, the morphological present tense in German simple tense clauses and in present perfect clauses sets an environment of the time of utterance or a time after the time of utterance as the tense time of the clause; the morphological past tense in simple past tense clauses and in past perfect clauses sets a time before the time of utterance as the tense time of the clause. On the basis of UTT, SIT, and TT, we define the simple tenses and complex perfect tenses in (6), where temporal intersection is indicated by a comma, temporal sequence is indicated by ___.

(6)	Present tense ('Präsens')	UTT, SIT, TT
	Past tense ('Präteritum')	SIT, TT__UTT
	Present perfect ('Präsensperfekt')	SIT__TT, UTT
	Past perfect ('Plusquamperfekt')	SIT__TT__UTT

The situation time as well as the tense time of a clause can be specified by temporal adverbials. The explicit specification of the time parameters makes it somewhat easier to identify and to distinguish them. This can be seen especially clearly in perfect clauses because in these clauses the situation time and the tense time diverge. In the past perfect clause in (7), for example, *eine Stunde vorher* specifies the situation time, i.e. the leaving of the storm, while *gestern um 12* specifies the tense time and hence, the having left of the storm. Hence, the disappearance of the storm is temporally located at yesterday 11 o'clock while yesterday at 12 o'clock it was gone already.

- (7) Gestern um 12 hatte der Sturm sich eine Stunde vorher verzogen.
yesterday at 12 had the storm self an hour before left

The examples in (8) show *seit*-adverbials as specifiers of the situation time in a present perfect clause and in a past perfect clause. In both examples, the *seit*-adverbial locates Eva's sleeping in time: it is asserted to have taken place in the *seit*-interval.

- (8) a. Jetzt hat Eva seit 10 Uhr geschlafen.
now has Eva since 10 o'clock slept
 b. Gestern um 12 hatte Eva seit 10 Uhr geschlafen.
yesterday at 12 had Eva since 10 o'clock slept

But crucially, the time interval introduced by the *seit*-adverbial does end at the time of utterance only in (8a). In (8b), the *seit*-interval intuitively ends yesterday at 12 o'clock.

¹³ The system using three time parameters goes back to Reichenbach (1947). There are many substantial arguments against this simple analysis (see, for example, Klein 1994); but they do not matter for present purposes.

¹⁴ For more details, see, for instance, Klein (1994) and Musan (2000).

Hence, the generalization that *seit*-adverbials introduce time intervals that start at the time given by the complement of *seit* and that end at the time of utterance apparently was wrong to begin with. In actual fact, the *seit*-interval in (8) ends at the tense time given by the adverbials *jetzt* and *gestern um 12*, respectively.

Let us assume this to be in fact the adequate generalization concerning *seit*-adverbials:

- (9) *Seit*-adverbials introduce time intervals that begin at the time given by the complement of the preposition and that end at the tense time of their clause.

We have seen this for the case of the present and past perfect in (8). But how about simple tense clauses? Recall the present tense clause in (4a), repeated here as (10a), and consider the past tense clause in (10b).

- (10) a. Maria ist seit gestern in Berlin.
 Maria is since yesterday in Berlin
 b. Maria war seit gestern in Berlin.
 Maria was since yesterday in Berlin

Just as in the examples in (8), the *seit*-intervals in (10) provide a time frame for the situation time of the clause, too. Since in simple tense clauses, the tense time and the situation time at least partially correspond to each other, doubts about our generalization may arise: how could the *seit*-adverbial possibly introduce a time interval that *ends* at the tense time when, by specifying the situation time of the clause, the adverbial *corresponds* to the tense time?

On closer inspection, however, it turns out that this is no contradiction at all: when an interval is supposed to end *at* the tense time, it is in principle free to end at the beginning of the tense time interval, at the end of it, or somewhere in between. In simple tense clauses like the ones in (10), the *seit*-interval meets the 'end-at-the-tense-time' condition by ending at the end of the tense time interval. Hence, the beginning of the *seit*-interval may very well be located at the beginning of the tense time interval – as long as its end does not reach beyond the tense time. Consequently, the *seit*-interval is able to specify the situation time that corresponds to the tense time. And so the data in (10) are compatible with the generalization in (9).

To summarize, *seit*-adverbials do not take the time of utterance as the end of the *seit*-interval but rather the tense time. The impression that the time of utterance is used as the end of *seit*-intervals is caused indirectly: when the tense time and the time of utterance correspond to each other, as they do in present tense clauses and present perfect clauses, it appears as if the time of utterance provides the end of the *seit*-interval. But this is nothing more than an epiphenomenal coincidence.

3.2.2 *Bis*-adverbials don't either

In the preceding subsection, it was shown that *seit*-adverbials in fact do not really make use of the time of utterance. When they seem to do so, this is only a side-effect of the time of utterance corresponding to the tense time of the clause. But how about

bis-adverbials? Do they indeed systematically make use of the time of utterance?

Let us first check their readings in simple tense clauses as in (11). Each of the sentences has a reading which locates Josef's being in Berlin within the interval introduced by the *bis*-adverbial. (11a), however, also has another reading according to which Josef's arrival in Berlin – that is, the beginning of his being in Berlin – is located within the *bis*-interval. In (11a), the *bis*-interval starts now, i.e. at the time of utterance; in (11b), it starts at some time before yesterday.

- (11) a. Josef ist bis morgen in Berlin.
Josef is until tomorrow in Berlin
 b. Josef war bis gestern in Berlin.
Josef was until yesterday in Berlin

Hence, although *bis*-adverbials *can* introduce time intervals that start at the time of utterance of their clause, they do not *have* to do so.

So far one may generalize that the *bis*-intervals start at the time of utterance only in the case of present tense clauses, but not in past tense clauses. But this does not seem right either: when the present tense clause (11a) is put into more specified contexts, it turns out that the *bis*-interval does not even in these cases *have* to start at the time of utterance. Rather, the preferred reading of the clause is something like "Josef will be in Berlin from (the next) two o'clock until tomorrow."¹⁵

- (12) [Josef kommt um zwei an und] er ist bis morgen in Berlin.
[Josef comes at two at and] he is until tomorrow in Berlin

In this example, the beginning of the *bis*-interval is not the time of utterance but rather a contextually salient time that is inferable from the preceding context. Thus, it seems that the adequate generalization concerning *bis*-adverbials is something like (13).

- (13) *Bis*-adverbials introduce time intervals that end at the time given by the complement of the preposition and that begin at some contextually salient time.

Under this view, the choice of the time of utterance as the beginning of a *bis*-interval is just a special case of choosing a contextually salient time. Since the time of utterance is always contextually salient, it is an ideal candidate for providing the beginning time of a *bis*-interval.

Another special case of choosing a contextually salient time as the beginning of a *bis*-interval is shown in (14). Here the left boundary of the *bis*-interval is explicitly mentioned in the clause by the *von*-adverbial.

- (14) Josef ist von zwei Uhr bis morgen in Berlin.
Josef is from two o'clock until tomorrow in Berlin

¹⁵ The fact that this futurate reading can occur with the present tense is due to the general ability of present tense clauses in German to receive futurate readings, especially when they are combined with appropriate temporal adverbials.

Still another option in temporally unspecified contexts is that the left boundary of the *bis*-interval is simply left indefinite or unspecified, as in the past tense clause (11b), repeated here for convenience as (15).

- (15) Josef war bis gestern in Berlin.
Josef was until yesterday in Berlin

The options described above can be realized in perfect clauses, too. Consider the examples in (16). They show *bis*-adverbials in a present perfect clause and in a past perfect clause. Under the most preferred readings of the examples, the *bis*-adverbials function as specifiers of the situation time of the clauses. Since the contexts of the sentences do not contain any temporal specifications, no such temporal value from the context can be used as the beginning of the *bis*-interval. In (16), the time of utterance cannot be taken as the beginning. This is so since in both cases, the situation time of the clause has to be located before the time of utterance – simply because of the present perfect and the past perfect employed in the sentences (cf. (6)). Given that the situation time has to be located before the time of utterance, it cannot be located within a time interval that starts at the time of utterance and ends after it. Consequently, the *bis*-interval cannot take the time of utterance as its beginning. Hence, in (16a) and (16b), the beginning of the *bis*-interval is indefinite.

- (16) a. Jetzt hat Eva bis 10 Uhr geschlafen.
now has Eva until 10 o'clock slept
 b. Gestern um 12 hatte Eva bis 10 Uhr geschlafen.
yesterday at 12 had Eva until 10 o'clock slept

To summarize, *bis*-adverbials do not take the time of utterance as the beginning of the *bis*-interval but rather, if possible, a contextually salient time. The first impression that the time of utterance is used as the beginning of *bis*-intervals is an epiphenomenal coincidence: since the time of utterance is always contextually salient, it can be easily used as the beginning of the *bis*-interval – unless this is not possible for independent reasons, as in (16a) and (16b).

Hence, when *bis*-adverbials make use of the time of utterance in order to construct an interval, this is only a side-effect of the time of utterance being a contextually salient time.

3.3 Differences in how they don't do it

What did we find out? – On the one hand, *seit*-adverbials do not really make use of the time of utterance; when they seem to do so, this is only a side-effect of the time of utterance corresponding to the tense time of the clause. On the other hand, *bis*-adverbials do not make use of the time of utterance as such any more than *seit*-adverbials do; when they appear to do so, this is only a side-effect of the time of utterance being a contextually salient time.

In other words, the apparent symmetry of *seit*- and *bis*-adverbials is due to the fact that the time of utterance is a time parameter that is, by its prominence, predestined to

fulfill several crucial interpretive functions. One of these functions is its use as a contextually salient time that can fill vague or open time parameters by a concrete value; another such function is its use as the tense time in temporal interpretation.

Thus, the interpretation of *seit*-adverbials and *bis*-adverbials is not at all symmetrical in the sense introduced above. *Der Schein trügt* – in this case, as often, in a double sense. First, for both *seit*-adverbials and *bis*-adverbials the end and the beginning of their intervals, respectively, does in fact not always have to correspond to the time of utterance. Second, even when it does so, it does so for different reasons. Hence, the apparent symmetry is mere illusion. There are more asymmetries in language than are dreamt of in our philosophy.

4 Concluding remarks

If research in physics is indeed inspired by a principle such as ‘Avoid asymmetries!’ - and there is good reason to believe that, explicitly or implicitly, this is what physicists have done over the centuries, before and after Einstein - then this does not mean that the existence in nature of asymmetries is denied. It reflects a research strategy, a certain mental, and maybe emotional, attitude in the way in which nature should be looked at, when the human mind constructs theories, or partial theories, of it. But this is surely not the approach which the human mind takes when constructing those notions of time and space that underly the expression of these categories in human language. If we were to state this approach in a slogan, as well, it should rather be ‘Look for asymmetries!’.

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