PERFECTIVE AND PERFORMATIVE
A reconstruction of aspectual universals

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1. **Scientific mentalism**

Major investigations of the linguistic activity of the mind took place seventy years ago in mid-20th century. At a time when the anti-mentalism of Bloomfield (1926, 1933) and Chomsky (who assures his readers that his work is "not a model for a speaker or a hearer" 1965:9) was the norm, George Miller published his 1956 article on measuring the Working Memory, thereby making the mind unambiguously accessible to modern science.

Three years later, Wilder Penfield, a renowned Montreal neurosurgeon, published, with his colleague Lamar Roberts, *Speech and Brain Mechanisms*, a book which reported the discovery of language centres in the brain, in the course of investigations made during invasive brain surgery. This book, which has recently been reprinted, is of fundamental importance to the discipline of linguistics. Antimentalism was thus shown, by the disciplines of Psychology and Medicine, to be an unacceptable positivist prejudice.

Without a speaker, in fact, there can be no human language. The speaker-writer consequently can not be left out of the scientific investigation of language: the first of the three Canons of Science requires "...the adequate treatment of all the relevant material" (Robins 1964:7).

2. **European structuralism**

In *Tense and Aspect in Indo-European Languages* (Hewson and Bubenik 1997, hence TA in IE) the existence of two major completive aspects, called here Perfective and Performative, and two major incompletive forms, traditionally called Imperfective and Progressive was traced through all twelve families of the Indo-European linguistic phylum.

In the 20 years following 1997, we applied what we had learned from IE languages to other languages and other language families, notably Semitic (Bubenik 2012. Bubenik, Hewson, and Omani 2013), Bantu (Hewson and Nurse 2000, 2005, Hewson, Nurse, and Muzale 2002), Afro-Asiatic (Nurse, Rose, and Hewson 2010).

Wherever we turned, we found the same patterns emerging. In phonology, of course: vowel contrasts are based on simple parameters: the opening/closing of the jaw, the fronting/ backing of the tongue, and other simple binary contrasts. The simplest of vowel systems are consequently three fold (Inuktitut, Arabic: i, a, u), four fold (Algonkian: i, e, a, u) five fold (Latin: i, e, a, o, u), and so on. If languages were not inherently systemic, these patterns would not emerge.

This paper will trace the basic distribution patterns of two pairs of Completive and Incompletive aspects that are found universally not only throughout the IndoEuropean domain, but in other language phyla throughout the world. They appear to be linguistic universals, in the same way that vowel grids are based on universals (movements of tongue and jaw, controlled by the mind).

3. The simple binary contrasts of aspect systems
Time is movement, and all movement is perceived as either figure against background, the time involved in creating a sentence (Ascending Time −−►), or background against a figure (Descending Time ◄——), the time involved in the recording of a sentence by the Working Memory, as each moment of the present descends further into the past.

AT is consequently time that moves towards the future, towards the completion of the speaker's sentence; DT is time that moves towards the past, recording the activity of the present in the Working Memory and moving it ever deeper into the past (Miller 1956, Baddeley 2007). It is like the strip of film moving in one direction, while the activity recorded on the film moves in the opposite direction. Whereas the creation of a sentence is intentional (active, AT), the recordings of the W(orking) M(emory) are involuntary (passive, DT).

3.1 Linguistic representations in Descending Time
It is the content of these mental recordings, in DT, that provide the material for two fundamental linguistic aspects, the Imperfective, which represents what is ongoing in the WM (*going, going, going ...)*, and the Perfective, which represents what has reached completion in the WM (*gone!*). It is consequently normal for Imperfectives to be unmarked and Perfectives to be marked forms (an item that has ceased to be ongoing). The exclamation *gone!* (recognition of a discontinuity in the WM) is one of the most common first words of the English speaking child.

At the finite level, however, the Present forms represent complete events. English does not have any finite representations in DT (*going* and *gone* are not finite forms). The two-tense system of all the Germanic languages is constructed entirely in AT (Hewson and Bubenik 1997:209ff). Germanic languages have no tensed Perfectives or Imperfectives. The completive tensed forms in Germanic are Performatives, and the incompletive tensed forms are Progressive (systemic only in English and Icelandic, but found randomly elsewhere: German *Sie ist am essen*, "She is eating)".

3.2 Linguistic representations in Ascending Time
In Ascending Time, in fact, the Performative is typically the unmarked form; it appears that the Progressive, wherever it is found, requires an auxiliary of some kind (symbolized by X in the table below), a clear indication of a marked form. It is also less frequent than the Imperfective: of the seven major Germanic languages, all of which have two tenses in AT (i.e. Performatives), only English and Icelandic have a fully grammaticalized Progressive.

Table One gathers the basic systemic relationships discussed in this paper into a single diagram; it may be considered a reference point for the whole article. It brings into focus the relevance of the psychological research done on the Working Memory, from the early experiments by Miller to the comprehensive coverage presented by Baddeley (2007), which shows the relevance of the Working Memory to every act of language: in order to be digested, a sentence must first be recorded in the WM (typically by sound or sight). This is an area of Linguistics which has been neglected, partly perhaps as a result of the lingering anti-mentalism of the last century.

Systemic Relationships	Symbols of movement	Cognitive Experience	Completive Form	Incompletive Form
Ascending Time exterior view of unit	——>	Active operations of thinking and talking	Performative [X ————>]	Progressive [—— x- - - ->] X
Descending Time interior view of unit	<——	Passive operation of Working Memory (content)	Perfective [<————X]	Imperfective [<——X - - - -]

Table One

In this paper the earlier survey of the tense aspect systems of Indo-European (TA in IE 1997) has been extended to other major language phyla, notably Semitic, and Niger-Congo, and also to Chinese and (briefly) to Burmese, showing results that confirm that these four aspectual forms are found under various guises in other language families and phyla around the world, and *can always be identified by their distribution in a range of typical functions.*

4. **Perfective and Performative**.
A suitable label for the aspect found in the simple tenses of English: *I listen/ listened, I speak/ spoke*, has been a question of discussion for decades. Comrie, for example, follows the practice of the grammarians in calling them *Simple Forms*, and opts for the term *Nonprogressive* (1976:25) to indicate that this form, which has a wide range of functions, and is difficult to define in a single term, is *not* a Perfective.

Comrie 1976:78, chooses to use Perfective for Arabic completive forms ``although the meanings of the term are different from those used in Slavonic linguistics and elsewhere in this book.''

Bybee et al., however, use the term *Perfective* for two different forms, a usage also followed by Smith (1997:69) and also by Xiao and McEnery, whose fourth chapter is entitled *The perfective aspects of Chinese* (2004:89-180), thus acknowledging that in much current aspectual literature two substantially different items are both labelled "Perfective".

In traditional German grammar, moreover, the simple past tense form is called *das Imperfectum*, presumably because in much usage it corresponds to the usage of the *Imparfait* of French and other Romance languages: *We knew what she meant* = French *Nous savions ce qu'elle voulait dire.* The correspondences are presented in Table Two.

German	*ich wusste*	*ich liebte*	*es war*	*sie meinte*
French	*je savais*	*j'aimais*	*c'était*	*elle voulait dire*
English	'I knew'	'I loved'	'it was'	'she meant'

Table Two

5 Patterns of form and usage

There is a need for a clear, categorical terminology without ambiguities. One term, for example. should not be used for two different systemic entities: as noted long ago by Comrie (1976:78): what is called Perfective in Classical Arabic grammar is not the same as what is called Perfective in Slavic linguistics and elsewhere. As we shall show in what follows (Section 9 below), what is called *Perfective* (PFV) in Classical Arabic grammars can be used in performative function (as in *I accept*, *I resign*, *I promise*, where the words themselves perform the action that is represented), a normally *impossible* usage for a genuine Perfective.

In TA in IE it was decided to use the term *Performative* for the aspect which is found in these forms, not only in English, but in other language families all over the globe. This was done for three important functional and distributional reasons which are outlined as follows.

(i) This form is typically used in performative function in English, (and Germanic languages in general). As outlined by Austin (1962), *I resign* is a resignation, and *I promise* is a promise; but *I am resigning* is *not* a resignation, and *I am promising* is not normally a promise. Where Slavic languages typically use an Imperfective in performative function, English cannot use the Progressive. A Progressive is typically a referring form: *I'm resigning*, an affirmation of a previous decision.[1]

(ii) the Performative form of the verb is used to represent the **complete performance** of all phases of the event. When reporting on Past events, using the same class of verbs as in (1), the English Performatives correspond to Slavic Perfectives, which also represent complete events, as in the Russian and Polish Perfectives in (3) below.

(3)   Eng. *I accepted* (PFM)   = Rus. *ja prinimal* (PFV)   = Pol. przyjmałem (PFV)
          Eng. *I promised* (PFM)   = Rus. *ja ob'eščal* (PFV)   = Pol. ślubiłem   (PFV)

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[1]Exceptions may be found, where there are contrastive minimal pairs: *I tell you/ I'm telling you it's true.* A Progressive may be used if the Performative is being ignored, or likely to be ignored.

(iii) It will be shown in Section 6.0 below that since states are monophasal (the term is from Hirtle 2007:88), there is also an important distributional contrast in the usage of stative verbs. In past tenses, Germanic languages use Performatives for stative verbs, whereas Slavic languages (and most of the other Indo-European groups) use Imperfectives, as in (4).

(4)   English   We **knew** (PFM that he **was** (PFM) old (*were knowing, *was being)
        French   On **savait** (IPFV) qu'il était (IPFV) vieux.
        Czech   **Věděli** (IPFV), že země **je** (IPFV) kulatá

The single phase of a state is necessarily complete from the very first instant: there is no further phase to follow. The performance of a monophase is consequently phasally complete from the very first instant; and monophasal verbs often have an inchoative meaning. In the sentence "She sat down and waited", or "He went over and stood by the open window", the waiting and the standing begin immediately and continue indefinitely as monophasal states; they would be Imperfects in French (*attendait, restait debout*). The Perfective on the other hand, is time-dependent, not phase-dependent: it is not complete until the very last instant, and may not be used for open-ended states. This issue will be dealt with comprehensively in Sections 5 and 6.

The distributive contrasts of PFV and PFM present contradictions that need to be explained, or at least justified. We may state them formally in (5).

(5)   Performative function (Nonpast)   Germanic PFM corresponds to Slavic IPFV
        Reporting completed activities (Past)   Germanic PFM corresponds to Slavic PFV
        Reporting with stative verbs (Past)   Germanic PFM corresponds to Slavic IPFV

In TA in IE the term *Perfective* (PFV) is used only in the traditional Slavic sense, and the term *Performative* (PFM) is used for the forms in Hittite, Germanic, Modern Indic, and Modern Iranian, which represent *not so much the completed event as the performance of all phases of the event* (from beginning to end). The PFM is also used in performative function, where Perfectives can *not* normally be used. In this paper the different *distribution* patterns of Perfective and Performative will be made explicit, and the rationale behind these differences explored.

This state of affairs requires a review of the aspectual typology of a wide variety of languages, where the systemic combinations of Completives (PFV/ PFM) on the one hand, and Incompletives (IMPV/PRG) on the other, can be found in finite forms of the verb. These verbal forms, which appear as universal categories in the languages of the world, are then analysed as mental representations of the cognitive experience of time, as demonstrated by the function of the Working Memory (Descending Time), and the operations of the active mind (Ascending Time), a binary contrast that yields three common systemic patterns in the languages of the world: PFV/IPFV, as in Slavic; PFM/PRG, as in English, or PFM/IPFV as in Semitic. We also give examples from a very small number of languages that have all four variants: PFV/IPFV/PFM/PRG (Akan

[Niger-Congo], Kikuyu [Bantu], Chinese [Sino-Tibetan]).

6. **The primary role of representation in linguistic usage**

A lingering result of mid-twentieth century positivism is the unspoken (and untenable) assumption that a language is a nomenclature for things and events in the real world, which would require, in a terminology which has been in use since the time of Descartes, a "God's-eye-view" of the world that human beings do not have. We can only talk about what is immediately perceivable, the contents of memory, and what we might imagine. Our knowledge of the world is entirely dependent upon the cognitive faculties of memory, perception, and imagination.

If someone says, for example, "She disappeared around the corner", what is reported is a personal perception. A person situated on the second street might in fact represent the same event by "She appeared round the corner". From a God's-eye-view of the world she did not appear or disappear at all: she was just as visible after turning the corner as she was before. If we ask which of these two sentences is true, we must assert that both are true, although they both represent the same event, and at the same time contradict each other.

There are, furthermore, different representations used in different contexts, as in (6), where (6a) has two different representations of the same event. But whereas sentence (6a) is acceptable, the grammar of sentence (6b) is not accepted by native speakers of English. Here again are linguistic facts that need to be explained, or at least justified.

(6)   a.   He *has gone* to Paris; he *went* last week.
        b.   He *has gone* to Paris; *he *has gone* last week

All four verbs in the two sentences refer to the same event; it is clear that there is a lot more to the use and function of language than simple reference to experience. The view that languages are nomenclatures is an unacceptable form of reductionism: languages are organized systems for *representing* not only experiences perceived and recorded by human cognitive faculties, but also the reflections and creations of human minds.

6.1 **What do tense and aspect forms represent?**

The question of verbal meaning is discussed at length in *The Oxford Handbook of Tense and Aspect* (2012:123-154) by Jean-Pierre Desclès and Zlatka Guentchéva: "Universals and Typology". On questions of grammatical aspect they write (p.128):

> The typological approach generally applied to grammatical aspect and tense (see Comrie,1976, 1985; Bybee, 1985; Dahl 1985, 2000, 2005; Bybee and Dahl 1989; Bybee et al 1994) is more inductive than that applied to actionality (Aspect). It is based much more on empiric observation leading to more general categories and then to a set of "universal gram types," themselves the result of "grammaticalization paths".

In short, this is Bloomfieldian antimentalism: the "gram types" are generalizations based on observed regularities. Gram types do not produce these regularities, and the speaker is eliminated by antimentalist doctrine. The major problem with this approach is that language without a speaker is scientifically impossible. It is speakers who produce discourse; if there is no speaker, there is no language. Antimentalism is a blind alley.

6.2 **Evidence of phonemic systems**

As early as 1925 Sapir had outlined vowels as positions in a system, as in the publication of the first vowel grid (Daniel Jones in *Outline of English Phonetics*, published in 1918). For over a hundred years, vowels have been treated as positions in a system, the values in a three vowel system being substantially different from those in a four or five vowel system, as exemplified by the hundreds of vowel systems in Ladefoged and Maddieson (1996).

6.3 **Grammatical systems**

A speaker who has learned a language has necessarily accumulated all the so-called Emic entities (see Table Five) which are needed in order to create new sentences, and to understand the sentences of other speakers. As the neurosurgeons have shown (Penfield & Roberts 1959, 2014), such linguistic items as Phonemes, Morphemes, Sememes, and Grammemes are stored at various points on the cortex of the brain and accessible to physical intervention. In ordinary conversation, however, the Emic entities in Table Five are never heard: what the hearer observes and interprets is an endlessly variant product (Allophones, Allomorphs, Allosemes, Allograms), and not the means of production (Phoneme/ Morpheme/ Sememe/ Grammeme), which are not immediately accessible to human observation. As with vowel systems, which are equally inaccessible, the parameters of the Emic entities of a language require to be reconstructed from the data.

Phoneme ➞	Allophones	/ t / ➞ [t ~tʰ]	*/strikt/* [strɪktʰ] (variant aspiration)
Morpheme ➞	Allomorphs	/ænd/ ➞	[n, nd], (*you and me; you and I)*
Sememe ➞	Allosemes	station ➞	bus station, radio station (on radio)
Grammeme ➞	Allograms	(to) be ➞	Infinitive, Subjunctive, Imperative

Table Five

The Emic entities typically form systems, such as a vowel system or consonant system:

Vowel System: i   u   Consonant System   p   t   k
                    a   b   d   g

The variation to be found in these categorial parameters within a single language is well known; English, for example, as a worldwide language typically has a contrastive system of five or six short vowels, which the dialectologists have exemplified with the words *pit/ pet/ pat/ pot/ put/ putt.* But not all speakers of British English, as shown by John Wells (1997), have all six vowels.

The Midlands and North of England, for example, normally have only five contrastive short vowels. The distinction between *put* and *putt*, which originated in Early Modern English, never caught on in the Midlands and Northern dialects.

6.4. **Variation in tense and aspect systems**

Similar kinds of variation occur in tense and aspect systems. All the major Germanic languages, for example, have two tenses in Ascending Time, but the boundary between the Past and the Nonpast in Dutch and German is slightly different from the boundary between the Past and the Nonpast in English and the Scandinavian languages (TA in IE 224-225), allowing for the use of the Present Perfect in past reference as in (7), a usage not possible in English.

(7)   German   Gestern habe ich ihn gesehen
         English   I saw him yesterday. *I have seen him yesterday.

A recent book by Stephen Dickey (2000) also raises the question of the variation of aspectual usage in Slavic languages. He surveys the earlier Slavist literature (Koschmieder 1934, Bondarko 1971, Galton 1976) on the use of a present with the perfective aspect, as seen in rituals of the type *I baptize you*: (Czech *křtim tě ve jménu*). The perfective counterpart *po-křtim t*ě *ve jménu* would represent the future (e.g. this afternoon, tomorrow, and so forth.

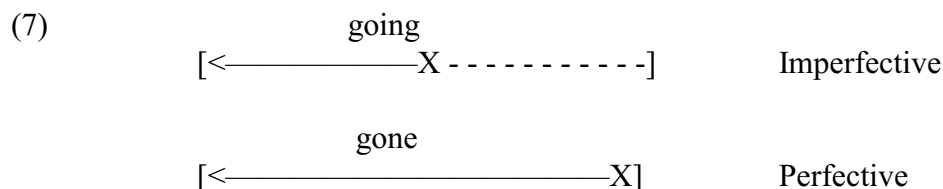## 7.0 **The cognitive basis of aspectual forms**

One of the earliest linguistic contrasts to emerge in child language is the aspectual distinction between *Completive* and *Incompletive*[2]: contrasting linguistic representations of events that are complete, and events that are still in progress. For a substantial number of English speaking children, the expression *gone!* or *all-gone!* constitutes their first usage of the mother tongue, 'their first words' (Bloom 1973, Brown 1973, Gopnik 1981, Tomasello 1992). *Gone!* is an aspectual form: it is the recognition of an event as complete. Given such a large percentage of children making their first linguistic representation in such a way, it is important to explore why a completive aspectual form is so often the first linguistic expression, not only of the anglophone child, but of children of other languages and other language families, e.g. Italian, Greek, and Turkish (Antinucci and Miller 1976, Stephany 1985, Aksu-Koç 1988).

In mid twentieth century significant research was carried out on the operations of the Working Memory, which was shown in the early work of Miller (1956) to have a retention span of seven (plus or minus two) digits of information. Since this is the memory that is essential for understanding a sentence, it is of fundamental importance to linguistics[3]. Overviews of this research may be found in Parkin 1993:119–144, Baddeley 2007, and elsewhere.

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[2] As explained in Section 2 above, *Completive* includes both *Perfective* and *Performative*, and *Incompletive* includes both *Imperfective* and *Progressive*.

[3] It enables the recapitulation of a phrase or even a short sentence for further perusal. It also enables the early part of a sentence to be retained while the rest is still being composed.

The operation of the Working Memory is the human organism's fundamental experience of time, and since the WM can be measured, this experience of time becomes a scientific datum: time working in the mind, taking the most recent memories deeper into the past as newer memories are accumulated. This descending view of time, automatically recording experience, is one of the major passivities of living organisms, and as such the obvious basis of one of the most fundamental aspectual contrasts: that between the ongoing Imperfective (*going, going, going*) and the arrival of its ultimate moment of completion, the Perfective (*gone!*), as in (7).[4]

(7)   going
                    [<——————————X - - - - - - - - - -]   Imperfective

                         gone
                    [<————————————————————X]   Perfective

(The square brackets represent the beginning and end of the event; the solid lines = *accompli*, and the dotted lines = *inaccompli*. The arrow indicates direction of movement, here Descending Time, the inherent movement of the Working Memory towards the past.)

These two participles from English illustrate a basic, quasi-universal aspectual contrast, where the form *going* shows a boundary between what is complete and what is incomplete,[5] whereas in *gone* the boundary has been eliminated. These are two different mental representations of experiential time, as it moves through the mind enabling the operations of the Working Memory in Descending Time, moving the most recent experiences deeper into the past, as symbolized by the arrow pointing left. The image is that of a passenger in a railway train, facing the rear, and watching the landscape as it disappears:.

The diagrams used in (7), with their square brackets to represent the beginning and the end of the event, were used in TA in IE to present a set of five cardinal positions that are the basis of aspectual forms used in human languages, as in (8), where the letters represent the position of the subject in relation to the event.

(8)   **A[B --------------- C--------------- D]E**

A = before the event (Prospective); **B** = at the beginning (Inceptive, Inchoative); **C** = between the beginning and the end (Imperfective, Progressive); **D** = at the end (Perfective); **E** = after the end (Retrospective, formerly Perfect, or Anterior[6]). These are not, by themselves, aspects, but the

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[4]This is not new: Bybee et al (1994) comment, apropos of the Slavic Perfectives that "Dahl (1985:74-75) argues that ... in the Slavic type some limit has been attained".
[5]The French terms *accompli/inaccompli* are often used as mass nouns for descriptive purposes as in "The English Retrospective Participle *gone* has no *inaccompli*".
[6]Because of a common confusion between Perfect and Perfective, Bybee et al (1994:55) "decided to use the term 'anterior' rather than 'perfect' for what in English is called Perfect". The intent is

cardinal positions on which aspect systems are typically based. The interplay of the internal positions with AT is quite complex, C being possible in AT only with the aide of an auxiliary.[7]

8.0 **The cognitive structure of lexical aspect (Aktionsart)**
In early child language children show awareness of the whole range of the Aktionsart contrasts noted by Vendler (1967): states, activities, accomplishments, and achievements, that are reflected in the lexical meaning of all verbs.

These four Aktionsarts represent the four different phases of any event, as in (9). In these diagrams the square brackets likewise represent the beginning and end of the event, but the contrasts here are lexical, not grammatical. The figure 1 represents the beginning phase, 2 represents the middle phase; 3 represents the completion phase, and 4 the result phase. X represents the position of the potential subject, which in the English finite verb plays the syntactic role of support to the verb, to which the verb is syntactically dependent.[8]

(9)

1 [X————————————————>]	State	Monophasal
1 2 [X————>————>- - - - - ->]	Activity	Biphasal
1 2 3 [X————>————>————>]	Accomplishment	Triphasal
1 2 3 4 [X————>————>————>]————>	Achievement	Quadriphasal

States: *live, stay, like, want, see*   Activities: *walk, talk, run, fly, do*
Accomplishments: *jump, give, tell, put*   Achievements: *create, erect, design, make*

States are monophasal because every moment of the event is identical to every other moment. Activities have a beginning and a middle but no completion; if the completion is added the result is an Accomplishment: *jump*, for example, has a beginning (leaving the ground), a middle

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laudable, but in a true Perfect the emphasis is typically on the ensuing result phase, rather than on what is anterior: **I have seen that yesterday* (which represents what is anterior) is in fact not a possible sentence in English.
[7]One of the oddities of the Progressive is that it typically has an auxiliary: see Section 11.2 on the Chinese Progressive. The difference between DT and AT parallels that between mass nouns (DT = interior continuate view of the event) and count nouns (AT = exterior unit view of the event).
[8]A finite verb in English does not require an object, but it does require a subject, whether explicit or implicit. In many languages the subject is incorporated into the finite verb.

(movement through the air), and an end (returning to the ground). The Achievement, in turn, represents some kind of result stemming from the completion of the event.

Many verbs have allosemes that take them into a different category: *sit, stand, lie*, for example, become Accomplishments and/or Achievements in *sit down, stand up, lie down*. Many Activities when accompanied by a Direct Object also become Accomplishments and/or Achievements: *do the washing up, eat an apple, write a letter*. When said of a human being or an animal, *run* is an Activity, but when said of a slow river, it normally becomes a State, because all phases of the event are then normally identical, whereas human running is an activity with phases called *strides*. In short, basic Aktionsart, lexical aspect, is constantly affected by context and situation.

9. **The linguistic representation of Ascending and Descending Time**
The sometimes strange differences between different aspects, and different aspectual systems can not be properly or fully understood without the recognition of the fact that tense and aspect are regular and normal representations of human cognitive experiences. To human perception it is the sun that moves; in terms of the solar system it is the Earth that moves.

Time is movement: either the figure moves against the background, or the background moves against the figure. The sun, for example, rises in the east and moves across the sky to set in the west: it is perceived as in motion around the earth. A God's-eye-view of this activity, however, reveals that the Earth not only revolves on its North-South axis in every twenty four hour day, but also makes a complete orbit around the sun in every calendar year.

9.1 **The binary nature of temporal experience**
There has been extensive commentary by linguists and psychologists on the binary nature of temporal experience: Benveniste 1965, Fillmore 1975, Traugott 1978, using such terms (Clark 1973:35) as 'moving-ego' (Ascending Time) vs. 'moving-world' (Descending Time) or 'moving-ego' vs. 'moving-time' (Fleischman 1982:324). Lakoff & Johnson (1980) use the terms *Moving Time* and *Moving Observer*, which are also discussed in detail by Pinker (2007:191). Recent research in Cognitive Psychology (Gentner, Imai, and Boroditsky 2002), using Fleischman's *moving ego* versus *moving time* as metaphors for AT and DT, reveals that English native speakers comprehend ego-moving metaphors faster than time-moving metaphors).

Our own usage of AT and DT stems from Gustave Guillaume, who used arrows to show the difference in his revolutionary 1929 book *Temps et Verbe* and ten years later (31 March 1939) was using the terms *le temps ascendant* and *le temps descendant* in his classroom teaching at the École des Hautes Études at the Sorbonne in Paris (Guillaume 1992:210).

Guillaume's terminology has the advantage of using only the word *Time* for both concepts, and avoiding *world* and *ego*. Descending Time moves deeper and deeper into the memory, and Ascending Time advances, moving into new, unexplored territories. As a direct result of these

two universal human experiences, there are two different ways, in the languages of the world, of representing completive and incompletive experiences, involving major differences of distribution, as presented in the chart in (10) (based on Hewson 2012:517).

(10)

	Completive	Completive	Incompletive	Incompletive
Aspectual form	PFV	PFM	IPFV	PRG
A. Complete activities	yes	yes	no	no
B. Complete achievements	yes	yes	no	no
C. Statives	no	yes	yes	sometimes
D. Performative function	no	yes	yes	no
E. Instant Presents	no	yes	yes	no
F. Habitual function	no	yes	yes	sometimes
G. Proverbs	no	yes	yes	no
(cognitive representation)	DT	AT	DT	AT

There are other interesting distributions. In languages with no tense contrasts e.g. Chinese (11.1 below), many West African languages (9.6 below), but only a Vast Present with the ongoing present typically represented by Imperfectives, the Past can be represented by either a Perfective or a Performative (ex. (35) below): whatever is complete in the Vast Present has to be in the past. But in languages with binary tense contrasts, such as Germanic and Slavic, the completive forms of the Nonpast tense (PFV in Slavic; PFM in Germanic) both have future reference: whatever is complete in in the Nonpast *must* be in the future, because the present segment of the Nonpast is always a representation of the ongoing and incomplete present.

In what follows, we give examples of this set of distributions over seven different functions in the following phyla and families: Indo-European, Niger-Congo, Semitic, Chinese and Burmese.

10. **Examples from Indo-European**
Typical examples of usage for items A - F are given in English, French, and Czech. Examples of parallel proverbs are given in English and Czech.

A. Completion of activities
        He immediately ran (PFM) to the door
        Il a couru (RTR) tout de suite à la porte
        Běžel (PFV) okamžitě ke dveřím

B. Completion of achievements and accomplishments
    He *began* (PFM) the work, and eventually *produced* (PFM) a remarkable volume
    Il s'est mis (RTR) au travail et a produit (RTR) enfin un tome extraordinaire
    Začal pracovat (PFV) a nakonec napsal (PFV) pozoruhodný svazek

C. Stative function
    The ancients *knew* (PFM) that the earth *was* (PFM) round (*were knowing, *was being)
    Les anciens *savaient* (IPFV) que la terre *était* (IPFV) ronde
    Staří *věděli* (IPFV), že země *je* (IPFV) kulatá

D. Performative function
    I *applaud* (PFM) your courage
    J'*applaudis* (IPFV) votre courage
    Obdivuji (IPFV) vaši odvahu

E. Instant presents
    She *opens* (PFM) the door and *looks* (PFM) outside (stage direction)
    Elle *ouvre* (IPFV) la porte et *regarde* (IPFV) dehors
    Otvírá (IPFV) dveře a *dívá* se(IPFV) ven

F. Habitual function
    He *lived,/ was living* with his uncle   At 10 a.m. he always had (* was having) a coffee
    Il *habitait* (IPFV) chez son oncle   A dix heures il prenait (IPFV) toujours un café
    Žil (IPFV) se svým strýcem   V deset hodin ráno vždy pil (IPFV) svoji kávu

G. Proverbs (English and Czech)
(a)   A new broom *sweeps* clean (PFM)
         Nové   košt'e dobře *mete*
         New   broom well   sweep+IPFV+3

(b)   Who *digs* (PFM) a trap for others *ends* (PFM) up in it himself.
         Kdo jinému   jámu   *kopá*   sám   do ní *padá*
         Who other+DAT   pit+ACC   dig+IPFV+3   self   in it fall+IPFV+3

(c)   Barking dogs seldom *bite* (PFM)
         Štěkající   pes   zřídka   *kouše*
         Barking   dog   seldom   bite+IPFV+3

(d)   All*'s* (PFM) well that *ends* (PFM) well
         Vše *je*   dobré co   *končí*   dobře
         All   be+IPFV+3   well   that   end+IPFV+3 well

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It is remarkable that Perfectives and Performatives share only a single function: the representation of complete actions (activities, achievements, and accomplishments). In a wide variety of other functions where the PFM is used (Statives, Proverbs, Habituals, etc.) the IMPF is used instead of the PFV. This contrastive usage is illustrated in what follows from a variety of language families, showing that this difference of distribution may be used by researchers to determine the status of Completive and Incompletive aspects of languages, with the Perfective and Performative aspects accurately recognized and categorized.

11.0 Evidence from Niger-Congo

A recent estimate (Grimes 2000) points out that Niger-Congo, with 1,489 languages is the largest phylum in the world. Some 400 million Africans speak Niger-Congo languages, of whom about 240 million have a Bantu language as their first language. Grimes estimates 507 Bantu languages (approximately a third of the phylum) with Bastin et al. (1999) extending this to 542, and Maho (2002) to some 660.

Tense and Aspect in the Bantu family has been extensively described by Derek Nurse, with documentation from over 150 Bantu languages (Nurse 2008a and b). He produced over a hundred charts, with tenses listed vertically and aspects listed horizontally. These are only an initial sorting; there is still an enormous amount of work to be done before a fully comprehensive picture can be presented. These charts, however, represent a prodigious amount of work accessible to researchers. Access to publications of other specialists and researchers on Bantu may also be obtained in Nurse's *Bantu TA Bibliography* (2008c), a comprehensive bibliography of work on tense and aspect in Bantu.

Bantu languages often have two tense levels, a Vast Present, with aspectual contrasts but no tense contrasts, and a further level with tense contrasts which, from a minimum of two, as in Swahili, can run as high as eight contrastive forms as in Kikuyu.

11.1 The Swahili tense system

The tense system of Standard Swahili as described for example, in Ashton (1944/82), shows these two tensed levels (Beaudoin-Lietz 1999, Hewson and Nurse 2000). as outlined in (11) and (12) below. Tense Level 1 has four contrastive aspect forms (marked by pre-stem /a-, ki-, na-, me-/). Tense Level 2 has a binary tense contrast of Past and Future (marked by pre-stem /li-, ta-/), but no aspectual forms: aspectual forms for the Past and Future can only be found in compounds.

The pre-stem marker /a-/, which is not found today in all dialects of Swahili, was analysed in Hewson and Nurse (2000) as a variant form of the Imperfective, since its usage (as does that of the Performative) overlaps with the usage of the Imperfective: it is found with stative verbs, in proverbs, and in performative and habitual usage (see (10) above). But here is also substantial evidence that /a-/ is in fact a marker of the Performative, the typical aspect of Ascending Time.

(11)

```
                                        a
                            [X————————>]            Performative
Stage 1      AT    ∞——————————————————————————————————>∞
                                        ki
                          [<X- - - - - - - - - - - -]      Situative
                                        na
                          [-----------X- - - - - -]       Imperfective
                                        me
                          [<————————————x]X            Retrospective

             DT    <————————————————--———|————————————-------—
                   memorial time    VAST PRESENT   non-memorial time
```

```
                         li                        ta
                   [X————————>]              [X- - - - - ->]       Performative
Stage 2      AT∞————————————————————————>|- - - - - - - - - - - - - - - - - - ->∞
                         PAST             ω  α       FUTURE
```

SWAHILI TENSE-ASPECT SYSTEM
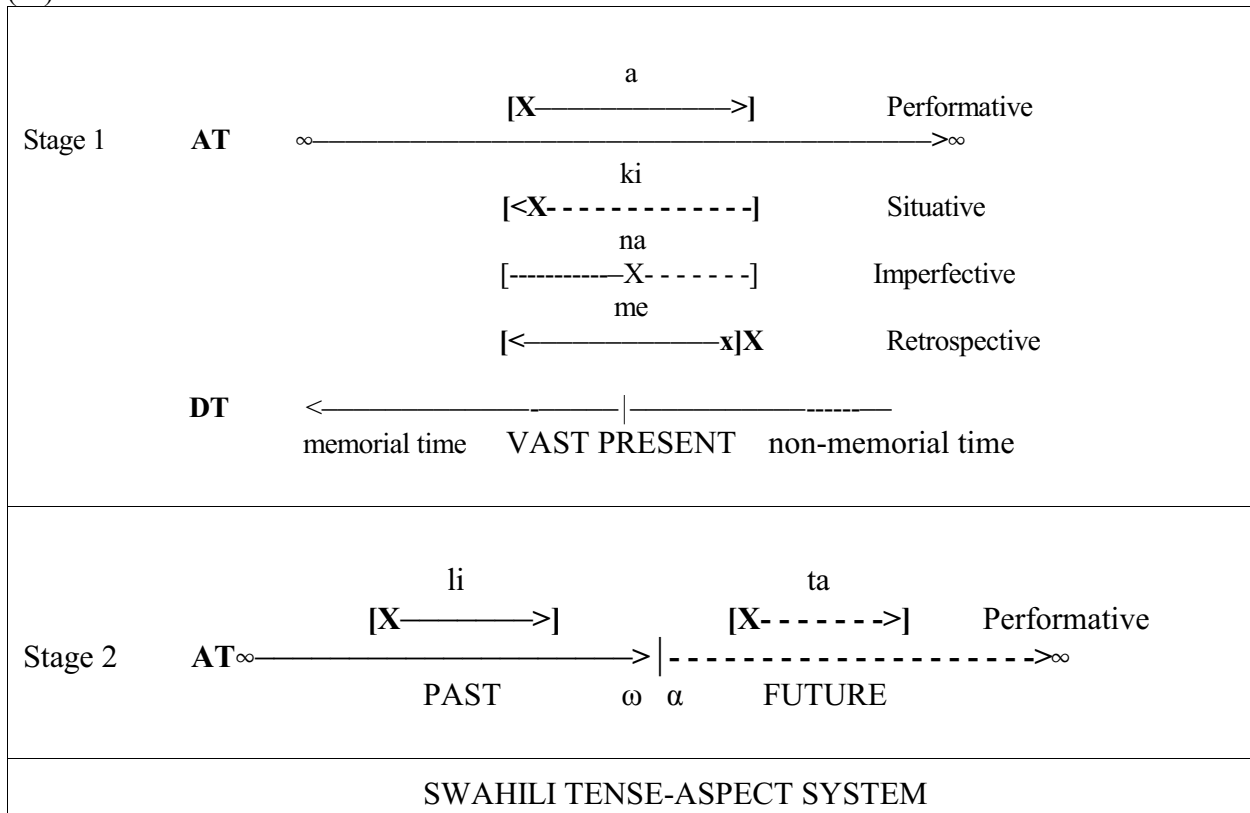
Swahili also has a Situative, which may be described as an Imperfective that has no *accompli*; it often represents simply the possibility of the event. In diagram form the subject (X) is represented as being in position to carry out the event: [<X- - - - - - - - -]; it may consequently represent a state in DT, a position of continual possibility, suitable for subjunctive function.[9]

To understand the tense system of Swahili, outlined above, certain facts have to be reconciled.
(i)   There is a binary tense contrast between Past and Future. The boundary between the two is composed of the last quantum (ω) of the Past and the first quantum of the Future (α). In cognitive terms the last moment of the experiential past is the omega moment of the Working Memory. The first quantum of the future is the alpha moment of Expectation, the reflex reaction to the information in the Working Memory (See Section 5.0 above).

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[9]Its use in Indo-European languages is rare: it is found in participles in Baltic and Slavic (TAIEL: 160-64), and in infinitives in French (Hewson 2007), and probably other Romance languages. In TA in EL it is described as "Potential", but since the Africanists were already using the term *Situative* for this particular aspect (Rose et al 2002), it becomes appropriate to use the term already in use: it represents a situation where the subject is in a position to act, a potential (or sometimes actual) actor at the very beginning of the event.

(ii)   The Vast Present has aspectual markers, but is unmarked for tense: it is a not a present
          that separates Past and Future as is found in Indo-European (Baltic, Celtic, Romance).
(iii)   The aspectual forms for Future and Past consequently require compound forms, using the
          auxiliary *kuwa* 'be' as in (12) below.

Compound forms for aspects in Past and Future are in (12). A single verb form can be marked for
either tense or aspect, but not both.

(12)	PFM	RTR	IPFV	SIT
PRESENT	**tu-a-kimbia**	**tu-me-kimbia**	**tu-na-kimbia**	**tu-ki-kimbia**
(Stage 1)	we run	`we have run'	`we are running'	`if we run'
PAST	**tu-li-kimbia**	**tu-li-kuwa**	**tu-li-kuwa**	**tu-li-kuwa**
(Stage 2)	`we ran'	**tu-me-kimbia**	**tu-na-kimbia**	**tu-ki-kimbia**
		'we had run	'we were running'	'we ran habitually'
FUTURE	**tu-ta-kimbia**	**tu-ta-kuwa**	**tu-ta-kuwa**	**tu-ta-kuwa**
(Stage 3)	`we will run'	**tu-me-kimbia**	**tu-na-kimbia**	**tu-ki-kimbia**
		'we will have run'	'we will be running' 'we will run habitually'	

The unusual staggering of this paradigm (compounds required in the past and future, but not the
present) confirms that the Vast Present at Stage 1 does not contrast with the representations of
Past and Future, developed at Stage 2, but implicitly contains both: the relationship between
Stage 1 and Stage 2 in Swahili is one of hypernym (superordinate) and hyponym (as in *animal*
versus *cat/dog/cow/horse*, etc.). Forms from both levels can consequently be used together in
compounds without clash of tense, provided that Stage 2 forms (the hyponyms) always precede
Stage 1 forms (the hypernyms, generic forms, which cover both past and future).[10]

The second representation of Universe Time at Stage II of the Swahili system consequently
represents the whole of Universe Time as divided into a binary tense representation of Past
(already experienced) vs. Future (not yet experienced), both tenses in Ascending Time, as in (11).

11.2 The forms of the Vast Present
In Swahili affirmative forms, the Vast Present represented in (11) is consistently seen through the
filter of aspect. The typical role of aspectual markers is to show the role of the subject by
indicating its position in relation to the event, in terms of the five cardinal positions established

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[10]The rationale for this may be seen in *He teased the dog and the animal bit him* but not **He
teased the animal and the dog bit him.* It may also be noted that the English Subjunctive (also a
VP) may be used after either Past or Nonpast, whereas Indicatives typically follow the
grammatical rule of Sequence of Tenses:

Original Speech:	I **insist** he **be** there	I **know** he **is** therex
Reported Speech:	I **insisted** he **be** there	I **knew** he **was** there

in (8) above, and marked by X in (11) above, where /me-/ represents a position after the event, /na-/ represents a medial position within the event, and /ki-/ an initial position in Descending Time, where there is the potentiality of immediate action in the present, or extended activity in the Past or Future, which are not limited to a particular moment.[11]

The Performative marker /a-/, in its turn, is a representation of Ascending Time, and marks the **complete performance** of all phases of the event, from beginning to end.

Although the binary tense contrast in Stage 2 is similar to that of English *I spoke* vs. *I speak*, the contrast in Swahili distinguishes Past from Future, because the Present is already given more than adequate representation in the aspectual forms of Stage1. Restricting this binary contrast simply to the representation of past and future is significantly different from the common IndoEuropean practice of including the present and the future together in the Nonpast[12]. Because the present, which experientially is merely the threshold between past and future, is adequately represented elsewhere in the Swahili system, the binary tense contrast represents the contrasting infinities of past and future, a binary contrast between time that has already been experienced (including the last micro second) and time that has not yet been experienced (including the next micro second).

Although there are three different tenses in Swahili (the Vast Present, and subsequently the contrastive Past and Future that are derived from it), they are clearly not of equal status. The Past and the Future are marked for tense, but these morphological forms may not be marked for aspect, an indication that these latter tenses (in Ascending Time) are systemically different from the representation of the Vast Present (in both AT and DT), which has a variety of aspectual forms. In Bantu languages the past and the future are typically conceived as sub-categories of the Vast Present. Swahili, with a system much simplified and reduced, compared with the verbal systems of many other Bantu languages, has nevertheless managed to create a system which maintains this separation, a contrast represented vertically rather than horizontally in the relevant diagrams, and with a concomitant contrast of AT and DT.

Three of the aspectual morphemes of Stage1 (*ki/na/me*) mark representations of DT, whereas the contrastive tense forms at Stage 2 are representations of AT. The simple tense forms exemplified in (13) represent complete events, in contrast to the compound forms of the same tenses in (14).

(13)   a-ta-kimbia   3 will run   (Performative)

                a-li-kimbia   3 ran   (Performative

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[11]This open-endedness, when allocated to Past or Future, results in an Habitual meaning.

[12]Of the twelve Indo-European families only three have a future tense; the remaining nine all have a binary tense contrast between Past and Nonpast (Hewson and Bubenik 1997:353-356; Hewson 2012:513-515), and typically represent the future as an aspect of the Nonpast (Prospective in English *he will run*, but Nonpast Perfective in Slavic and Greek).

(14)   a-ta-kuwa a-na-kimbia 3 will be running   (Progressive)[13]
         a-li-kuwa a-na-kimbia 3 was running   (Progressive)

Consequently the Swahili past tense is a Performative representing complete events, and the non-past tense, likewise a Performative, depicts future events as unitary, as in (13).

11.3 **Performative versus Imperfective in Swahili**.

Ashton's *Swahili Grammar* shows (1982:38) that both *a* and *na* can be used with stative verbs, as in (15) with a slight difference of meaning.

(15)   Mpishi asema   anataka   sukari.   Ataka   kiasi gani?
         Cook   a-a-sema   a-na-taka   sugar   a-a-taka   how much
                 3-a-say   3-na(IPFV)-want   3-a(PFM)-want
                 'The cook says that he wants some sugar'.   'How much does he want?'

The use of Imperfective *anataka* "indicates that the cook is in immediate need of sugar". The reply with the Performative *ataka* treats the need as a state, a typical PFM usage when reporting opinions or conclusions: *he says, hopes; she thinks, intends; it means, appears (that)*.

The following example in (16) is on p. 40, showing the Habitual usage of the PFM.

(16)   Watoto   wanaimba   vizuri. Watoto   waimba   vizuri? Waimba   vizuri.
         Children   wa-na-imba   well.   Children wa-a-imba well?   wa-a-imba well.
                       3pl-na-sing   3pl-a-sing   3pl-a-sing
         'The children are singing well'.   'Do the children sing well?'   'They sing well'.

Proverbs, with their sense of unchanging aphorism, are also found in Swahili, as in (17).

(17)   Mahaba   yaua.   Mahaba   yana   mkono   wake.
         Love   y-a-ua   Love   y-a-na   hand   wa-ke
                     3-a-kill   3-a-have   poss-3
         'Love kills'   'Love has its own hand' (Its own time of coming).

The Performatives in the English translations reflect those in the Swahili proverbs.

11.4 **Tense and Aspect in Ruhaya**

Ruhaya is an Eastern Bantu language (Muzale 1998) with a system similar to that of Swahili Hewson, Nurse, and Muzale 2002), except that the aspects at the first level (Stage 1) of

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[13]The use of an auxiliary automatically creates a Progressive, an incompletive form which always requires some kind of auxiliary.

chronogenesis, are slightly different (the Imperfective is unmarked and there is a Perfective as well as a Retrospective; there is also a Persistive, as in (19). The PFV is marked with the ancient /-ire/ suffix; the addition of pre-stem /-aa-/ changes the PFV into a RTR, and the Persistive (continuing action beyond a given position) is marked with pre-stem /-ki + aa-/. There is also a Progressive *ni-tugura*, where the prefix /ni-/ appears initially in contrast to all the other aspect markers, which are in either pre-stem or final position.[14]
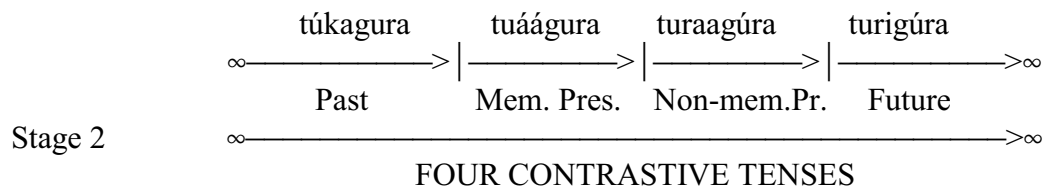
There is also a Far Past, a Near Past (earlier today), a Near Future (later today), and a Far Future. Possible contrastive meanings are shown in (18), where prefix /tu-/ = first person plural *we*.

(18)   *túkagura* 'we bought (it) yesterday   *tuáágura* 'we bought (it) this morning
          tuaaagúra 'we'll buy (it) this afternoon'   *turigúra* 'we'll buy (it) tomorrow

These four contrastive tense forms are completive, and they are necessarily Performatives, since the Perfective in Ruhara is marked with the common Niger-Congo suffix /-ire/.

(19)   tugúra   'we buy'
                                  [<———X- - - - - -]   Imperfective

                                    ni-tugúra   'we are buying'
                                  [<———x - - - - - -]   Progressive
                                         X   (ni + IPFV)

                                    tuguzîre   'we bought'
                                  [<——————X]   Perfective

                                    tukiáágura   'we're still buying'
                                  [<———x- - - - -X]   Persistive

                                    tuááguzîre   'we have bought'
                                  [<——————x]X   Retrospective
Stage 1   ∞<————————————————————————————————∞
                               VAST PRESENT

             túkagura   tuáágura   turaagúra   turigúra
        ∞————————>|————————>|————————>|————————>∞
             Past   Mem. Pres.   Non-mem.Pr.   Future
Stage 2   ∞————————————————————————————————>∞
                       FOUR CONTRASTIVE TENSES

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[14]Note a similar preposed element in the Chinese Progressive in Section 12. Chinese has also IPFV, PFV, PFM, and PRG; only the Progressive marker is preposed: see Section 10 below.
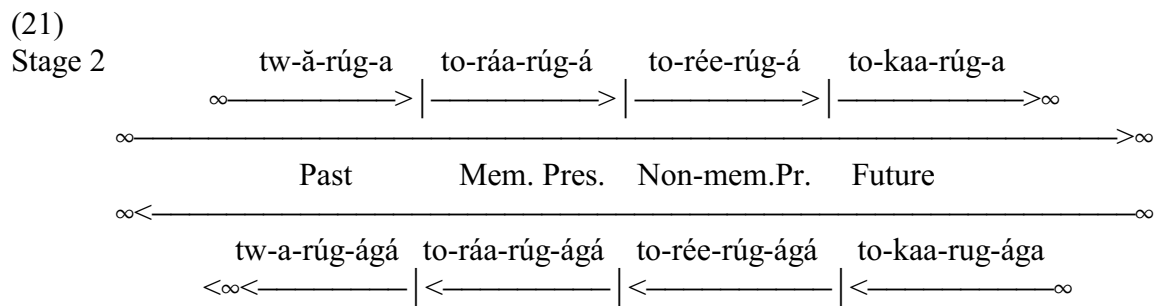
As in Swahili, there are compound forms with the auxiliary in one of the four contrastive tenses (Stage 2), and the main verb an aspectual form from Stage 1, as in (20), which gives just a brief sample. As always in both Niger-Congo and Semitic, both parts of the compound are finite. And again, these combinations of tenses are only possible because the Vast Present is a generic hypernym which encompasses all the contrastive tenses at the second stage of the chronogenesis. It must not be forgotten that (unlike IE compound verb forms) both parts of the Swahili and Ruhaya compounds are finite. Such finite compounds, the two parts of which together represent a single event, cannot possibly represent two contrastive different times for that event: the tense of the second part of the compound must completely cover that of the first part.

(20)   tú-ka-ba tuááguzîre 'we had bought'   tu-ka-bá tukiáágura 'we were still buying'
        tu-ri-ba tuááguzîre 'we will have bought   tu-ri-ba tukiáágura 'we will still be buying'

11.5 **Tense and aspect in Kikuyu**
The Kikuyu verb is similar in its basic structure to Swahili and Ruhaya, except that it is much more complex: the complexities of the system are examined and discussed at length in Hewson and Nurse 2005. Aspects are marked by suffixes: PFM /-a/; IMPV /-aga/; PFV /-irɛ/; RTR /-etɛ/; tenses by pre-stem affixes: Far Past /-a-/; Near Past /-raa-/; Near Future /-ree-/; and Far Future /kaa-/.

This twofold marking allows for more complexity at Stage 2, where there are four tenses with PFM /-a/ (the basic Completive form) and four tenses with IMPF /-aga/ (the basic Incompletive form), as in (21). The root is /rug/ 'run': tw-ă- rúg-a 'we ran'; tw-a- rúg-ágá 'we were running'.

(21)
Stage 2   tw-ă-rúg-a   to-ráa-rúg-á   to-rée-rúg-á   to-kaa-rúg-a
                ∞—————>│—————>│—————>│—————>∞

        ∞————————————————————————————————————>∞
                Past   Mem. Pres.   Non-mem.Pr.   Future
        ∞<————————————————————————————————————∞

                tw-a-rúg-ágá to-ráa-rúg-ágá to-rée-rúg-ágá to-kaa-rug-ága
                <∞<—————│<—————│<—————│<—————∞

The compounding in Kikuyu is also very complex, but it follows the basic patterns of all Niger-Congo languages.

11.6 **Non-Bantu Niger-Congo**
The Bantu languages form the largest of the Niger-Congo groups, accounting for some two thirds of the whole phylum. The remaining third are languages of West Africa south of the Sahara, with several important sub-groups. Of the 21 languages of this group reported on by Nurse, Rose, and Hewson (2010), only 6 had tense contrasts.

A language from the West African area of particular interest is Akan, a Kwa language recently reported on by Boadi in Ameka and Kropp Dukubu (2008). Akan has all four Completive and Incompletive forms (2008:14), as in (22), where the Imperative, typically the unmarked form of the paradigm, is identical to a form that, from the evidence in the text, is a Performative.

(22)   Imperative   dá   'Sleep!'
           Performative ɔ dá   'He sleeps regularly and from time to time'
           Perfective   ɔ dà-è   'He slept'
           Imperfective ɔ dà   'He is asleep'
           Progressive   ɔ rè-dá   'He is sleeping, falling asleep'
           Prospective   ɔ bɛ-dá   'He will sleep'
           Retrospective ɔ à-dá   'He has slept'

The difference between the PFM and the IPFV is simply tonal. The PFV has the IPFV stem with a suffix; it is the marked form of the two. The PRG, PROS, and RTR all have prefixed auxiliaries, as they do in English. Like other West African languages, Akan has no tense contrasts, as in (23).

(23)   ɔ dà   'he is asleep'
                                          [<———X- - - - - -]   Imperfective
DT   ∞<————————————————————————∞
                                           ɔ dà-è   'he slept'
                                          [<——————X]   Perfective

                                           ɔ dá   'he sleeps regularly'
                                          [X——————>]   Performative
AT   ∞—————————————————————————————>∞
                                           ɔ rè-dá   'he is sleeping'
                                          [———X- - - - ->]   Progressive

                                           ɔ bɛ-dá   'he will sleep'
                                          X[x——————>]   Prospective

                                           ɔ à-dá   'he has slept'
                                          [<——————x]X   Retrospective

BASIC ASPECTUAL CONTRASTS OF AKAN

Boadi calls the /dá/ form Habitual, but notes (p. 20) that it "is not clear how the verb *sé* 'say'" is Habitual in *Kwàsí sé brà* 'Kwasi says come', where the verb has no habitual sense whatever. He gives a list of such verbs (tell, mean, imply, suppose, beg, request, explain , think) and also includes "members of the sub-class of predicates which, following some writers, we refer to here

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as performatives", with examples such as *mà dí bèm* 'apologize', and *bù bèm* 'acquit', extensive evidence, in short, that the Habitual forms are in fact Performatives.

This is just an outline of the basic system. There are three auxiliated forms: Retrospective, Progressive, and Prospective, all three used with the least marked stem.

11.7. **Conclusion**.
 The Niger-Congo languages make extensive use of a basic aspectual contrast between PFM and IPFV. The PFV, when used, normally appears as a marked form, often with reflexes of the /-ire/ suffix. The IPFV is also frequently marked with the /-aga/ suffix, or a variety of pre-stem markers, and Progressives are found, inevitably constructed with some form of auxiliation.

12.1 **Examples from Semitic**
The Semitic languages are a branch of the Afroasiatic language family, spoken by more than 470 million people in North Africa, the Horn of Africa, and the eastern end of the Mediterranean. The following is a list of the most widely spoken Semitic languages, with an approximate estimation of the numbers of native speakers: Arabic (300 million), Amharic (21.8 million), Hebrew (7 million), Tigrinya (6.7 million), and Aramaic (550,000).

A number of specialized studies of tense and aspect in Semitic languages are available (Bubenik 2012, Cohen 1989, Eisele 1999, Fleisch 1957, Kuryłowicz 1973, Woidich 1975, and others) with due attention paid to Arabic, and a recent indepth study of the Arabic verb (Bubenik, Hewson and Omari 2013).

In Indo-European the nine families with binary tense systems have either two tenses in DT, or two tenses in AT. Semitic languages, however, are typologically different from IndoEuropean languages in that their completive forms are Performatives in AT, and their incompletive forms are Imperfectives in DT. These two tensed forms are contrastive aspects of the Vast Present that typically represent the present and the past respectively, except that with stative verbs the PFM typically represents the present, the same pattern that is found so often in Western Niger-Congo.

12.1 **Verbal system of Arabic**
This is the typical distribution found in languages with only a Vast Present, and no other tense contrasts (e.g. Chinese, Burmese, Akan, etc.), with an incompletive form to represent the present, and a variety of completive forms to represent the past. The justification for this world-wide lack of tense contrasts is the simple fact that events that are represented as complete (either aspectually or by Aktionsart) in the Vast Present are automatically located in the experiential past, in time that is co-eval with the memory, so that a major aspectual contrast between Completive and Incompletive is sufficient for a binary representation of time, Past (Completive) and Nonpast (Incompletive).

We present in (24) the basic system of Syrian Arabic, one of the modern vernaculars which extend from Morocco to the Persian Gulf, and follow the basic patterns of Classical Arabic. Compound forms: past auxiliary *kān* 'he was', future auxiliary *raħa*, progressive particle *ʕam*) .

(24)   kātəb(at)   ktəb(i)
                    [<————————————X][<————X- - - - - - -]
Stage 1   'having written'   'write!'

                                    (tə)/yə-ktob   '3 may write'
                          [<X- - - - - - - - - - - - -]   Situative
Stage 2   DT ∞<————————————————————————∞

                              b=(tə)/yə-ktob   '3 is writing/writes'
                          [<————X - - - - - - -]   Imperfective

                                  katab(at)   '3 wrote'
                          [X————————————>]   Performative
Stage 2   AT ∞————————————————————————>∞
                              VAST PRESENT

Past   kān katab   kān yə-ktob
                'he had written'   'he used to write'

Future   kān raħa yə-ktob   raħa yə-ktob
                'he was going to write'   'he will write'

Progressive   kān ʕam yə-ktob   ʕam yə-ktob ~ ʕam b=yə-ktob
                'he was writing'   'he is writing'

In Syrian Arabic the indicative is formed by the particle *b=* with subjunctive; its allomorph *m=* is used in the 1st Pl: *ʕam nə-ktob* 'we write' (in Palestinian Arabic *b=* is used: *b=nə-ktob*).

12.2.1 **Evidence of Performative function in Classical Arabic**
In Performative function, where the verb itself represents the performance of the action (see (1) above), Perfectives may not be used. Where Completive forms are found in this function, they must be labeled Performatives, as in (25) below (Reckendorf1921/1977) *Arabische Syntax*. There are also the marriage vows recorded by Mustafa Mughazy (2008:570), in (26).

(25)   ħalaftu.   biʕtuka ħāđā.   aslamtu.
        'I swear'   'I (hereby) sell it to you'   'I accept Islam

(26)   zawwaj-tu-ka (PFM)   nafs-ī
        marry-1SG-you.2MSG   self-my
        'I accept you as a husband'

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qabil-tu (PFM)          z-zawāj              min-ki
agree+1SG               the=marriage         from=2/SG/F
'I agree to marriage with you '
```

These are regular formulas that use the Performative aspect referring with present reference. These are not Past tenses. These are genuine Performatives: the forms that are often labeled *Perfect* or *Perfective* in Semitic languages, are in fact clearly and unquestionably Performative.

12.2.2 **Performative function in Biblical Hebrew**
Performatives with present reference are also found, as in (27), in Biblical Hebrew.

```
(27)    a.    haś=śādɛ̄h      nātat-tī              lāk
              the=field       give-1SG(PFM)         to.you
              I give you the field ... (Gen. 23:11)


        b.    ʔănî    ħērap̄-tī           ʔɛt    maʕarkōt      Yiśrāʔēl
              I       defy-1/SG-(PFM)    ACC    armies        Israel
              I defy the ranks of Israel (1 Sam 17:10)


        c     yāʕaṣ-tī
              advise-(PFM)-1/SG
              I advise (2 Sam 17:11)


        d.    bə-Yahwēh      nišbaʕ-tī
              by-Yahweh      swear(PFM)-1/SG
              By Yahweh I swear (2 Sam 19:7)
```

There is, in fact, evidence that this is common usage of all Semitic languages: Weninger (2000), for example, gives examples from Classical Ethiopic of the use of the "Perfect" (the form normally used as a preterit) in performative function.

12.3 **Habitual function in Semitic languages**
Many Semitic languages have substantial collections of proverbs, where Performatives are typically used in English and elsewhere, as in the Arabic examples in (28). Since IPFVs can also be used in these functions, as in Slavic, both PFM and IPFV can be used in performative and proverbial function in Semitic languages, as in (28b), where both are used. These patterns may be used to distinguish Perfectives from Performatives.

12.3.1 Proverbs from Egyptian Arabic
```
(28) a.  iđā    ħadarat              al-malāʔikah   ġābat                 aš-šayāṭīn
         when appear(PFM)-3/SG/F    the-angels     disappear(PFM)-3/SG/F the-devils
         'When angels appear, devils disappear    (Elkhadem 1993:9)
```

b. ēš   mā ṭabaxat   al-ʕamiša   li-zawjatihā   bi-yataʕaššā
    what what cook(PFM)-3/SG/F the half-blind to husband=her   3/SG/M(IPFV)-sup
    Whatever the half-blind wife cooks for her husband, he sups it' (Burckhardt 1972:43)

ʕ

c. xayr an-nās   man faraħ   li 'n-nās   bi 'l-xayr
    good the=people   who rejoice(PFM)-3/Sg/M   to the=people in the=welfare
    'He is chosen of the people who rejoices in the welfare of others' (Burckhardt 1972:246)

In these examples, the PFM *kataba* forms have present, not past reference: these forms can not be described as past tense. This is a typical use of Performatives in a Vast Present typology. Also of interest is the IMPF in (28b): languages of this type where Slavic languages must use the IPFV and Germanic languages the PFM, can use both the IMPF and the PFM in this function, with stylistically interesting alternatives.

12.3.2 **Proverbs from the Hebrew Bible**.
(29) a.   bāʔ   zādōn way=yābōʔ   qālōn
            come(PFM)-3/SG/M   pride and.comes   shame
            'When pride comes, then comes shame' (Proverbs 11:2)

      b.   ħāmad   rāšāʕ   məṣōd   rāʕīm
            covet.(PFM)-3/SG/M   wicked   net   evil-PL/M
            'A wicked man covets the net of evil men' (Proverbs 12:12)

      c.   wə=lēs lō   šāmaʕ   g əʕārāh
            scoffer not listen(PFM)   rebuke
            'A scoffer does not listen to rebuke' (Proverbs 13:1)

13.0 **Examples from Chinese**
A recent book by Richard Xiao & Tony McEnery, *Aspect in Mandarin Chinese: A corpus-based study* (2004) is a very complete survey of the Mandarin Chinese verbal system. A book of seven chapters, it deals with lexical aspect (Aktionsart) and grammatical aspect, and the relations between the two, making use of a corpus of modern newspaper writing in Mandarin Chinese.

13.1 **Chinese Completive markers**
The fourth chapter of *AMC*, on the "Perfective aspects in Chinese", presents the two different completive forms: enclitic *-le*, a Perfective, and enclitic *-guo*, whose usage is that of a Performative. The first of these may also be used as a Retrospective, with appropriate syntactic adjustments. The doubling of Perfective and Retrospective is not unusual: it is found in Latin, and in Modern French *j'ai parlé* is both "I spoke" and "I have spoken". Retrospectives typically look back to a complete event, viewed from a position after the event, as in (30).

(30)   A.   [<⸺⸺⸺⸺X]   Perfective
       B.   [<⸺⸺⸺⸺ x] X   Retrospective

A Retrospective consequently typically contains a Perfective; the difference between the two aspects is that of two different sides of one and the same boundary: the Perfective represents the completion of the event (a. in (31)), and the Retrospective represents the consequent resultant state of the completed event (b. in (31)). The Retrospective has two positions where the Perfective has only one, and the Retrospective is often used in both functions.

When these generalities are taken into account, it is no surprise to find in the early pages of Chapter Four of *AMC* a long discussion on the two different syntactic values of the marker *le*. When suffixed (cliticized) its meaning is described as *actual*; when standing independently at the end of the sentence it is described as change-of-state (COS), and section 4.1.1 has the heading "The actual -*le* vs. the change-of-state *le*" where we find minimal pairs such as the following (X&M 2004:134), where (a) is clearly Perfective and (b) is Retrospective.

(31)   a.   ta   qu-le   Faguo   b.   ta   qu   Faguo le
            he   go-ACTL   France   he   go   France COS
            "He went to France"   "He has gone to France"
            [<⸺⸺⸺⸺ X]   [<⸺⸺⸺⸺ x]X

Here ACTL = actual: the authors treat *le* as an actualizer, and COS = Change of State, indicating the resultant state that is the typical representation of the Retrospective (perfect) aspect.

There are also examples where *le* is used twice, as if to emphasize the dual role of the subject: once to represent the completed event (ACTL), and the other to represent its resultant state (COS), as in (32) (X&M 2004:90).

(32)   wo   chi-le   fan   le
       I   eat-ACTL   meal   COS
       "I have had my meal already"

After some fifty pages on *le* the authors spend a further ten pages on *guo*, which marks complete rather than completed events; they describe it as the "experiential aspect" (EXP), which overlaps substantially with the usage of *le*, as in the following minimal pair (2004:142), where RVC = resultative verb complement.

(33)   a.   zuotian   wo   chi-guo   wanfan   yihou zhao-guo   ni
            yesterday   I   eat-RVC   supper   after visit-RVC   you
            "I went to see you after I had supper yesterday"
       b.   zuotian   wo   chi-le   wanfan   yihou zhao-le   ni
            yesterday   I   eat-RVC   supper   after visit-RVC   you
            "I went to see you after I had supper yesterday"

The overlap here is facilitated by the transitivity of the verbs, giving a Resultative Verb Complement, which allows for either of the two representations, whereas elsewhere they will yield contrastive minimal pairs (2004:138) as in (34).

(34) a. ta   zai   Lundun   shu-guo   san-nian
          he   in   London   live-EXP   three-year
          "He once lived in London for three years"
      b. ta   zai   Lundun shu-le   san-nian   le
          he   in   London live-ACTL   three-year   COS
          "He has lived in London for three years"

Enclitic *-guo* is also used to represent states and series of events, both of which are typically represented by the Imperfective in Romance and Slavic, but by the Performative in English. To the Chinese example (2004:147) copied here as (35) we have appended French and English translations, to show how French uses IPFV forms, and English PFM forms, to translate Chinese *guo* when used in its stative and habitual senses.

(35) Chinese ta   dang-guo   bing, da-guo   ji-ci   zhang
              He   is-EXP   soldier fight-EXP   a=few-CLF   battle
     French   Il   était(IPFV)   soldat, se battait(IPFV) des fois   au champ de bataille
     English He was a soldier, and fought at times on the battlefield
              He *was being a soldier and *was fighting at times on the battlefield

This major difference between *-guo* and *-le* is nicely brought out by a minimal pair (2004:148), showing the necessity of using two different verbs in the English translation as in (36):

(36) a. ta   dang-guo   bing   b. ta   dang-le   bing
          he   is-EXP soldier   he   is-ACTL   soldier
          "He was once a soldier"   "He became a soldier"

The event in (36a) is represented as a single phase, unchanging from beginning to end: it is no more complete at the end than it was at the beginning. The one in (36b) is an event that was formerly incomplete (Imperfective) and at some point in the past became complete (Perfective).

In (36a) it is understood that the state of *being a soldier* was complete from beginning to end. In (36b) it is understood that the state of *being a soldier* was incomplete prior to the moment X, and was finally realized at X. The inchoative act thus completed then has a resultant state, that is not part of the completed event, but merely its consequence.

This pair is a striking illustration of the difference between a Performative, a representation in Ascending Time (time as it operates [X---------->] in the working imagination), and a Perfective, a representation in Descending Time (where what was incomplete [<-----X- - - -] in the working memory has become completed [<----------X]). (36a) is consequently an external view of the

event, similar to a count noun; (36b) is an internal view of the event, similar to the auctioneer's "going, going, gone"). This demonstration shows, in fact, why the Perfective is typically the marked form of the Imperfective/ Perfective pair: a Perfective is always secondary, an Imperfective that has reached its term, that is now bounded.

It is important to note that one finds in Chinese the same kind of representations of universal cognitive experiences that one finds in other language families. The data also indicates that aspectual forms are typically representations of the experiences of the Aristotelian cognitive faculties of memory, perception, and expectation (see footnote 10).

13.2 **Chinese Incompletive markers**

The fifth chapter of Xiao and McEnery 2004 entitled, *The imperfective aspects in Chinese* follows a similar pattern to Chapter Four in that it deals with four ways of marking events as incomplete, using using four markers: *-qilai, -zhe, zai, -xiaqu*, three of which are cliticized, whereas *zai* is treated as an independent element, as will be seen.

The first element to be dealt with is *-zhe*, which is clearly an Imperfective marker (labelled DURATIVE), and to be compared to *zai*, the second element examined, which is equally clearly a Progressive marker, and it is revealing to examine where these two markers differ in function and usage. The Imperfective *-zhe* is typically used with (intransitive) positional (*stand, sit, lie*) and (transitive) posture verbs (*put, set, hang*) where there is often an initial activity that results in a continuing state. The Imperfective always represents that which is incomplete in time, as in (38); as we have already seen (in (1) above) the Progressive is frequently unsuitable for such usage, and in English the Performative (*stands, hung*) is used to translate the imperfects in (37) (examples from p. 184).

> (37)a.   huangshan   shang   chuli-zhe   yi-zuo   gulao   de   diaolou
>   barren-hill   on   stand-DUR   one-CLF   ancient   GEN   carve-building
>   "On the barren hill stands an ancient carved building"
>
>   b.   zhuxitai   shangfang   gua-zhe   hongbu   jufu   heng'e
>   rostrum   over   hang-DUR   red-cloth   huge   banner
>   "Over the rostrum hangs a huge red banner"

On page 187 there are examples that show the typical ambiguity of an Imperfective, which can be used (i) as an iterative (a'), a usage not suited to a Progressive, and translated here in (38) by a Performative (*plant*), or to represent a single ongoing event (a''), in which case the Progressive provides a suitable translation: an example of the typically restricted overlap of Imperfective and Progressive as seen elsewhere in other languages.

> (38)   tianli   **zhong-zhe**   hua
>   field   plant-DUR   flower

a'   "In the field they plant flowers"
a''   "In the field they are planting flowers"

The authors indicate their awareness of the relationship of *-zhe* and *-le*: "As we know, *zhe* is an imperfective marker whereas *-le* is a perfective marker" (p. 201), and are equally positive about *zai* as a progressive marker (p. 205). But they do not seem to have noticed the parallel between Chinese *-guo* and the English simple forms, the exponents of Performative aspect.

The section on the *zai*-progressive, however, and the way it contrasts with the *zhe*-imperfective is impressive in its insight. As already noted, an Imperfective is a representation of an event that is incomplete in time. The authors note that a progressive is incomplete in a different way: the stages of the event are in some way interrupted (hence its compatibility with the representation of activities and accomplishments, *but not states*); it is the *progression of the event* that is incomplete. This is summed up very neatly in a discussion on page 215: "While *-zhe* is available to both stative and dynamic situations..., *zai* applies only to non-stative situations". It is a very succinct description of a major difference between the Imperfective and Progressive aspects.

Finally, in what is a remarkable piece of evidence of the universality of aspectual contrasts, the Chinese Progressive has a different syntax from all the other aspectual markers. Whereas these latter are all enclitics, postposed to the verb, *zai* alone is preposed. Historically a locative verb, it is also used as a preposition (p. 205). Its contrastive syntax may be seen in (39) from p. 206, where (39a) shows *zai* preposed to the verb, and (39b) shows *zhe* suffixed to the verb as a clitic.

(39)   a.   *waimian*   *zai*   *xiayu*   b.   *waimian*   *xia-zhe*   *yu*
           outside   in/at   fall-rain   outside   fall-IPFV   rain
           It is raining outside (PRG)   Il pleut dehors (IPFV)

The two remaining markers included in this chapter are *-qilai*, which has a lexical meaning of "up", and is described as a marker of inceptive aspect, and *-xiaqu*, which marks "continuative aspect", and has a lexical meaning of "down". This latter often has the sense of English "kept on went on" and appears to function as a Persistive. It is not absolutely clear whether these items are lexical or grammatical.[15]

13.3. **Chinese as an aspect language**
Languages such as Chinese, that have no tense contrasts, are usually described as tenseless. Comrie (1985:4) raises the topic in his *Preliminaries*, and on p. 50 has a section entitled "Tenseless languages" which deals with languages that have no tense distinctions.

Many languages, however, have no tense distinctions, but still distinguish between Event Time, which is the domain of aspect, and Universe Time, which is the domain of tense.

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[15]Verbs of going (Itive) and coming (Ventive) are frequent in Niger-Congo serial verbs, and are also found in English (*Now you've gone and done it*).

Aspects by themselves are tenseless: they may represent past, present or future time quite indiscriminately, as does the IPFV participle *going*, and the PFV participle *gone* in (40), whereas their corresponding tense forms represent either past or non-past time.

(40)   When going up the hill I find the climb difficult.   When I go/*went...
        When going up the hill you will find the climb difficult.   When you go/*went...
        When going up the hill he found the climb difficult.   When he went/*goes...

        When gone from my office I always leave a note.   Nonpast (present reference)
        When gone from your office you will always leave a note.   Nonpast (future reference)
        When gone from his office he always left a note   Past

But as soon as a verb has finite status, Imperfectives automatically begin to represent the ongoing present, which creates a tensed form, representing Universe Time, which is the domain of tense. The Vast Present so created appears to be a linguistic universal; for many languages, as we have seen, it is the only means of reference to Universe Time.

The tradition of describing languages as tenseless, when they have a Vast Present but no tense contrasts, is still maintained in recent usage. A chapter entitled "Tenselessness" in the recent *Oxford Book of Tense and Aspect* (Binnick, ed. 2012:669-696), by Jo-Wang Lin, has much interesting data from Chinese. Under the heading Present Time Reference (p. 672) we find that sentences with the PRG as in (42a) automatically refer to the present, but sentences with accomplishment or achievement verbs, if they have no grammatical aspect marker, as in (42b) must refer to the past (CL=classifier). These different temporal references would not occur if the verb were not finite, with a clausal subject.

(42)   a.   wo   zai   manpao   b.   Zhangsan   dapo   yi-shang   changhu
              I   PRG   jog   Zhangsan   break   one-CL   window
              "I am jogging"   "Zhangsan broke a window"

As we have seen elsewhere, sentences such as (42b) only represent the past because whatever event in the VP has completive Aktionsart must necessarily be a past event. What is materially complete cannot be in the ongoing present, always incomplete by nature.

14.0 Evidence from Burmese
Nicoletta Romeo's 2008 study *Aspect in Burmese: Meaning and function* contains a large quantity of information from a native speaker (May Thet Tun) that has been organized so that the reader has all the evidence necessary to gain a clear idea of the system of aspectual contrasts.

Chapter 7 discusses the /pì/ marker, which is labelled *Perfective*, but, as noted in a review (Hewson 2008:465): "There are indications early in the chapter, however, that this is not a true Perfective". The author indeed notes on p. 213 that "[pì] PERFECTIVE, unlike other Burmese

operators, seems not to be sensitive to the semantics and/or Aktionsart of the verb it attaches to". It is found for example with stative verbs, such as [θí] 'know' in a way that is not possible for Perfectives. There is already a comment on p. 101 that there is no clear guidance in the literature on identifying "non-progressive forms", a comment on the misuse of the term Perfective.
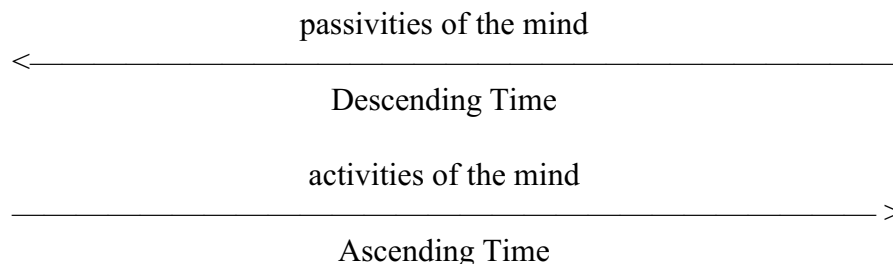
In Romeo's chapter on the /pì/ marker, in fact, there is further clear evidence that [pì] is a Performative marker. On p.226 there is a sentence 'Po Te comes to this pond every day' in which the verb 'comes' carries a [pì] marker, a usage which, in that iterative context, can only be a Performative. Translated into Czech, Russian or Greek it would be an Imperfective; it would never be a Russian Perfective or a Greek aorist.

15.0 **Conclusion**
The purpose of this paper has been to clarify an unusual state of affairs in aspectology, where two different Completive forms (PFV, PFM), and two different corresponding Incompletive forms (IPFV, PRG) are found in the languages of the world with regular but unusual distribution contrasts. The empirical facts of distribution do not significantly differ from language to language, and these forms may consequently be shown to represent the two universal cognitive mechanisms of Ascending and Descending Time, noted and commented on by a variety of linguists and psychologists in the twentieth century (as documented in Section 6 above).

What Gustave Guillaume (1929) called Descending Time, the time that works in the mind recording the stream of consciousness (1964:59-72) in the (passive) Working Memory has been called *moving-time* (or *moving-world*) by others, as opposed to *moving-ego*, which Guillaume called simply Ascending Time, the mind that works in time, as in the linguistic activity of creating sentences, reflecting the cognitive features outlined in (43).

(43)

passivities of the mind

<———————————————————————————————————

Descending Time

activities of the mind

———————————————————————————————————>

Ascending Time

Both AT and DT reflect the realities of the Working Memory, which has been studied as a scientific object since the middle of the last century (Miller 1956, Baddeley 2007). The WM not only records the stream of consciousness, an operation over which the speaker has no control (speaker is passive), but it also has mechanisms that allow the speaker to interpret what has been recorded (speaker is active, interpretive). Ascending and Descending Time are scientific realities that have been extensively examined over the last 70 years.

The theoretical framework adopted in this study is not new, it follows the classic theoretical principles of all science: observation, comparison, reflection, and conclusions. It accepts that the role of the linguist is not to theorize language, but to look for the underlying elements and structures that *must* exist, but are not *directly* observable. This was, in fact, the methodology of the 19th century comparativists, who recognized that when two languages were very similar, they obviously had a common ancestor, which was normally a necessarily theoretical entity, because it no longer existed in any empirical way. They noted the remarkable regularity of sound change, which is found wherever there is systemic change,[16] and used it to reconstruct prehistoric phonological contrasts and systems, the theoretical approximations of "archaeological linguistics". If the discovery is successful, as was that of the 19th century Neogrammarians, it can be tested globally and found to have universal applications.

Finally, there are still further interesting patterns in the data. Where tense is binary, for example, the two major aspects will often be either Perfective and Imperfective, as in Czech and other Slavic languages, or Performative and Progressive, as in English and elsewhere in Germanic. In Semitic, however, which has only aspectual contrasts (see Section 10 above), and only a single tense (Vast Present), the major aspectual contrast is between Imperfective and Performative, as in (44), a pattern that is also found in Niger Congo languages (Nurse, Rose, and Hewson 2010).

(44)

Languages	Incompletive	Completive	
Slavic	Imperfective	Perfective	A + B
Germanic	Progressive	Performative	C + D
Semitic	Imperfective	Performative	A + D

These recurring patterns in the linguistic data, found everywhere in the languages of the world reflect the typical binary structures that are used to represent the human experience of time: time that works in the mind (the Descending Time of the passive Working Memory), and the mind that works in Time (the Ascending Time of the active creative thinker).

Index of abbreviations: TA in IE = *Tense and Aspect in Indo-European Languages*; AT = Ascending Time; DT = Descending Time; RTR = Retrospective (formerly Perfect or Anterior).

There is also change that is not systemic, which can not be expected to be regular. It is change in the system that creates the regularity of sound change. Regular change is change in the system: it cannot be otherwise.

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