Aspect marking and situation types in Greek, Polish and Swedish
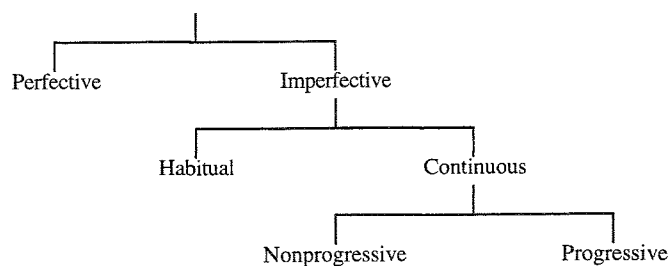
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Introduction

This article is a continuation of my article in *Working Papers* 45, 1996, which was an analysis of definite marking and referential status of nouns. This article is a parallel and deals with verbs, namely aspect marking and situation types, and has the same approach, cognitive and typological, and the same corpus: an extract from a Swedish children's book. After a presentation of the theoretical background, this article presents an analysis of the three languages Greek (modern), Swedish and Polish. The article will go from morphological aspect marking into the question of discourse motivation of aspect. The results are discussed and formed into a schema with typological patterns. The Greek letters are transliterated to their phonemic counterparts in Latin script, except γ ð θ x ç, which are written in accordance with the principles of IPA.

Previous theoretical treatments

Aspect is a label covering various linguistic phenomena and is thus not a uniform concept. Closely connected to the question of morphological/ grammatical aspect is the one of lexical aspect/semantic aspect/Aktionsart, where it is neither possible nor necessary to make a clear-cut boundary. The point of departure of this article is the idea of aspect as a cross-linguistic phenomenon, with extraordinarily overt and systematic morphological expression in some languages, here Greek and Polish.

When discussing aspect and situation types, it is necessary to regard categorisation of events as such. The major relatively uncontroversial division is between 'states' and 'activities', in addition to 'accomplishment' and 'achievement' coined in Vendler 1957 among others. This classification – *state, activity, accomplishment* and *achievement* – has become the prevailing ground of classification of events, accepted in its major parts by most scholars, and it will be used here. A verb can be seen as a phrase,

(1) *Classification of aspectual opposition* (Comrie 1976:25).

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                    |
         ┌──────────┴──────────┐
    Perfective            Imperfective
                               |
                     ┌─────────┴─────────┐
                  Habitual           Continuous
                                         |
                               ┌─────────┴─────────┐
                          Nonprogressive      Progressive
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together with arguments and adverbials. It can change from an activity verb to an accomplishment verb with the help of adverbials. Therefore, instead of event type, the focus is rather laid on *situation type*.

Among the first writers to present a general basic treatment of aspect is Comrie 1976. Following Holt 1943:6, he defines aspect in its broad sense as "different ways of viewing the internal temporal constituency of a situation" (p. 2). One of the major features of aspect is *perfectivity*, where he describes the following contrast (p. 3-4): "the whole of the situation ... as a single unanalysable whole, with beginning, middle, and end rolled into one" (perfective) versus "explicit reference to the internal temporal constituency of the situation" (imperfective). From this perspective, aspect is the way an event is seen in relation to external circumstances. Imperfective aspect can be subdivided into *habituality* and *continuity* and further with respect to *progressivity*, see (1). Properties such as *punctuality* and *telicity* however are regarded as inherent subcategories of perfectivity.

Aspect as a universal phenomena has also been studied by Givón 1984, where he stresses its importance for the sentence as a whole, with its propositional-semantic features. He presents (p. 269) a gradation from *lexical-semantic* features, "involved in the meaning-structure", through *propositional-semantic* features, coding "various facets of the state, event or action", to *discourse-pragmatic* features, playing "a crucial role in the sequencing of propositions in discourse, in foregrounding or backgrounding them, and in indicating their time/truth/certainty/probability modalities vis-à-vis the speaker-hearer contract". He also describes (p. 274) the interaction of *boundedness* and adds a time-axis with *point-of-reference* as a basic feature. Givón also assumes *habitual-state* (see below) and *repetitive/distributive* aspect.

Thelin 1990 introduces more systematically the foreground–background distinction in order to account for the discourse function of aspect in Slavic languages. Smith 1991 presents a theory of aspect with the two components situation type and viewpoints, introducing the *Neutral viewpoint*. Other aspectologists mainly on Russian are Durst-Andersen 1992 and Klein 1994. Verkuyl 1993 stresses the *compositional* nature of aspect in general, adding the properties of the verb's arguments.

A survey of aspect is to a great extent given by Frawley 1992 with numerous world-wide examples. He lists (p. 295) at least six principal subgroups, namely *imperfective–perfective, atelic–telic, durative–punctual, iterative–semelfactive, progressive* and *habitual*, and assumes further *inceptive/incipient/ingressive, terminative/regressive, prospective, retrospective* and *intensive*.

A purely typological approach on aspect is taken by Dahl 1985. Data from 64 languages show how most tense and aspect categories in the world's languages can be reduced to a small set of cross-linguistic category types. He reflects that the Slavic aspect system compared to other languages appears (p. 69) "rather idiosyncratic in many ways". This turns up in the marking relations and possibly in iteratives. Also, Slavic languages together with Greek behave as clear exceptions in the aspectual relation to tense. Maybe the most typical cross-linguistic aspectual opposition is the PERFECTIVE:IMPERFECTIVE one (Dahl uses upper case letters for the semantic category), however this is an opposition without clear marking relations. Both members seem equipollent. The common semantic features (except for the prototypical ones) are hard to pin down however.

For marking relations in the Slavic languages, the Imperfective form has according to Dahl 1985:75 a constative general factual or simple denotative meaning. This indicates that Perfective is the marked form, a suggestion also raised by Comrie 1976:113 among others about Russian. Gawrońska 1993:166 argues that the *underived* Imperfective be unmarked for aspect in Polish.

The phenomenon of *habituality* deserves a special mention. This aspect function has probably developed later than the imperfective, which is not surprising as habituality contains many elements strongly deviant from other properties of imperfective aspect. Comrie 1976:27 calls it a characteristic feature of an extended period of time. Givón 1984 defines habitual on the time dimension; either (p. 273) "at all times" or "unspecified for time". He stresses the mixed status of habituality (p. 285): "On the one

hand, it represents a clear *strong assertion of facts*, in the sense defined for the realis ... On the other hand, ... it is a *generic*, non-referential expression. And in this sense, the habitual resembles irrealis." (italics by TG). The parallels with generics are also observed by Frawley 1992:316. Habituality can cover both habitual events as a part of a genetic disposition or 'simple' habitual, denoting habits. Both kinds are usually expressed with the same imperfective aspect, although some languages differentiate between them. Habituality occurs mainly in the past.

Besides general theoretical treatments with examples mainly from English and Russian, and pure typological approaches, some language-specific analyses of interest for this article are to be mentioned. Paprotté 1988 gives an account of the discourse function of tense and aspect in Greek (modern), e.g. how change of aspect brings about a transition of event types. Perfectively used, states turn into achievements and/or accomplishments, and imperfectively used, accomplishments turn into activities or states. Gawrońska 1993 with the focus on machine translations stresses the importance of discourse semantics. A successful choice in translations of articles or aspect is achieved by lexical information and a combination of default rules.

Aspect in Greek, Polish and Swedish

In this section, the three languages of the study will be described, first in general terms and then related to the study. All three languages are Indo-European and spoken in Europe: Greek as an independent branch, Polish belonging to the Slavic branch, and Swedish to the Germanic one.

Greek is a typical aspect-language in its traditional sense, though not as focused and thoroughly analysed with respect to aspect as the Slavic languages. There are two aspect forms: Imperfective and Perfective, where the Perfective is derived from the Imperfective with stem alternation. Perfective Past is traditionally labelled Aoristos, a term less suitable to describe its function. There are three tense forms: Present, Preterite and Future. Aspect can be expressed in Past and Future, while Present tense has only an imperfective stem and is regarded as inherently imperfective. Other forms with both Imperfective and Perfective stems are Imperative and the debated 'subjunctive' / 'neuter' / '*na*-complement'. The latter is in many cases used as the Infinitive in Polish and Swedish, but I choose the term Neuter, following Eklund 1976. The two periphrastic forms, Present Perfect and Past Perfect, have perfective stems. Other verb forms to be

mentioned are the imperfective Progressive, the perfective Relative Future and various conditional constructions. The verbs have subject agreement, expressed with suffixes, and allow pro-drop.

In *Polish* as a Slavic language, aspect is a basic grammatical category. Of the two aspect forms Imperfective and Perfective, the Perfective forms are usually derived from the Imperfective ones, by prefix or by change of stem. A few verbs have suppletive forms. There are three tense forms, namely Present, Preterite and Future, where aspect can be expressed in Past and Future. Present tense has only an imperfective stem and is regarded as inherently imperfective. Perfective Future is derived from Present, while Imperfective Future is periphrastic. Also Imperative and Infinitive can express aspect. Polish has no Perfect, but the adverbial Preterite Gerund with its perfective stem sometimes serves a similar function. Other verb forms are the imperfective Progressive and various conditional construc-tions. The verbs have subject agreement, which is expressed with suffixes indicating person and in some forms also gender, and allow pro-drop.

Unlike the Greek aspect, the Polish aspect has the function, in addition to the purely aspectual one, of expressing additional information with the same morphological means. Of the prefixes, which can be several for each verb, one is usually purely aspectual. The others have additional meanings, e.g. *podpisać* 'sign' (lit. 'under-write') or *popisać* 'write little by little'. From this form it is possible with the help of a suffix -*ywa/-iwa* to get a new imperfective form denoting iterativity, *podpisywać* 'repeatedly sign'.

Swedish does not possess either the grammatical category of aspect or subject agreement and does not allow pro-drop. The three traditionally described tenses are Present, Preterite and Future. Swedish has no indisputable future marker but rather three alternative paraphrases with varying modal connotations. Swedish has the forms Imperative, Infinitive, Present Perfect and Past Perfect. The elder use of Relative Future is substituted with Present Perfect in today's language. The form corresponding to English Progressive is seldom used. Other constructions such as the conditional are periphrastic as in Greek and Polish.

The fact that Swedish has no morphological aspect does not mean that there are no ways of expressing aspectual functions. There is widespread use of location verbs to express progressivity, e.g. *satt och skrev* (lit. 'sat and wrote') 'sat writing', 'was writing'. A common feature between Swedish and Polish is the use of position markers, e.g. *skriva under* (lit. 'under-write') 'to sign'. The Swedish phonetically stressed particles roughly

(2) *Summary of aspect, tense and modality categories in Greek, Polish and Swedish.*

		Greek	*Polish*	*Swedish**	
Preterite	IP	éɣrafa	pisałem	skrev	'wrote'
	P	éɣrapsa	napisałem		
Future	IP	θa ɣráfo	będę pisał	ska skriva	'shall write'
	P	θa ɣrápso	napiszę		
Imperative	IP	ɣráfe!	pisz!	skriv!	'write!'
	P	ɣrápse!	napisz!		
Infinitive/	IP	na ɣráfo	pisać	att skriva	'to write'
Neuter	P	na ɣrápso	napisać		
Present	IP	ɣráfo	piszę	skriver	'write'
Progressive	IP	ɣráfontas	piszac	skrivande	'writing'
Pres. Perf.	P	éxo ɣrápsi		har skrivit	'have written'
Past Perf./Gerund	P	íxa ɣrápsi	napisawszy	hade skrivit	'had written'

*For Swedish, the verb is technically placed on the IP line because it is *morphologically* unmarked. It is not imperfective but *neutral* for aspect.

correspond to the Polish aspect prefixes and serve to some extent as aspect markers. The Swedish directional particles can appear with habituals. So can the Polish prefixes, but then with an imperfective suffix. A summary of the major aspect and tense categories is shown in (2). IP=Imperfective, P=Perfective.

All the languages also have verbs without aspect marking. They possess only one, self-evident, aspect on lexical-semantic grounds, connecting Aktionsart. State verbs have by definition an imperfective meaning, while clear achievement verbs are perfective. The most frequent state verb is the copula and existential marker Gr. *íme* / Po. *być* / Sw. *vara* 'be', and among the transitive verbs the possessive verb Gr. *éxo* / Po. *mieć* / Sw. *ha* 'have'. Consequently they do not have the characteristic double stems in any tense, neither in Greek nor in Polish (and certainly not in Swedish). The Greek verbs *káno* 'do', *kséro* 'know' and *periméno* 'wait' are unmarked for aspect, but their counterparts in Polish do have double forms: *robić/zrobić* 'do', *znać/poznać* 'know' and *czekać/poczekać* 'wait'. Verbs with a perfective meaning are achievement verbs denoting transition, e.g. Sw. *bli* 'become'.

An empirical study

Distribution of forms

The corpus consists of extracts from a Swedish children's book by Astrid Lindgren *Alla vi barn i Bullerbyn* and their published translations into Greek and Polish. The choice of this text has several reasons. Lindgren is one of the few authors available in the three languages. The principal characters are children with their often immediate discourse and syntax. The style is therefore informal and simple, and the syntax not too distant from that of spoken language. From the original Swedish books two coherent extracts were chosen more or less at random (p. 18-19, 37-40), which were compared to their translated counterpart. The first one tells how the seven year old girl Lisa gets a room of her own, and the second one how Lisa and her playmates get three kittens. There is an English edition *The six Bullerby children*, but I have usually chosen a more detailed word-for-word representation of the examples.

As for the nouns (see Lindvall 1996), all verbs were registered, and their forms were coded. Imperfective verbs were given the code IP with three degrees: IP1, IP2 and IP3. The first one, IP1, denotes verb forms with 'double aspect', i.e. with grammatical aspect independent of tense (Preterite, Future, Imperative, Infinitive/Neuter). The next degree, IP2, contains verb forms with 'one aspect', verbs where the aspect is dependent of their tense (Present, Progressive). Finally, IP3 is for the verbs without aspect marking but where the aspect is evident from lexical and/or semantic cues. Their P counterpart is often a suppletive verb, see below. The IP3 verbs in this study are strictly reserved to Sw. *vara* / Gr. *íme* / Po. *być* 'be' and Sw. *ha* / Gr. *éxo* / Po. *mieć* 'have'.

IP1   Gr.   βρισκόμουν σ' ένα δωμάτιο
            vriskómun s' éna ðomátio
            'I *found myself* in a room'

IP2   Po.   Wszyscy ludzie ... *lubią* chyba kocięta
            'All people *like* kittens'

IP3   Sw.   den öppna spisen, som hon *har* i sitt rum
            'the open stove that she *has* in her room'

Verbs without any marking for aspect were given a Ø-code.

Ø   Sw.   Jag *band fast* en papperstuss i ett snöre
            'I *fastened* a scrunched up piece of paper to a string'

Perfective verbs were also given their codes and degrees: P1, P2 and P3. P1 denotes verbs with grammatical 'double aspect'. P2 is given the verbs with aspect depending on tense, 'one aspect' (Present Perfect, Past Perfect, Preterite Gerund). P3 is for verbs that are totally unmarked but with self-evident perfective aspect. They can be seen as suppletive aspect pairs with the IP3s, see above. In this study the P3 category contains only one such

transition verb: Sw. *bli* 'become'. The Greek and Polish equivalents are however not always P, as they can have a progressive/iterative meaning and then an IP form, e.g. Gr. *jínome/jíno* / Po. *zostawać/zostać* 'become'.

P1   Po.   – Och, czy nie moglibyśmy ich *dostać*?
           '– Oh, couldn't we *get* them?'

P2   Gr.   Η μαμά είχε φτιάξει τις κουρτίνες.
           I mamá *íçe ftiáksi* tis kurtínes.
           'Mother *had made* the curtains.'

P3   Sw.   Jag *blev* så glad så jag skrek högt
           'I *became* so happy that I shouted loudly'

As for the nouns (see Lindvall 1996), the codes were arranged into a scale after the following system. In the very centre is the bare verb, Ø, unmarked for aspect. Here, only the lexical meaning of the verb is important, not the aspect. The verbs coded with no. 1 are placed near the centre. They consist of verbs with grammatical aspect independently of tense. As they are characterised as 'double aspect' they consequently appear on both sides of the centre (Ø); IP1 with an imperfective form and P1 with a perfective. They differ only according to the aspect, and this aspect is expressed by morphological means, prefix and/or stem alternation, not by the tense or lexical content itself. The no. 2s draw away from the centre, diminishing the explicit marking of aspect. The verbs have their aspect only because they belong to a specific tense. IP2 contains tenses denoting progressivity and P2 tenses denoting something finished. The no. 3s have maximal inherent aspect and simultaneously they have minimal morphological marking. The IP3 denotes states and the P3 dynamism.

Consequently, from the centre where the morphological marking is zero, the steps go from morphological aspect unrelated to tense to aspect related to tense, then to the endpoints, with self-evident aspect and little explicit marking.

In the Swedish text, 139 verb phrases appeared. It is never possible to have word-for-word translations, especially not in fiction, and consequently not all verb phrases were translated, only 124 into Greek and 125 into Polish and not always the same ones. Some examples are seen below with their English equivalents and the untranslated verb in italics.

(a) not translated
    Sw.   Pappa (a) *hade stått* nere i snickarboden om kvällarna och (b) *trollat fram* en byrå och ett runt bord och en hylla och tre stolar
          'Daddy (a) *had been standing* down in the carpentry workshop in the evenings (b) *conjuring up* ...'

    Po.   Tatuś wieczorami (b) *wyczarowywał* dla mnie w swoim warsztacie stolarskim ...
          'Daddy in the evenings (b) *was conjuring up* for me in his carpentry shop ...'

(b) not translated
    Sw.   Hon (a) *kokade* kaffe också i en kaffekokare som (b) *stod* på tre ben mitt i brasan.
          'She also (a) *prepared* coffee in a coffee pot that (b) *stood* on three legs in the middle of the fire.'

    Gr.   και μας (a) πρόσφερε και καφέ.
          ke mas (a) *prósfere* ke kafé.
          'and she also (a) *served* us coffee.'

The first example is an illustration of the Swedish way of expressing progressivity with postural verbs, 'sit and', 'stand and', etc. This is not necessary in Polish which has its grammatical aspect. In the second example the translation is more concentrated than the original. Sometimes a sentence is translated into one language but not into the other. Thus, after deletions of everything but full verb phrases in all three languages, the number was 114. The general distribution of forms can be seen in (3).

To begin with IP3, where the aspect is indicated on lexical grounds, the distribution is fairly even among the three languages. The number for explicit imperfective aspect (IP2+IP1) is lower in Greek than in Polish, and null in Swedish. The distribution of perfective aspect is mirror-imaged: higher in Greek than in Polish. The Greek and Swedish forms Present Perfect and Past Perfect are far more common than the Polish semantic equivalent, the adverbial Preterite Gerund. One Greek Past Perfect verb is unmarked for aspect (*íçe káni* 'had done/made'). If one disregards the lexical aspect, IP3 and P3, there is a dominance of perfective verbs.

Translations of forms
This section presents how the original text was translated into each language and how the translations correspond to the original. It is assumed that the aspect categories in Greek and Polish correspond to each other. Swedish is the source language, and being a 'non-aspect language' it gives no

(3) *General distribution of verbs with imperfective and perfective marking in the Greek, Polish and Swedish texts.*

		Gr.	Po.	Sw.
IP3	Unmarked state verbs	15	20	23
IP2	Present, Progressive of other verbs than IP3	2	6	3**
IP1	Preterite, Future, Imperative, Infinitive/Neuter, Conditional	33	38	–
Ø		–	–	74
P1	Preterite, Future, Imperative, Infinitive/Neuter, Conditional	45	50	–
P2	Present Perfect, Past Perfect, Preterite Gerund	19*	–	12***
P3	Unmarked achievement verbs	–	–	2
Total		114	114	114
Sum IP		50	64	26
Sum Ø		–	–	74
Sum P		64	50	2
Total		114	114	114

*For Greek, one Past Perfect verb is unmarked for aspect (*íçe káni* 'had done/made'). It is placed on the P line because of its *tense* category.

**For Swedish, the verbs are placed on the IP line because of their *tense* categories. They are not imperfective but *neutral* for aspect.

***For Swedish, the verbs are placed on the P line because of their *tense* categories. They are not perfective but *neutral* for aspect.

morphological clues to the choice of aspect. But as the aspect is evoked from the context and discourse, there are reasons to believe that the Greek and Polish translators independently make similar choices from the given discourse. A few words have to be said about the translations. It is a well known fact that translations differ to some extent from original texts, due to 'translationese'. It is to be assumed that a similar text originally written in Greek and Polish respectively would differ slightly from the present translations. However, in my current dissertation, several original texts reaffirm similar results as those presented below, and the risque of 'translationese' seems to be of minor importance.

The results in (4) show correspondence between the forms of each language. The translation process is shown from Swedish to Greek (A) and from Swedish to Polish (B), i.e. from Ø in the source language to various aspect and tense forms in the target languages. Then the aspect forms are compared between Greek and Polish (C).

The general impression is an extensive correspondence between the Greek and Polish forms. Imperfective in Greek is Imperfective in Polish, and Perfective in Greek is Perfective in Polish, although the translators have chosen aspect independently of each other from the Swedish Ø-form. This indicates that aspect is obviously 'hiding' in the Swedish discourse,

(4) *Comparison between the aspect forms in the Swedish original text and the Greek and Polish translations*

A. *Swedish to Greek*

IP3	23	→	IP3	14
			IP1	2
			P1	3
			P2	4
IP2	3	→	IP2	2
			IP1	1
Ø	74	→	IP3	1
			IP1	29
			P1	42
			P2	2
P2	12	→	IP3	
			IP1	
			P1	2
			P2	10
P3	2	→	IP1	1
			P2	1

B. *Swedish to Polish*

IP3	23	→	IP3	15
			IP2	2
			IP1	3
			P1	3
IP2	3	→	IP2	3
Ø	74	→	IP3	3
			IP2	2
			IP1	29
			P1	41
P2	12	→	IP3	1
			IP1	6
			P1	5
			P2	
P3	2	→	IP3	1
			P1	1

C. *Greek compared to Polish*

IP3	15	→	IP3	12
			IP2	2
			IP1	1
IP2	2	→	IP2	2
IP1	33	→	IP3	4
			IP2	2
			IP1	22
			P1	5
P1	45	→	IP3	3
			IP1	7
			P1	35
P2	19	→	IP3	2
			IP1	9
			P1	8
Sum IP	50		IP	45
			P	5
Sum P	64		IP	21
			P	43

Polish compared to Greek

IP3	20	→	IP3	12
			IP1	4
			P1	3
			P2	1
IP2	6	→	IP3	2
			IP2	2
			IP1	2
IP1	38	→	IP1	22
			P1	7
			P2	9
P1	50	→	IP3	1
			IP1	5
			P1	36
			P2	8
Sum IP	64		IP	44
			P	2
Sum P	50		IP	6
			P	44

although not expressed on the surface. The cases where the aspect choice is *not* similar have several explanations. Often there is another verb:

P1 Gr. δίπλες στο ειδικό τηγάνι, που *έβαλε* πάνω στη φωτιά
δíples sto iðikó tiɣáni, pu *évale* páno sti fotiá
'waffles in the special pan, that she *put* over the fire'

IP1 Po. wafli w szczypcach. Szczypce te *trzymała* nad ogniem.
'waffles in tongs. That tongs she *held* over the fire.'

IP1   Gr.   μα ποτέ δεν είχα σκεφτεί ... πως *προορίζονταν* για μένα.
              ma poté ðen íxa skeftí ... pos *proorízontan* jia ména
              'but I had never thought ... that they *were meant* for me.'

P1   Po.   ale nie mogłam ... przypuszczać, że to ja je *dostanę*.
              'but I could not imagine, that I *will get* them.'

Another reason is the Greek use of past tense in indirect past quotations, where Polish has present, and present is always imperfective:

P1   Gr.   ένιωσα σα να *βγήκαμε* ... από το σπίτι
              éniosa sa na *vjíkame* ... apó to spíti
              'I felt as if we *went out* of the house'

IP3   Po.   poczułam, że *jesteśmy* na dworze
              'I felt that we *are* outdoors'

It is however more interesting to see when Greek and Polish choose different aspects of the *same* verb:

P1   Gr.   Μετά *ξανανεβήκαμε* τις σκάλες.
              Metá *ksananevíkame* tis skáles
              'Then we *went* upstairs.'

IP1   Po.   a po chwili *szliśmy* znów w górę po schodach.
              'and after a while we *were walking* again upstairs.'

P1   Gr.   Την *παρακαλέσαμε*, τη *χιλιοπαρακαλέσαμε*
              Tin *parakalésame*, ti *çilioparakalésame*
              'We *asked* her, *thousand-asked* her'

IP1   Po.   *Prosiliśmy* więc i *błagali*
              'We were begging thus and pleading'

It seems that the difference appears with iterative verbs, in that Greek gives them perfective aspect, focusing the momentaneous nature of each instance, while Polish gives them imperfective aspect, thus focusing the repeated nature. A more detailed analysis of the verbs will be presented in the next section.

Relation to situation types
The previous section demonstrated how translations from one non-aspect language to two aspect languages independently gave highly consistent agreement in the choice of aspect. This section will discuss how the choice of aspect derives from the situation types, and thereby how the question of aspect goes beyond the use of grammatical forms. With Verkuyl's (1993:35) interpretation of Vendler's four time schemata as a background, I conclude

that state verbs are imperfective by definition, activity and accomplishment verbs can be either imperfective or perfective, and achievement verbs are perfective by definition. However, in an iterative or habitual sense, the last ones can take the imperfective form.

Low degree of dynamism
With these considerations I will examine the situation types lying behind the Swedish verbs and how they appear in the translations. Here, only the Swedish sentences will be coded to English, as the Greek and Polish equivalents express more or less the same propositional content. The first major issue to be discussed is the property of *dynamism*. The situation type with the lowest degree of dynamism is the stable stative situations or *states*. In this study, all three languages use verbs without aspect marking, e.g. 'be', i.e. inherently imperfective, IP3. More temporary states, e.g. 'stay', 'stand', are expressed by Ø-marked verbs in Swedish or, for Greek and Polish, IP. It is not uncommon that such postural verbs in Swedish are used to express duration of another verb, here 'wave'.

Ø   Sw.   Farmor *bodde* hos oss när jag *var* liten

IP   Gr.   Η γιαγιά *έμενε* μαζί μας όταν *ήμουν* μικρή
              I jiajiá *émene* mazí mas ótan *ímun* mikrí

IP   Po.   Babcia *mieszkała* u nas, gdy *byłam* mała
              'Grandma *lived* with us when I *was* small'

Ø   Sw.   Och i fönstret där *stod* Britta och Anna och vinkade åt mej.

IP   Gr.   είδα ... την Μπρίτα και την Άννα *να στέκονται* στο παράθυρο και να με χαιρετάνε.
              íða ... tin Bríta ke tin Ánna *na stékonte* sto paráθiro ke na me çeretáne

IP   Po.   W oknie *stały* Britta i Anna i machały do mnie rękoma.
              'And at the window there Britta and Anna *were standing* waving at me.'

Other properties are *durativity* and *continuity*. While states are inherently durative, dynamic situations express various degrees between durativity and punctuality. Durative, continuous activities are expressed by a few verbs in the text. In Swedish they are Ø-marked, but again a postural verb can be used to express durativity, or the verb phrase *hålla på att* 'be busy' (cf. *hålla* 'hold'). Greek and Polish have indisputably an IP stem. It is hard to imagine any purely aspectual P counterpart. A P form would for

leżały 'lay' indicate an inchoative event, and for Gr. *niaúrizan* / Po. *miauczały* 'mew' a punctual one, 'mewed once'.

Ø	Sw.	Dom *låg* i en korg och *jamade*
IP	Gr.	Τα γατάκια *νιαούριζαν* μέσα σ' ένα καλάθι Ta γatákia *niaúrizan* mésa s' éna kaláθi.
IP	Po.	*Leżały* w koszyku, *miauczały* 'They *lay* in a basket and *mewed*'

A special role is played by *habituals*. They can occur as discontinuous *activities* over a longer period of time. They resemble states, in that they can be generic and denote characteristics of the executor, a part of the genetic predisposition or a customary habit. They are often accompanied by adverbials such as *always* and can occur in present tense. Swedish verbs are Ø-marked, Greek and Polish have IP.

Ø	Sw.	Han *drack* inte som mänskor *gör*, utan han … *slickade* i sej mjölken.
IP	Gr.	Τό '*πινε* με τη ροζ γλωσσίτσα. Tó '*pine* me ti roz γlossítsa.
IP	Po.	Nie *pił* tak, jak *piją* ludzie, lecz … *wlizywał* w siebie mleko. 'He (=the kitten) did not *drink* like people *do*, but he … *lapped* up the milk.'

Ø	Sw.	pappa *snickrar* alltid om vintrarna
IP	Gr.	o μπαμπάς *πάντα* φτιάχνει *πράγματα* ... το χειμώνα o babás *pánta ftiáxni práγmata* … to çimóna
IP	Po.	tatuś zawsze w zimie *zajmuje się stolarką* 'but daddy is always *doing carpentry* in winter time'

The most interesting situations are the *habitual achievements*. They share all the properties of achievements (dynamic, punctual, telic) but they occur repeatedly. Habituals are formed in Polish as well as in other Slavic languages in a derived way, the 'derived imperfectives'. From a continuous IP verb the punctual P is derived with a prefix or a stem alternation. The habitual IP is derived back from the punctual P with the help of a suffix. In the Swedish extract, the reader has to go through a good deal of the text before it is obvious that the events are habitual, especially as the preceding text describes a row of punctual events. This habituality is not signalled until the adverbial *i början* 'in the beginning'). The Greek and Polish translations have IP.

Ø	Sw.	Jag (a) *band fast* en papperstuss i ett snöre och (b) *sprang* runt med det, och Murre (c) *sprang efter* och (d) *försökte* få fatt i papperet. Lasse och Bosse (e) *lekte* också med honom <u>i början</u>, men dom tröttnade snart
IP	Gr.	(a)′ *Εδενα* ζαρωμένο χαρτί σ' ένα σπάγκο κι (b) *έτρεχα* γύρω γύρω τραβώντας το και το Μαράκι ξωπίσω μου (d) *προσπαθούσε* να πιάσει το χαρτί. Στην αρχή (e) *παίζανε* μαζί του κι ο Λαρς και ο Πιπ, σύντομα όμως βαρέθηκαν (a) ´*Εδena* zaroméno xartí s' éna spáγko ki (b) *étreça* jíro jíro travóntas to ke to Maráki ksopíso mu (d) *prospaθúse* na piási to xartí. Stin arçí (e) *pézane* mazí tu ki o Lars ke o Pip, síntoma ómos varéθikan
IP	Po.	(a) *Przywiązywałam* kułkę z papieru do sznurka i (b) *biegałam* z tym w kółko, a Mruczek (c) *biegał* za mną i (d) *starał się* schwytać papier. Lasse i Bosse (e) *bawili* się z nim tez z początku, lecz wkrótce im się sprzykrzyło 'I (a) *fastened* a scrunched up piece of paper to a string and (b) *ran around* with it, and Murre (c) *ran after* and (d) *tried* to catch the paper. Lasse and Bosse also *played* with him <u>in the beginning</u>, but they soon tired'

Diffuse intermediate stages

From clear cases of indisputable IP form to these with indisputable P form, there are intermediate stages where Greek and Polish differ in-between themselves or each language has internal variations. Non-habitual activities can be durative but discontinuous, *iterative*. In such cases Greek and Polish differ, in that Greek tends to have P verbs and Polish IP.

Ø	Sw.	Och vi *tiggde* och *bad*
P	Gr.	Την *παρακαλέσαμε*, τη *χιλιοπαρακαλέσαμε* Tin *parakalésame*, ti *çilioparakalésame*
IP	Po.	*Prosiliśmy* więc i *błagali* 'We *were begging* and *pleading*'

A higher degree of dynamism is represented by the property of *telicity*, i.e. where the event brings about a change. Some events are only telic but not punctual, corresponding to Vendler's accomplishments. In Greek and Polish both IP and P verbs occur. In Swedish such verbs are Ø, sometimes with a directional particle strengthening the telicity e.g. *bort* 'away', which is semantically equivalent to the Polish prefix *od-* 'away'.

Ø   Sw.   jag tänker *spara* till en cykel

IP   Gr.   μάζευα λεφτά για ένα ... ποδήλατο
           mázeva leftá jia éna poðílato

IP   Po.   bo chcę *zbierać* na rower

           'I *am saving up* for a bicycle'

Ø   Sw.   hon var tvungen att *ge bort* allihop utom en

P   Gr.   έπρεπε να τα *δώσει* όλα εκτός από ένα,
           éprepe na ta *dósi* óla ektós apó éna

P   Po.   muszona jest *oddać* wszystkie, prócz jednego

           'she had to *give* them all *away* except one'

High degree of dynamism

Dynamic events are, if not durative, usually connected to the property of *punctuality*. Such verbs, punctual but not telic, are very few in the text, mainly perception verbs. In Swedish, the punctual effect is strengthened with the verb *komma att* 'happen to'. Another mean of expressing punctuality in Swedish is the particle *till* 'to', however this was not present in this text. Greek and Polish punctual verbs are indisputably P. An IP would indicate continuity.

Ø   Sw.   Men så *kom* jag *att titta ut* genom fönstret, och då *såg* jag
           Norrgårdens gavel

P   Gr.   Όταν όμως *κοίταξα* από το παράθυρο *είδα* τη σοφίτα της
           Βορινής Φάρμας
           Ótan ómos *kítaksa* apó to paráθiro *íða* ti sofíta tis Vorinís
           Fármas

P   Po.   Kiedy jednak *wyjrzałam* przez okno, *zobaczyłam* ... poddasze
           Zagrody Północnej

           'But I *happened* to *look out* of the window, and then I *saw* the
           gable of North Farm

But the great majority of the remaining verbs describe both punctual *and* telic events, corresponding to Vendler's achievements. In Greek and Polish they are P. Again, the Swedish verbs can be strengthened by directional particles, here *ut* 'out', semantically equivalent to the Polish *wy-* 'out'. But as mentioned earlier, it seems that this particle/prefix is used to mark telicity rather than punctuality.

(5) *Aspectual subgroups related to the degree of dynamism in Greek, Polish and Swedish*

Degrees of dynamism:	Expressed by:		
	Greek	Polish	Swedish
Low degree of dynamism			
1. Stable states	IP	IP	IP
2. Temporary states	IP	IP	Ø (+postural verb)
3. Continuous activities	IP	IP	Ø (+postural verb / *hålla på att*)
4. Habitual activities	IP	IP	Ø (+adverbial)
5. Habitual achievements	IP	IP	Ø (+*bruka*)
Intermediate stages			
6. Iterative activities	P	IP	Ø (+postural verb)
7. Telic accomplishments	IP or P	IP or P	Ø (+particles)
High degree of dynamism			
8. Punctual activities	P	P	Ø (+*komma att* / particle)
9. Punctual and telic achievements	P	P	Ø (+particle)

Ø   Sw.   Lasse *valde ut* vilken vi skulle ha.

P   Gr.   Ο Λαρς *διάλεξε* το δικό μας.
           O Lars *ðiálekse* to ðikó mas.

P   Po.   Kociątko dla nas *wybrał* Lasse.

           'Lasse *chose* which one we should have.'

Some verbs are ambiguous as to their durativity. The translators too, obviously confused, interpreted them as durative, hence IP, but in addition to this IP stem, they have also added a modal P verb.

Ø   Sw.   Jag blev så glad så jag *skrek* högt
             'I got so happy that I *shouted* loudly'

P+IP Gr.   Τόσο είχα ευχαριστηθεί που *άρχισα να τσιρίζω*
             Tóso íxa efxaristiθí pu *árçisa na tsirízo*
             'So much I was pleased that I *began to shout*'

P+IP Po.   Ucieszyłam się tak bardzo, że *zaczęłam* głośno *wykrzykiwać*
             'I got so happy that I *began* loudly *shout*'

Taken together, the verbs in the text show strikingly regular patterns of correspondence between situation type and grammatical form. The functions are degrees of dynamism, where boundedness, punctuality and telicity play important roles. The forms are connected with tense and expressed with stems, prefixes and particles. With these considerations, the aspectual subgroups related to dynamism are listed in (5).

Summary

The categorisation above has given some concepts for a general discussion of aspect. The differences between the three languages Greek, Polish and Swedish are several, but my aim is to illustrate their similarities.

The underlying basis is the question of *dynamism*, with some subproperties: *continuity/punctuality, iterativity, telicity* and *habituality*. In all three languages the first extreme endpoint expresses the unbounded state. This is expressed in the same way, with the state verbs Gr. *íme* / Po. *być* / Sw. *vara* 'be' and Gr. *éxo* / Po. *mieć* / Sw. *ha* 'have'. They denote an absolute absence of dynamism. The languages have no morphological alternative to this absolute imperfective aspect, no 'double form'. The other extreme endpoint expresses the utmost dynamism, such as Swedish *bli* 'become'. Also Greek and Polish have their 'become' counterparts but with double stems, Gr. *jínome/jíno* where the imperfective form denotes progressivity and Po. *zostawać/zostać* where it denotes iterativity.

It seems that in Greek, the most important criterion is the one of *continuity*, at the price of iterativity. If an event is continuous then verb has to be Imperfective, but if punctual then Perfective, *even when the punctual event occurs iteratively*. Iterativity thus plays a less important role than continuity in the marking of Greek aspect. In Polish, however, iterativity is an important criterion. If a punctual event occurs iteratively, then the verb has to be Imperfective, *because it occurs iteratively*.

Another borderline case is the one between telicity and punctuality. Telicity with continuity gives Imperfective marking in both Greek and Polish. Thus, telicity alone does not seem to be sufficient for Perfective. This can be seen in contrast to punctuality, which alone gives Perfective marking. In combination, however, telicity together with punctuality is an unbeatable candidate for Perfective.

In this article, aspect has mainly been treated in the form of the *Perfective* stem. It must not be forgot that the Polish perfective verbs with prefixes can be the source of derivations of new *Imperfective* stems. For example, Polish tends to use 'simple' Imperfective for process and iterativity but 'derived' Imperfective for habitual achievements. The semantic value of these prefixes is equivalent to the (postposed) verb particles in Swedish. Swedish also possesses other means of expressing aspect, such as added verb phrases, adverbials, etc. This problem has not been sufficiently covered in this article, but it is assumed that a systematic treatment of prefixes and particles would give even clearer patterns of the

subcategories of aspect and their marking. That would hopefully puncture the unfortunate dichotomy of languages into 'aspect languages' and 'non-aspect languages'.

The problems treated in this article give rise to several new questions. What more exactly is the role of the aspectual property habituality? And the intermediate stages of iterative activities and telic accomplishments, where two features compete? What are the connections between aspect and other verbal categories such as tense and modality? And last but not least: can aspectual properties of the whole verb phrase, the whole sentence including objects and even subjects, be expressed by the nominal properties of these arguments? The connection between aspect and case, for e.g. Finnish, is well-known, but what about other nominal properties such as definiteness? This problem is treated in my current dissertation and will hopefully shed more light on the fascinating field of aspect.

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Rune: A computer program for interpretation of rune stones

Bengt Sigurd and Johan Dahl

Introduction and abstract

The language on Swedish rune stones written in the 16 character alphabet (*futhark*) constitutes a very special fragment of the Swedish of its time (about 800-1100). Because of the ritual character of the inscriptions the language is rather standardized. The greatest variation is in proper names. As has long been noted the typical formula is (in English translation): *N raised this stone after M his P*, where *N* and *M* are personal names and *P* is a kinship term. Additional sentences may state where the person died, e.g. *He fell in Greece*. Depending on the success of the new religion the formula *God help his soul* is sometimes also added (for safety). There are about 3000 rune stones with text of this type.

The purpose of this paper is to describe a computer program which is able to interpret such typical rune stone texts and translate them into Modern Swedish. In a first step the runes are transliterated into Latin letters. The second step is the parsing of the transliterated text resulting in a functional-semantic representation showing the analysis in terms of subject, predicate, objects and adverbials (functional roles) in addition to word meanings according to Swetra grammar. In a third step this functional representation is then used as an intermediate language (interlingua) in an automatic translation into Modern Swedish. The program may also be run in the other direction translating Modern Swedish into runes. Some stones are offered for demonstration.

The program Rune is based on the grammar developed in the project Swetra (Swetra Grammar; see Sigurd 1994). It has been implemented in the programming language LPAProlog and can be run on any Apple computer which supports this Prolog. It can be transported to other Prolog variants and other computers. The program can be demonstrated on demand at the Department of Linguistics, Lund University. The description in this paper