ASPECT AND COERCION IN ANCIENT GREEK

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The interpretations of aoristic and imperfective aspect in Ancient Greek cannot be attributed to unambiguous aspectual operators but suggest an analysis in terms of coercion in the spirit of de Swart (1998). But since such an analysis cannot explain the Ancient Greek data, we combine Klein's (1994) theory of tense and aspect with Egg's (2005) aspectual coercion approach. According to this theory, (grammatical) aspect relates the runtime of an eventuality and the current time of reference (topic time), whereas tense relates the moment of utterance and the topic time.

These relations can trigger aspectual selection restrictions (and subsequent aspectual coercions) just like e.g. aspectually relevant temporal adverbials, and are furthermore susceptible to the Duration Principle of Egg (2005): properties of eventualities must be compatible with respect to the duration they specify for an eventuality, otherwise coercion is called for. The Duration Principle guides the selection between different feasible coercion operators in cases of aspectual coercion but can also trigger coercions of its own. We analyse the interpretations of aorist and imperfective as cases of coercion that avoid impending violations of aspectual selection restrictions or the Duration Principle, which covers cases that are problematic for de Swart's (1998) analysis.

1. Introduction

This paper discusses the semantics of aoristic and imperfective aspect in Ancient Greek. The aorist indicates that an eventuality is completed, e.g., receiving the reign in (1). But for unbounded predicates (which introduce no inherent boundaries for eventualities) it has an ingressive interpretation, e.g., the begin of joy and courage in (2), or a 'complexive' interpretation (with begin and end), e.g., serving a term as senator in (3):

(1) *teleutē-sa-ntos* *Aluatteō* *ex-e-dexa-to*
     die-AOR-PTCP.GEN.SG Alyattes.GEN.SG from-PAST-take.AOR-3SG
     tē-n *basilēiē-n* *Kroiso-s*
     the-ACC.SG reign-ACC.SG Kroisos-NOM.SG
     "After Alyattes died, Kroisos received (AOR) the reign." Hdt.1.26.1

(2) *Apothenēisk-ei d' oun Mario-s (...) kai mega*
die.IMP.PR-3SG and then Marius.NOM.SG and great.NOM.SG
e-sch-e parautika tē-n Rōmē-n charma kai
PAST-have.AOR-3SG immediately the-ACC.SG Rome-ACC.SG joy.NOM and
tharso-s
courage-NOM.SG
"Then Marius dies ... and immediately, great joy and courage took posses-
sion (AOR) of Rome." Plu. *Mar.* 46.5

(3) *allē-n men archē-n oudemia-n pōpote ērxa*
other-ACC.SG though office-ACC.SG no-ACC ever PAST.rule.AOR.1SG
en tēi polei, e-bouleu-sa de
in the.DAT.SG state.DAT.SG PAST-be.a.senator-AOR.1SG but
"I never held any other office in the state but I served a term as senator
(AOR)." Pl. *Ap.* 32a9

Imperfective aspect in Ancient Greek by default is interpreted progressively, as in
(4); but habitual interpretations also exist (5).

(4) *Kuro-s eti pros-ēlaun-e*
Kyros-NOM.SG still to-PAST.march.IMP-3SG
"Kyros was still marching on (IMP)." X. *An.* 1.5.12

(5) *en dexia-i de kai en aristera-i autou te kai tōn*
in right-DAT.SG PRT and in left-DAT.SG him.GEN PRT and the.GEN.PL
hippe-ōn peltasta-is chōra ēn
cavalry-GEN.PL targeteer-DAT.PL place.NOM.SG PAST.be.IMP.3SG
"To the right and left from him and the cavalry was (IMP) the usual place for
the targeteers." X. *Cyr.* 8.5.10

The interpretations of (1)-(5) cannot be explained in terms of unambiguous aspectual
operators. E.g., for the aorist, one would have to assume an ambiguity between a
change-of-state operator like Dowty's (1979) BECOME and Krifka's (1989) AOR
operator that maps predicates P onto (locally) maximal phases of P.

Instead, the interpretations resemble the result of aspectual coercion, as in the
analogous English examples (6)-(9) (Moens and Steedman 1988):

(6) When Mary arrived, Max ran (he started running, ingressive, cp. (2))

(7) Max ran in ten minutes today (he started running, ran, and and then stopped
running, complexive, cp. (3))

(8) Max played the Moonlight Sonata for two minutes (he played a part of it,
progressive, cp. (4))

(9) Max played the Moonlight Sonata for two decades (he played it over and over

again,habitual, cp. (5))

This seems to suggest applying de Swart's (1998) account of the different forms of the French past tense to the Ancient Greek data, which would put down the interpretations (1)-(5) to coercion triggered by aspectual restrictions of independent temporal operators. But this would not work for Ancient Greek, where tense can be distinguished morphologically from aspect and the aoristic/imperfective distinction is not restricted to tensed forms. Such a coercion analysis for Ancient Greek would furthermore entail that aoristic and imperfective morphology are semantically vacuous, because the semantic effect of choosing either one would be attributed entirely to aspectual restrictions from other sources.

What is more, the default status of the progressive interpretation of the imperfective would remain unexplained, and habitual interpretations of stative predicates like in (5) cannot be based on aspectual coercion anyway (these interpretations are stative, too).

The last problem also holds for French: De Swart's analysis cannot explain the habitual interpretation of the stative main clause in (10) in terms of a selection restriction of the French imparfait for unbounded predicates:

(10)   Quand j'étais petit, je ne dormais pas bien
         'When I was young, I usually didn't sleep well.'

2.   The semantics of aorist en imperfective

To describe aorist and imperfective, we distinguish *aspectual class* (or 'aktionsart') from *grammatical* aspect. Aspectual class is introduced by the semantics of an uninflected verb and its complements and adjuncts and describes the temporal progression of the eventuality denoted by the verb; grammatical aspect is introduced by aspectual inflection and locates the eventuality temporally with respect to the reference or topic time (TT), about which a claim is made (Klein 1994). Tense relates TT to the moment of utterance, see (11b).

Aorist and imperfective are both grammatical aspects. The aorist states that the runtime of a specific eventuality (Klein's TSit) is located within TT; the imperfective, that TT is located in TSit (following Gerö and v. Stechow 2003). For the aorist, this means that its argument (a property of eventualities) must be bounded, i.e., the property must not hold for a proper part of an eventuality for which it holds. Otherwise, some constellations of TT and TSit describable by the imperfective of an unbounded P could be expressed using an aorist of P as well: In these constellations, the eventuality e whose runtime is TSit has at least one part e' that is (due to the divisivity of P) also in the extension of P, and this second eventuality e' is so small that its runtime TSit$'$ is located in the topic time. Fig. 1 illustrates this constellation; in this figure, the topic time is indicated by the brackets, and the runtime of the eventualities (TSit and TSit$'$, respectively), by the beams.
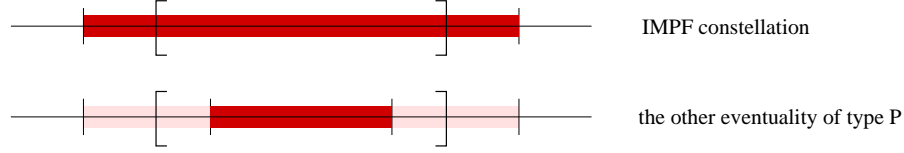
Figure 1: The imperfective of unbounded predicates

We rule out this unwanted potential overlap between imperfective and aorist in terms of an aspectual class restriction of the aorist. Eventually, this restriction is due to a case of 'pragmatic strengthening', which removes semantic overlap between competing instantiations of the same grammatical feature (here, aspect). In contrast, the imperfective does not restrict the aspectual class of its argument.

This analysis directly assigns the main clause of (1) a completive interpretation (the subordinate clause determines the topic time as the time after Alyattes' death). The aorist semantics (11a) maps properties of eventualities P onto the set of times that include the runtime of an eventuality of type P. Then the semantics of tenses maps a property P' of the topic time (which itself is rendered as anaphor t_{TT}) onto a proposition. (11b) shows this mapping for the past tense, here P' is mapped onto a conjunction of $P'(t_{TT})$ with the proposition that t_{TT} precedes the utterance moment t_0. (11c) states that the entire transfer of the reign to Kroisos took place within the topic time, which lies before t_0:

(11)   a. $\lambda P \lambda t \exists e. P(e) \wedge \tau(e) \subseteq t$
       b. $\lambda P. P(t_{TT}) \wedge t_{TT} < t_0$
       c. $\exists e.\textbf{receive-reign}'(\textbf{kroisos}')(e) \wedge \tau(e) \subseteq t_{TT} \wedge t_{TT} < t_0$

For (4), we get a progressive interpretation. The semantics of the imperfective (12a) maps properties of eventualities P onto the property of being a proper part of the runtime of an eventuality of type P, which together with the interpretation of the past tense in (11b) yields (12b) as the semantics of (4): The runtime $\tau(e)$ of an eventuality e of Kyros marching on includes the topic time t_{TT}, which precedes t_0. In the larger context. the topic time is determined as the time of Klearchos riding through Menon's army. At the end of TT, the eventuality e is still continuing, which yields the progressive effect:

(12)   a. $\lambda P \lambda t \exists e. P(e) \wedge t \subset \tau(e)$
       b. $\exists e.\textbf{march-on}'(\textbf{kyros}')(e) \wedge t_{TT} \subset \tau(e) \wedge t_{TT} < t_0$

In this analysis, we ignore the *imperfective paradox* (there need not be a full eventuality of type P for the imperfective to be true). The resolution of this problem goes far beyond the scope of this paper and is in principle independent of our account. See e.g. Dowty (1979) and Landman (1992) for in-depth discussions of the problem.

3. Aspectual coercion and the Duration Principle

The interpretations of (2) and (3) emerge as an attempt to avoid an impending mismatch between the selection restriction of aorist and the aspectual class of its argument in terms of intervening coercion operators like INGR or MAX that map unbounded onto bounded predicates:

(13)   INGR$(P)(e)$ iff e is the smallest eventuality such that $\neg \exists e'.e' \supset\prec e \wedge P(e')$ and $\exists e''.e \supset\prec e'' \wedge P(e'')$

(14)   MAX$(P)(e)$ iff $P(e) \wedge \forall e'.e \sqsubset e' \rightarrow \neg P(e')$

INGR resembles Dowty's BECOME. INGR(P) holds for smallest eventualities e that do not abut on a preceding eventuality (relation '$\supset\prec$') of type P but abut on a following eventuality in the extension of P. MAX is similar in spirit to Krifka's AOR. It maps a predicate P on the set of locally maximal eventualities in the extension of P (we assume that eventualities are convex, i.e., without interruptions). E.g., the second clause of (3) gets the interpretation in (15). In spite of this coercion analysis, we are not forced to assume that the aorist morphology is semantically empty.

(15) $\exists e.\text{MAX}(\textbf{be-senator}'(\textbf{speaker}'))(e) \wedge \tau(e) \subseteq t_{TT} \wedge t_{TT} < t_0$

The habitual interpretation of imperfective aspect and the choice of aspectual coercion for the aorist are put down to the *Duration Principle* (DP) of Egg (2005): properties of eventualities must be compatible with respect to the duration they attribute to an eventuality. This information may be exact (as in *for five minutes*) or take the form of a 'typical duration' (e.g., we know that the duration of playing a sonata usually is measured in minutes, but not seconds or days). The DP guides aspectual coercion and can trigger coercion of its own.

The DP plays a role in coercion, which is due to the fact that coercion operators may influence duration. In particular, an ingressive operator shortens, and a habitual operator lengthens, the typical duration introduced by its argument. The role of the DP is visible in cases where there are several potential coercion operators that are equally useful to avoid a specific aspectual mismatch: The need to ensure compatibility with respect to the duration attributed to an eventuality may guide the choice among these operators. This determines which operators to use for the aspectual class coercion of unbounded predicates in the aorist.

If the topic time is very short then an ingressive coercion is chosen like in (2): Here *parautika* 'immediately' fixes the topic time as a time point, and coercion in terms of an ingressive operator returns an eventuality (the beginning of joy and courage) of very short duration that may be situated within TT. Complexive coercion would not be possible because the runtime of a maximal eventuality of being glad and courageous, including its beginning and ending, would not fit within a time point. But if the topic time is longer, a complexive coercion is possible like in (3),

where TT is the whole life of the speaker, which can comprise the runtime of serving a term as senator from begin to end.

For the imperfective, the DP explains the default status of the progressive interpretation. Here, the topic time is part of the runtime of the eventuality. As long as the typical duration involved in the predicate P that introduces the eventuality is not smaller than TT, a literal, 'progressive' interpretation is available, e.g., in (4), where TT is (in the larger context) specified as the time that Klearchos is riding through Menon's army.

Only if the topic time is longer than the typical duration of the eventuality must one resort to coercion, e.g., in (5), where the topic time (the time during which Kyros waged wars, i.e., years) is longer than the typical duration of targeteers being in a specific strategic position. With a habitual operator the impending DP mismatch can then be avoided, because it considerably lengthens the typical duration (habits may well last for years). For (5), this leaves the aspectual class of the predicate untouched, which proves that no aspectual class coercion has taken place.

The same explanation is available for the French (10): the typical duration of sleeping uneasily is shorter than the duration of adolescence, but the typical duration of the habit of sleeping uneasily is not.

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