

RESOLUTIONS AND CHRONOLOGY IN EURIPIDES: THE FRAGMENTARY TRAGEDIES

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RESOLUTIONS AND CHRONOLOGY IN EURIPIDES

THE FRAGMENTARY TRAGEDIES

by

Martin Cropp and Gordon Fick

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FOREWORD

This study is the product of co-operation between a classicist with little statistics and a statistician with less Greek. Each of the authors has derived profit and pleasure from his excursion into the other's field, and both are happy to accept joint responsibility for the results. For the record, however, the development and computer-assisted implementation of the statistical procedures presented in Chapter 3, along with some of the decisions about the definition and quantification of data in Chapter 2, are due to Fick, while the actual collection of the data, the qualitative analysis in Chapter 4, and the comparisons between statistical and non-statistical evidence in Chapter 5 are the work of Cropp. The former wishes to acknowledge the support of an Operating Grant from the Natural Sciences and Engineering Research Council of Canada, and the latter the help he received from the University of Calgary Endowment Fund in the form of a killam Resident Fellowship in the Fall of 1981, which provided time for the completion of a large part of the work. Publication has been made possible, in part, by a grant from the University of Calgary Endowment Fund. It is also a pleasure for the authors to thank Professor E.W. Handley, Mr J.M. Murphy and Miss Margaret Packer for their enthusiastic co-operation in bringing this work to publication.

December 1984

REFERENCES

Texts used for the fragmentary tragedies of Euripides are listed in the entries for each play in Chapter 5. The general collections of fragments are:

August Nauck (ed.)	Tragicorum Graecorum Fragmenta ² (Berlin 1889). Cited as, for example, fr. 325.
Bruno Snell (ed.)	Supplementum Continens Nova Fragmenta Euripidea et Adespota apud Scriptores Veteres Reperta (Hildesheim 1964). Cited as, for example, fr. 265a Snell.
H.J. Mette (ed.)	"Euripides (insbesondere für die Jahre 1968–1981), Erster Hauptteil: Die Bruchstücke", <i>Lustrum</i> 23–24 (1981–2). Cited as, for example, fr. 719 Mette.
The following modern studies a	are cited in abbreviated form:
W.S. Allen	Accent and Rhythm. Prosodic Features of Latin and Greek: a Study in Theory and Reconstruction (Cambridge 1973).
E.B. Ceadel	"Resolved Feet in the Trimeters of Euripides and the Chronology of the Plays", <i>Classical Quarterly</i> 35 (1941) 66–89.
J. Descroix	Le trimètre iambique des iambographes à la Comèdie Nouvelle (Mâcon 1931).
A.M. Devine and L. Stephens	"The Greek Appositives: towards a Linguistically Adequate Definition of Caesura and Bridge", <i>Classical Philology</i> 73 (1978) 314–327.
	"Rules for Resolution: the Ziekinskian Canon", Transactions of the American Philological Association 110 (1980) 63–79.
	"Tribrach-shaped Words in the Tragic Trimeter", Phoenix 35 (1981) 22-41.
	"A New Aspect of the Evolution of the Trimeter in Euripides", Transactions of the American Philological Association 111 (1981) 45-64.
	"Towards a New Theory of Greek Prosody: the Suprasyllabic Rules", Transactions of the American Philological Association 112 (1982) 33–63.
	"Semantics, Syntax and Phonological Organisation in Greek: Aspects of the Theory of Metrical Bridges", <i>Classical Philology</i> 78 (1983) 1–25.
J. Irigoin	"Lois et règles dans le trimètre iambique et le tetramètre trochaique", <i>Revue des études grecques</i> 72 (1959) 67–80.
M.L. Philippides	Certain Features of the Iambic Trimeter of Euripides, diss. Princeton 1978 (published photographically by University Microfilms International; now available as The Iambic Trimeter of Euripides, La Haule 1981).
S.L. Schein	The Iambic Trimeter in Aeschylus and Sophocles: A Study in Metrical form (Leiden 1979).
L. Stephens	"The Myth of the Lex de Positione Debili and a Fundamental Question in Metrical Theory", <i>Phoenix</i> 29 (1975) 171–180.
T.B.L. Webster	"Chronological Notes on Euripides", Wiener Studien 79 (1966) 112–120.
	The Tragedies of Euripides (London 1967).
T. Zielinski	<i>Tragodoumenon Libri Tres</i> II: De Trimetri Euripidei Evolutione (Krakow 1925).

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CHAPTER 1 INTRODUCTION

Most scholars will agree that the most potent stylistic criterion of date in the tragedies of Euripides is the incidence of resolution in the iambic trimeters of his dialogue-scenes. Resolutions in trochaic tetrameters tell a similar story, but a more restricted one because tetrameters are much rarer than trimeters.¹ The importance of resolutions as a chronological criterion was already evident to J.G. Hermann, and there is no need here to give a general account of subsequent debates about it and of the steps by which its use has been refined through increasingly thorough collection and classification of the evidence, and through redefinitions of the relevant phenomena. The latter have both contributed to and benefited from developments in metrical and related linguistic theory.²

Resolutions are a particularly useful chronological criterion because they are an integral part of the texture of the poet's writing and occur commonly and routinely enough to allow useful examination of the pattern of their occurrence. Given what we know about this pattern in the dated tragedies (and in Aeschylus and Sophocles), it is a safe hypothesis that the occurrence of low resolution-rates and a restricted variety of resolution-types in the early dated extant tragedies (Alk, Med, Hip) and of increasingly higher rates and an increasingly wider variety of types in the later ones (Tro, Hel, Pho, Or, Ba, IA) reflects, on the whole, a development over time in this feature of Euripides' style, rather than some chance combination of special motivations relevant to each individual play. The same cannot be said with similar confidence where other more prominent stylistic features are concerned, such as variety in the choice of metres for actors' solos or *amoibaia*, ³ the use of trochaic tetrameters, or the elaboration of certain types of plot. The chronological hypotheses that have been made about these features may well be true, judging from the available evidence, but if new evidence presented us (say) with a tragedy of Euripides that contained both some trochaic tetrameters and a very low resolution-rate (in both trimeters and tetrameters), the hypothesis that the very low resolution-rate indicated an early date would be much stronger than the hypothesis that the presence of trochaic tetrameters indicated a late date.

One other criterion comparable with that of resolution, insofar as it concerns a "routine" stylistic feature, is the frequency of appositive word-breaks at Porson's bridge, following a heavy syllable in the ninth (third anceps) element of the trimeter. This criterion, recently identified by Devine and Stephens,⁴ is an interesting complement to the criterion of resolutions, though it does produce one or two anomalies. Unfortunately, it is difficult to apply it to the problem of dating the fragmentary tragedies because the phenomenon in question is much rarer than resolution. The numbers of occurrences in the extant tragedies range from one in *Medeia* to 42 in *Orestes* and *IA*. Since only three of the fragmentary tragedies (*Erechtheus, Antiope, Hypsipyle*) are represented by more than about a tenth of their original trimeters, and none by more than a fifth, inferences from the very small numbers actually found in the fragments will not be very informative, at least by comparison with the inferences made from resolutions.

Since the evidence of resolutions is so important, it is also important that it should be formulated and interpreted as carefully as possible, with a clear recognition of the nature and strength of the inferences that are being made from it. This is the purpose of the present study, in which we have intentionally concentrated on answering, in what seems to be a logical order, a limited series of questions.

First, what is to be counted as evidence for each fragmentary tragedy, and how are resolution-rates to be defined, for both extant tragedies and sets of fragments, in such a way that comparisons among them can usefully be made? These questions are the subject of Chapter 2, where it will be seen that there have been several inadequacies and inconsistencies in previous formulations of the data, especially where the fragments are concerned, and that it is possible at least to avoid inconsistency, even if some of the principles of definition remain open to debate.

Secondly, in the first part of Chapter 3, we ask what information about the resolutions in a lost play can be extracted from its fragments. Clearly, the answer to this question is never "none" (to know that *Chrysippos* contained four resolutionless couplets is to know *something* about resolutions in *Chrysippos*), but the information may be either so limited or so distorted as to be of no practical use, and some clear idea is needed of the degrees of precision to be expected in the information extracted from samples of differing sizes and constitutions. Since this is a matter of making inferences from numbers, the method used must be an appropriate statistical one – a fact which, on the whole, has been either insufficiently recognised or insufficiently acted on in previous studies. Since any statistical method is founded on the concept of probability, any conclusions reached by this method will be distinctions between what is more likely, less likely and highly unlikely, rather than between the possible and the impossible. It will emerge that for many of the fragmentary tragedies useful distinctions of this kind can be made – although for others they cannot, either because the required prior assumptions cannot safely be made or simply because the numerical information available is insufficient to identify any of the relevant hypotheses as negligible.

Our third question, also addressed in Chapter 3, is this: what can reasonably be said, by inference from what we know of the resolution-rates of dated plays, about the rates at which Euripides is likely to have been using resolutions in a given year, and conversely about the years in which a play with a given resolution-rate is likely to have been written? The regression analysis through which this question is addressed presupposes that particular plays will naturally have shown fluctuations in their resolution-rates around a general trend of increase over time, and that relative resolution-rates are not exact indicators of relative dates (the comparison of *Hekabe* with *Hiketides* is an obvious case in point), though there are limits upon the extent to which normal fluctuation will have caused a play's rate to diverge from the general trend. Thus even an extant play cannot be identified with a single year simply by virtue of its actual resolution-rate,⁵ while for any fragmentary play the breadth in range of likely years of composition will be compounded by the breadth in range of likely resolution-rates of the whole play.

Our fourth inquiry, in Chapter 4, concerns the introduction of new types of resolution – that is, the implementation of resolutions in (to judge from the available evidence) novel rhythmic configurations. Strictly speaking, this inquiry too could be conducted by statistical means, since it involves only breaking down the general phenomenon of resolution into specialised categories and comparing frequencies of incidence within these categories.⁶ But given the rather small quantities of data for the fragmentary tragedies, we have limited our observations essentially to the occurrence or non-occurrence of what seem to be chronologically significant resolution-types, treating this evidence as a complement to the evidence of the overall resolution-rates.

The dates of those tragedies which are reliably dated independently of the resolution-criterion (either exactly or approximately, and whether the tragedy is extant or fragmentary) are of course part of the data on which this whole enquiry is founded, both as regards the hypothesis of a general relationship between resolution-practice and dates of composition⁷ and, in particular, as regards the identification (through the regression analysis) of a numerical model describing this relationship. For the remaining tragedies our method (and our assumption about the primary importance of resolution-practice as a criterion of date) requires that the available information about resolutions should be fully interpreted, and independent estimates of resolution-rates and dates reached, before comparisons are made between what is implied by the evidence of resolutions and what is implied by any other actual or hypothetical indications of date.

Thus we postpone these comparisons, in general, until Chapter 5, in which we examine the remaining evidence for each fragmentary tragedy in the light of our interpretation of the resolution-evidence. As we state in more detail on page 69, there is remarkably little contradiction between the estimates made from the resolution-evidence and those implied by any other reliable criteria – the latter being in some cases known *termini* and in others plausible arguments about the style or composition of a play or its relationship with other plays, works of art, historical events, and so on. Where contradictions do occur (as for *Antiope* and *Erechtheus*, for example), decisions must be made about the relative value of the resolution-evidence and the other criteria. But the prevailing absence of contradiction encourages confidence in the general validity of the resolution-criterion and in the reliability of the chronological estimates for (especially) 11 plays to which no non-metrical criteria can be applied: *Danae, Kretes, Protesilaos, Temenidai, Antigone, Oidipous, Meleagros, Polyidos, Auge, Phaethon, Alkmene.* These estimates are never exact, and in several cases are wider than estimates offered by previous scholars. This may seem a disappointing outcome to a complicated argument, but we must leave it to our readers to decide whether they prefer (as we do) a well-reasoned reserve to an unjustifiable optimism about our ability to arrive at more exact dates.

The objectives of this study are limited, but we hope it will contribute indirectly (especially through some of the analyses in Chapters 3 and 4) to the study of some broader questions: why Euripides developed his use of resolutions in the way that he did; to what extent he did so consciously or unconsciously; to what degree resolution was associated with particular dramatic or stylistic effects.⁸ These questions are interrelated, and it seems reasonable to presume that there was a significant degree of purposefulness in Euripides' development, since it was apparently confined to the last 20 years or so of his 50-year career as a tragedian and he can hardly have been unaware that he was departing from his own previous style and adopting (to a much greater extent than Sophocles ever did) effects already associated with the trimeter in less elevated contexts – especially satyr-drama and comedy. Thus the hypothesis of Devine and Stephens is attractive, that developments in resolution were part of a general tendency of "increasing acceptance [sc. by Euripides] of phonological structures other than those of slow and deliberate speech" and of "increasing admissibility of everday pronunciations in the language of later Euripidean verse".⁹ This in turn suggests an association with Euripidean "realism", with Euripides' determination to reflect his own world in the inherited and stylised world of the tragic legends.

So far as terminology is concerned, we have tried to follow what are now normal conventions. Each element of the iambic trimeter contains one syllable except when two are assigned to it by resolution or anapaestic substitution. (On pages 7-8 we explain why it seems reasonable to use "resolution" as a convenient general term for both of these phenomena.) Each combination of elements 1+2, 3+4 and so on is a "foot", and each combination of elements 1-4, 5-8 or 9-12 is a "metron"; these are convenient terms, and their use does not imply that the trimeter is best analysed into feet or metra for other theoretical purposes. ("Resolvable foot" is similarly a term of convenience: see Chapter 2, n. 12.) We use anceps, longum and breve to denote respectively the first, the second or fourth, and the third elements of an iambic metron. But in general we reserve "long" and "short" for distinctions of *vowel*-length, using "heavy" and "light" for distinctions of *syllabic* weight.¹⁰ (Special considerations have led to some adaptations of this practice in designing labels for the resolution-types which we describe in Chapter 4: see page 31.) For the development of Euripides' resolution-practice, Zielinski's categories are still of some practical use - "Severe" style being represented by Alk/Med/Hkld/Hip, "Semi-severe" by An/Hek/Hik, and "Free" by all the rest except Or/Ba/IA ("Very Free"). So far as these extant plays are concerned this division is clear for the Severe, Semi-Severe and Very Free groups, but Zielinski himself was inclined to sub-divide the "Free" group between "middle" and "freer",¹¹ and some of the observations we make on pages 60-61 would support still further sub-division. To say this is merely to point out that such categorisation should not be expected to describe completely a development which presumably had a considerable degree of continuity, at least after 428.

Lastly, we should stress that in this study "the fragments" are (unless otherwise stated) those fragments which we ascribe to particular fragmentary tragedies of Euripides.¹² These are listed for each play in Chapter 5.

NOTES TO CHAPTER 1

- 1. The supporting evidence of resolutions in tetrameters is treated separately in pages 66-67 below. In general, it seems that Euripides' innovations in resolution were made in trimeters and then applied analogously in tetrameters. This is not surprising, since tetrameters were a less familiar medium for him.
- 2. Hermann's work and subsequent studies down to 1940 are usefully surveyed by Ceadel, CQ 35 (1941) 66-69. Schein, The lambic Trimeter, 55-58 briefly covers the same ground and stresses the importance of the (largely unpublished) work of E.B. Harrison. Both Schein and A.M. Dale (Euripides: Helen [Oxford 1967] xxiv-xxviii) reasonably criticise Ceadel's inattention to distinctions of word shape, the systematic recognition of which was a crucial contribution of Zielinski in 1925 and, independently, of Descroix in 1931. Those studies which are still of practical (rather than merely historical) interest, including the more recent work of Allen, Devine/Stephens, Irigoin, Philippides and Webster, are frequently mentioned and discussed throughout our study. For full bibliographical citations of the central works see the note on References preceding Chapter 1, above.
- 3. See Webster, WS 79 (1966) 113.
- 4. Devine/Stephens, TAPA 111 (1981) 45-64 and CPh 78 (1983) 1-5.
- 5. See Devine/Stephens, *TAPA* 111 (1981) 45, though the procedure we use in Chapter 3 for establishing the ranges of resolution-rates expected in a particular year differs from theirs.
- 6. Devine and Stephens, *TAPA* 111 (1981) 50-53, on "minor resolution criteria" in the extant tragedies, using their refined versions of the six of Zielinski's ten laws which they regard as informative. Zielinski (162, 185) himself offered some comparative rankings according to all ten of his minor criteria.
- 7. The dates which we have as part of our data are of course dates of production of the plays, rather than of composition, but this will not matter so long as it can safely be assumed that the time-intervals between composition and production did not vary significantly. This assumption may be questioned and has been in the case of a few plays such as *Elektra* and *Antiope*. But the little that we know about Greek playwrights' processes of composition includes nothing that suggests it is not, in general, a reliable assumption.
- 8. On this last question, which of course has a bearing on the others, substantial work has been done recently by Philippides, Certain Features, and C. Prato et al., Ricerche sul trimetro dei tragici grechi: metro e verso (Roma 1975). For Sophocles, see also M. Olcott, Metrical Variations in the Iambic Trimeter as a function of Dramatic Technique in Sophocles' Philocetes and Ajax (Diss. Stanford 1974).
- See especially Devine/Stephens, TAPA 111 (1981) 45-64. The quotations given here are from pages 58 and 60. As they point out, the essence of this hypothesis is to be found in E. Harrison, "Τριβραχυλογικά" (résumé), PCPhS 1932, 4-5.
- 10. See Allen, Accent and Rhythm, 50–62.
- 11. Zielinski, 163.
- 12. This means that about 70 resolutions in fragments known to be Euripidean are not considered in this discussion. But a survey of them suggests that none helps to solve particular problems of ascription, while only a few rule out early dates for the plays in which they occurred: see Nauck frr. 894, 937, 979, 1018, 1027, 1052, adesp. 494 and Austin fr. 156, in the light of the qualitative analysis of Chapter 4 below.

4

CHAPTER 2

ESTABLISHING THE RESOLUTION-RATES

For the extant tragedies, the resolution-figures given by Zielinski, Descroix, Ceadel, and most recently Philippides (for six plays only) were all prepared systematically and are still of practical relevance.¹ Naturally enough, no two sets of figures are in complete agreement. Divergences may arise in the identification of spurious or suspect lines, in distinguishing lyric from spoken iambic trimeters, in acceptance or rejection of a particular reading or conjecture involving resolution, or in choice of scansions (for example, in possible instances of synizesis). But the differences resulting from these matters of judgement are generally almost negligible, especially where the proportions of resolutions to trimeters are concerned. Table 2.1 lists the overall counts of trimeters and resolutions and the ratios of resolutions to trimeters used in this study, and compares them with those given by Descroix, Ceadel and Philippides, along with Zielinski's figures for trimeters counted (but without Zielinski's figures for resolutions and ratios, which are established on a different basis: see below). It might seem that yet another set of figures was hardly needed, but it is given for the sake of consistency with the qualitative analysis offered in Chapter 4.

Table 2.1 Comparison of overall counts of trimeters, resolutions, and resolution/trimeter ratios in extant plays

Z = Zielinski (1925); D	= Descroix (1931); C = Ceade	el (1941); P = Philippides	(1978); CF = Cropp/Fick

Trimeters						Resolutions				Resolutions as % of Trimeters			
	Z	D	С	Р	CF	D	С	Р	CF	D	С	Р	CF
Alk	806	806	802	804	802	54	53	53	54	6.7	6.6	6.6	6.7
Med	1048	1043	1037	1036	1031	76	75	75	75	7.3	7.2	7.2	7.3
Hkld	897	903	888	-	889	69	68	-	68	7.6	7.7	-	7.6
Hip 2	1016	1007	987	999	979	67	62	64	60	6.7	6.3	6.4	6.1
And	952	952	936	-	932	149	150	-	148	15.7	16.0	-	15.9
Hek	932	934	920	-	919	181	181	-	182	19.4	19.7	-	19.8
Hik	929	923	915	-	912	162	157	-	158	17.6	17.2	-	17.3
El	9 68	967	960	-	954	209	207	-	205	21.6	21.6	-	21.5
HF	998	991	984	-	992	231	228	-	230	23.3	23.2	-	23.2
Tro	809	796	794	-	785	215	213	-	210	27.0	26.8	-	26.8
Ion	1057	1057	1045	-	1027	289	289	-	287	27.3	27.7	-	27.9
IT	1081	1087	1074	-	1067	316	316	-	313	29.1	29.4	-	29.3
Hel	1267	1265	1253	-	1253	441	446	-	445	34.9	35.6	-	35.5
Pho	1198	1190	1164	-	1026	414	406	-	357	34.8	34.9	-	34.8
Or	1154	1165	1134	1175	1139	569	561	587	561	48.8	49.5	50.0	49.3
Ba	924	923	918	922	918	401	400	405	402	43.4	43.6	43.9	43.8
IA	790	873	816	81.5	822	378	354	358	358	43.3	43.4	43.9	43.6

A look at Table 2.1 will show that the counts of trimeters given by Zielinski and Descroix are usually liberal, while those of Ceadel and the present study are more cautious in excluding spurious or suspect lines. The resulting differences are minor, except in the cases of *Phoinissai* and *Iphigeneia in Aulis*, where special problems of authenticity arise. In *Iphigeneia in Aulis* we have excluded (besides intermittent minor deletions of the kind made in all of the plays) lines 105-114 and $1578-1626.^2$ In *Phoinissai*, the problems of interpolation are particularly vexing and have caused us to exclude from consideration, besides numerous minor passages, three passages (865-890, 1310-1355, 1625-1682) where suspicions of the presence of inauthentic or at least reworked material seem strongest. (It should be stressed that the exclusion of possibly genuine lines is less potentially misleading than the inclusion of spurious evidence.) Nevertheless, since excluded passages usually take some resolutions with them, the resolution/trimeter ratios based on the different counts remain remarkably consistent, the largest proportionate differences between the ratios being for *Hippolytos* (D is greater than CF by 9.8 per cent), *Hekabe* (CF is greater than D by 2.1 per cent), and *lon* (CF is greater than D by 2.2 per cent).³

Two judgements of principle, by Zielinski and Ceadel respectively, have created greater divergences in the figures than those discussed above. First, the main part of Zielinski's analysis did not take "anapaestic substitutions" into account – that is, those instances where two light syllables occur in the weaker positions 1, 3, 5, 7 or 9. Outside Chapter 6 of Zielinski's discussion, references to "anapaests" normally refer to instances where a resolved *longum* (in position 4 or 8) is followed by a heavy syllable in the next *anceps* position, so that an anapaestic syllable-sequence is accommodated – for example,

Ba 12 πέριξ εγώ 'κάλυψα βότρυώδει χλόη

Anapaestic substitutions are treated separately under the heading "Cyclic Anapaests" in Chapter 6, and in this chapter Zielinski still excluded those involving proper names (that is, all of those occurring in positions 3, 5, 7 and 9, and some of those in position 1). His reason for this exclusion was that these were necessitated by the poet's obligation to use epic names (although he did not in the rest of his discussion exclude other kinds of resolution involving proper names). Consequently, even when the totals of anapaestic substitutions in Zielinski p. 199 are added to the totals of other kinds of resolutions in Zielinski pp. 140–1, the sum-totals (and consequently the ratios of resolutions to trimeters) are to varying degrees smaller than those listed in Table 2.1. And, of course, the figures generally cited as Zielinski's are smaller still, since they are taken from his pp. 140–1 and exclude all anapaestic substitutions.

Secondly, Ceadel took the view that analysis should exclude *all* resolutions where the resolved syllables are part of a proper name or of an adjective formed from a proper name.⁴ His totals of all resolutions, which we give in Table 2.1, are given only in gross on p. 70 of his article, along with totals which exclude proper names and so on. It is on the latter figures that his subsequent analysis and interpretation are based.

Although the types of resolutions excluded by Zielinski and Ceadel do have their own peculiarities, do constitute differing proportions of all resolutions in different plays, ⁵ and may demand special attention in detailed analysis, there are a number of reasons for not excluding them on *a priori* grounds from a general account intended as the basis for identifying a general trend in resolution-frequency. The essence of the argument against including proper-name resolutions is put by Ceadel as follows: "whereas in the case of ordinary words the poet had complete freedom in the choice whether or not to employ words causing resolution, in the case of proper names he had little opportunity of avoiding those that were inherent in the story with which he was dealing, and it was consequently entirely a matter of chance how many or how few of these names happened to be such as would cause trisyllabic feet."⁶ This exaggerated statement of the case was properly modified by Ceadel in a footnote: "It is true that, as a natural development parallel to the increase in frequency of ordinary resolutions, Euripides tended to use proper names which involve resolution more often in the later than in the earlier plays... But ... the fact remains that his employment of them was never anything like free ..." This not only concedes that the trend of increasing frequency in the use of resolutions as a whole is not unreflected in the frequency of proper-name resolutions, but also points to the difficulty in principle of drawing the line between "compulsory" and "optional" uses of proper names

involving resolution. For example, did Euripides have to use the name Hippolytos just 11 times in the trimeters of Hippolytos, Hekabe just 18 times in the trimeters of Hekabe, and Helene just 25 times in the trimeters of *Helene*? Any answer to this question will be rather arbitrary. And of course many proper names are much less integral to the subject of a play than these. Some compromise might be reached by giving less weight to resolutions involving proper names than to the rest. But this would still be arbitrary, and would still ignore the possibilities (1) that some "ordinary" resolutions were as difficult to avoid as many proper-name resolutions, and (2) that a high incidence of "compulsory" resolutions might have caused a lower incidence of other resolutions, with a balancing effect overall. This might be the case, for example, with Hippolytos, where the exclusion of proper-name resolutions (many caused by the name Hippolytos) left Ceadel with an apparently low resolution-rate for this play (4.3 per cent) and led him to the risky inference that Euripides' propensity to resolution decreased between 438 and 428. This inference would not in any case be valid unless it were shown that the difference from his assumed trend in the case of Hippolytos was not attributable purely to chance. And this criticism can in turn be made of suggestions that the exclusion of proper-name resolutions is justified by cases where it results in a resolution-ratio closer to some "expected" figure. But even if such differences are not attributable purely to random variation, they may still be due to factors other than the "compulsoriness" of proper-name resolutions (for example, to a higher or lower degree of tragic solemnity in a particular play). And since the complex of factors causing significant differences may be different in different plays, it seems risky to isolate any single factor - such as the incidence of proper-name resolutions - and to suppress evidence related to this on a priori grounds.

There was also an inconsistency in Ceadel's application of his decision. After excluding proper-name resolutions from his resolution-figures, he continued to *include* the lines in which they occurred in his figures for total lines counted. That is, he calculated as if a line containing one resolution which was caused by a proper name was equivalent to a line in which no resolution occurred. The consequence of this was that the resolution-rates of plays with relatively high numbers of proper-name resolutions were excessively reduced in the figures which Ceadel used. In *Troades*, for example, Ceadel counted 794 trimeters and 213 resolutions, of which 45 were proper-name resolutions. He gives resolution rates of 26.8 per cent (proper names included: $213 \div 794$) and 21.2 per cent (proper names excluded: $168 \div 794$). But if the lines in which the proper-name resolutions occurred were also excluded, the latter figure would be well over 22 per cent and higher, not lower, than the corresponding figure for *Herakles*.

If proper-name resolutions are to be included, one major justification for Zielinski's exclusion of "anapaestic substitutions" is removed. (It was in any case an odd decision of Zielinski to apply this justification to the exclusion of anapaestic substitution while not excluding other kinds of proper-name resolution.⁷) The question remains whether, for the purposes of the present discussion, anapaestic substitution is a phenomenon sufficiently different from resolution of the *longum* to demand a quite separate analysis. It is true that in terms of metrical and linguistic theory the two phenomena demand differentiation, since "resolution" is not a satisfactory term for cases where two light syllables are substituted for a single light or *anceps* syllable,⁸ and that the word-boundary phenomena associated with each may usefully be examined separately (as by Zielinski). On the other hand, it may well be thought that both phenomena have the same fundamental kind of effect in varying the basic rhythm of the line, and there is much in common between the uses to which each is put to accommodate particular words; (for example, words shaped one may be placed at the beginning of a line, with anapaestic substitution, or before the penthemimeral caesura, with resolution; line-initial words shaped one give resolution if followed by a vowel but anapaestic substitution if followed by a consonant).

In the present study, then, both strictly-defined resolutions and anapaestic substitutions are grouped together under the general heading of "resolutions", and all particular sub-categories of resolutions are taken, at the outset, to be equally relevant to the general analysis of the poet's propensity to resolution, although it is recognised that any of them may repay individual analysis at a more detailed level. It is risky to prejudge issues by ruling out certain sub-categories *ab initio*, since the behaviour of any one sub-

category may well be interrelated with the behaviour of any other. (There clearly is some interrelation between anapaestic substitution and strictly-defined resolution, insofar as the two are never immediately juxtaposed in spoken tragic trimeters.)

As a pendant to this discussion, it should be noted that the figures used by Webster for comparison between the extant and fragmentary plays are inconsistent.⁹ For the eight extant tragedies which he classed as Severe or Semi-Severe, Webster gives Zielinski's figures (which ignore anapaestic substitutions) for the ratio between resolutions and trimeters counted. For the remaining nine tragedies, Webster gives those figures of Ceadel which ignore proper-name resolutions. While these two sets of figures are sometimes fortuituously close to each other, there are also several plays where one figure exceeds the other by (proportionately) between 10 per cent and 30 per cent:

	Zielinski	Ceadel
Alkestis	5.1%*	6.2%
Hippolytos 2	5.6%*	4.3%
Hekabe	14.7%*	12.7%
Herakles	19.6%	21.5%*
Phoinissai	29.4%	25.8%*

(* denotes figures quoted by Webster)

Problems peculiar to the fragmentary plays

It was Zielinski who first attempted a detailed study of resolutions in individual fragmentary tragedies. It was, in fact, interest in the chronology of the fragmentary tragedies which led him to re-examine the development of Euripides' resolution-practice in the extant ones.¹⁰ In his review of the fragmentary tragedies (Chapter 8 of his discussion), Zielinksi gave total resolutions and ratios for those plays where he thought the evidence was sufficiently extensive. He also noted instances of resolutions which he thought were qualitatively informative in the light of his "laws". His percentage ratios for resolution-frequency are of course calculated on the same basis as for the extant plays (that is, excluding anapaestic substitutions, though he does mention these separately) and share the weakness of this method. Moreover, of course, the considerable access of new fragments since 1925 has necessitated new calculations for many of the plays. ¹¹ And yet more new material has appeared since the time of Webster's publications.

Besides these obvious reasons for a completely new set of figures, there are two further considerations of accuracy in the collation of figures which were not taken into account (or at least not systematically) by Zielinski and Webster. The first concerns authenticity. The risks of ascribing fragments wrongly to particular plays of Euripides and of accepting corrupt texts (at least where corruption may have caused the addition or removal of resolutions) must be avoided so far as is reasonably possible. Both these risks are more serious in dealing with the fragments than with the extant plays, first of all because a small amount of alien material may have a large impact on a relatively small body of evidence. Moreover, the nature of the transmission of the fragments is such that (generally speaking) less control can be exercised over problems of ascription, interpolation and corruption. Some of the consequent risks have simply to be accepted as inherent in the nature of the evidence. For example, the ascriptions given in anthologies or gnomologies have to be accepted as correct unless there is some cogent reason to doubt them; likewise a text as given by such a source or by a papyrus fragment of unknown ancestry. Nevertheless, it is necessary to bear in mind that only the inclusion of alien material can be positively misleading, whereas the only effect of excluding material which in fact should have been included is to lead to less informative (but not misleading) statistical inferences, by reducing the volume of evidence on which they are based. It therefore

seems necessary to exercise a consistently high degree of caution (certainly higher than Zielinski's or Webster's) in dealing with disputed or conjectural ascriptions, supplements in papyrus fragments, suspicions of corruption or interpolation or paraphrase and so on. To take one simple example: fragments 212-216 Nauck (= 41-45 Kambitsis) are ascribed to *Antiope* in the manuscripts of Stobaeus (except that one MS ascribes 216 to *Antigone*), but all were re-assigned by Wecklein to *Antigone*. Zielinski counted them as belonging to *Antiope*, while Webster counted 212-215 as belonging to *Antigone*. Since the matter is clearly disputable, they are counted with neither play in the present study. (A full list of the trimeter-fragments counted as evidence for each play is given in Chapter 5, though space does not allow discussion of the decisions taken.)

The second consideration concerns fragmentary lines. Especially where a substantial proportion of the fragments of a play consists of tattered papyrus-fragments, it is clearly inadequate to count each partially visible trimeter as if it were a wholly visible trimeter and to assume, in effect, that no resolutions occurred in the invisible parts. For example, if *P. Oxy.* 2452 were being counted as ascribed to Euripides' *Theseus* (though the ascription is really too doubtful for inclusion for the present purpose), it could not be counted as 50 trimeters, since only about half the resolvable feet in these 50 lines are in fact visible.¹² For the sake of accuracy in dealing with incomplete lines, it is clearly necessary to count them (and consequently complete lines as well) in terms of feet rather than lines. All sixth feet will, of course, be excluded because they cannot contain resolution, and the ratios yielded will, strictly, be ratios of resolutions to *resolvable* feet.¹³ The 15 plays for which this method of counting seems at first sight important (since their fragments contain a high proportion of incomplete lines) are listed in Table 2.2.

One further problem arises in the counting of feet from incomplete lines. If a papyrus fragment contains, say, the ends of 30 trimeters in which only feet 4, 5 and 6 are visible in each line, we have, *prima facie*, two-fifths of the resolvable feet of each line. But the expectation of finding resolutions in these feet will be considerably lower than if the fragment contained the first two feet of each line, since Euripides normally used resolution more frequently in feet 1 and 2 than in feet 4 and 5 – and most frequently of all, of course, in foot 3. Thus, for example, lines 8-44 of *Phaethon* (in Diggle's numeration) show 18 resolvable feet

	(a) All resolvable feet counted	(b) Resolvable feet in incomplete lines	(b) as percentage of (a)
Aigeus	71	6	8.5
Peleus	67	7	10.4
Alope	65	10	15.4
Oidipous	223	33	14.8
Melanippe D.	441	71	16.1
Antigone	225	40	17.8
Alkmene	147	27	18.4
Antiope	942	178	18.9
Phaethon	534	101	18.9
Kretes	303	63	20.8
Protesilaos	90	20	22.2
Kresphontes	224	54 •	24.1
Telephos	420	105	25.0
Hypsipyle	1037	318	30.7
Alexandros	413	208	50.4

Table 2.2Plays in which resolvable feet in incomplete lines constitute more than 6 per cent of all
resolvable feet counted. (Note: An incomplete line is defined as a line in which it is unknown
whether or not resolution occurred in one or more of feet 1-5.)

which tell us practically nothing about resolution in these lines since they are all fifth feet; whereas the line-beginnings in lines 121-157 (from the other side of the page in the Codex Claromontanus) are considerably more informative. Some weighting is needed for the feet counted in incomplete lines to take into account the fact that they do not all have the same propensity to resolution. A sufficiently reliable weighting can be achieved since the relative propensity to resolution of the different feet remains (judging from the extant plays) reasonably constant from play to play. In the 17 extant tragedies, the mean percentage of resolutions occurring in the first foot is 27.85 per cent (Standard Deviation = 4.53 per cent); in the second foot 13.51 per cent (SD = 3.88 per cent); in the third foot 44.46 per cent (SD = 6.46 per cent); in the fourth foot 12.73 per cent (SD = 3.96 per cent); in the fifth foot 1.36 per cent (SD = 1.08 per cent). From these mean percentages the following weightings have been derived for counting feet in fragmentary lines:

	Weighted count
1st foot	1.39
2nd foot	0.68
3rd foot	2.22
4th foot	0.64
5th foot	0.07
Compl	ete line 5.00

Our assumption of constancy over time in the percentages is slightly open to question, since there are some significant (but not immediately explicable) differences between the distributions of resolutions among feet in the different individual extant plays. But slight alterations of the weights would not affect materially the validity of our analysis, and any inaccuracies in weighting would be much smaller than those incurred by not using weights at all.

In practice, of course, it often happens that a play with a large number of incomplete trimeters still turns out, overall, to have a roughly equal number of feet from each part of the line. In these cases, weighting makes little difference. The plays in which weighting has the greatest effect are:

	Feet c	ounted	Difference as percentage
	Unweighted	Weighted	of unweighted count
Phaethon	534	511.9	- 4.14%
Telephos	420	436.0	+ 3.81%
Alkmene	147	156.1	+ 6.19%
Kretes	303	323.3	+ 6.70%

Even these differences seem not overwhelmingly important, but we use the weighted counts as a basis for inference for all the plays, not only because this seems correct in principle but also because it may acquire more practical importance in connection with future papyrus publications.

The results of the new calculations made for all the fragmentary tragedies of Euripides are given in Table 2.3. It will be apparent from the comparative figures of Zielinski and Webster selectively listed there that the differences in the new figures for many of the plays are very substantial.

		Cropp/Fie	ck		Contrasting figures ¹			
						Webster ²		
	a set	a tet	с	d	e	f	g	as
	Resolvable fe (unweighted total)	Resolvable fé (weighted total)	Resolutions	c as % of b	Resolvable feet	Resolutions	f as % of e	Resolutions ; % of resolvat feet
Aigeus	71	72.2	1	1.38			-	
Aiolos	275	275.0	6	2.18				
Alexandros	413	410.1	16	3.90	160	5	3.1	3.5
Alkmeon Ps.	N	lo figures give	en ³					
Alkmeon K.	N	lo figures give	en ³					
Alkmene	147	156.1	5	3.20	115	1	0.9	0.8
Alope	65	67.2	0	0.00				
Andromeda	258	260.1	12	4.61				
Antigone	225	225.0	17	7.55	180	8	4.4	3.6
Antiope	942	929.7	29	3.12	1010	30	3.0	3.5
Archelaos	452	452.9	38	8.39	345	19	5.5	6.1
Auge	149	149.9	16	10.67	140	11	7.9	8.5
Bellerophon	445	440.0	9	2.02	435	7	1.6	1.6
Chrysippos	40	40.0	0	0.00				
Danae	360	360.0	3	0.83				
Diktys	270	270.0	3	1.11				
Erechtheus	858	862.7	47	5.45	570	19	3.3	3.5 ⁴
Hippolytos l	159	158.6	2	1.26				
Hypsipyle	1037	1045.8	71	6.79	690	39	5.7	5.7
Ino	378	377.1	4	1.06	380	3	0.8	0.8
Ixion	30	30.0	2	6.67				
Kadmos	0	0.0	0	-				
Kresphontes	224	223.7	6	2.68	100	0	0.0	3.3
Kressai	137	137.1	3	2.19	115	2	1.7	1.8
Kretes	303	323.3	0	0.00	210	0	0.0	0.0
Likymnios	15	15.0	0	0.00				
Melanippe D.	441	439.5	18	4.10	415	19	4.6	4.1
Melanippe S.	157	157.1	9	5.73	210	7	3.3	3.3
Meleagros	300	298.7	23	7.70	295	16	5.4	5.3
Oidipous	223	227.1	18	7.93	155	10	6.5	8.0
Oineus	108	107.1	1	0.93	I			
Oinomaos	120	120.0	0	0.00				
Pala med es	132	132.1	4	3.03	115	3	2.6	2.6

Table 2.3

Resolvable feet and resolved feet in the trimeters of fragmentary plays

cont.

	Cropp/Fick					Contrasting figures ¹			
					2	Webster ²			
	Resolvable feet (unweighted total)	Resolvable feet (weighted σ total)	Resolutions o	cas% of b p	Resolvable a feet	Resolutions J	fas%ofe me	Resolutions as % of resolvable feet	
Peleus	67	67.9	1	1.47					
Peliades	115	115.0	1	0.87					
Phaethon	534	511.9	19	3.71	425	19	4.5	4.7	
Philoktetes	175	175.0	3	1.71	180	2	1.2	1.2	
Phoinix	223	222.9	1	0.45					
Phrixos 1		No figures	s given ³						
Phrixos 2		No figures	s given ³						
Pleisthenes	69	68.6	3	4.37					
Polyidos	171	170.7	13	7.62	170	9	5.3	5.3	
Protesilaos	90	90.8	0	0.00					
Sk yrio i	59	59.9	0	0.00					
Stheneboia	254	253.4	4	1.58	295	5	1.7	1.7	
Telephos	420	436.0	15	3.44	225	5	2.2	1.7	
Temenidai	154	153.6	11	7.16	155	9	5.8	6.0	
Temenos	33	32.9	0	0.00					
Theseus	105	105.0	0	0.00	130	3	2.3	0.6	
Thyestes	72	70.7	1	1.41	1				

Table 2.3 Resolvable feet and resolved feet in the trimeters of fragmentary plays cont.

Notes

1 These are not given where there are no differences or only minor differences between the three sets of figures. The figures of Zielinski and Webster are here re-expressed in terms of total resolvable feet (rather than in lines).

2 Webster does not systematically give figures for feet and resolutions counted, but see Webster, WS 79 (1966) 114-7 for some guidance.

3 The fragments of the two Alkmeon plays and the two Phrixos plays present special problems of ascription. See the detailed comments in Chapter 5.

4 Revised to about 4.0 per cent in Webster, *Tragedies* 130, in the light of new evidence.

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NOTES TO CHAPTER 2

- 1. For references, see the note on References preceding Chapter 1, above.
- 2. The view taken here, after some hesitation, is that the anapaestic prologue-material in *IA* is spurious and that the iambic prologue-speech, up to line 104, is substantially authentic. The resolution-rate we give for the whole play would be only very slightly altered by the deletion of the whole iambic passage (as favoured most recently by D. Bain, *CQ* 27 [1977] 23-5) or of 49-79 along with 105-114 (G. Mizen, *ICS* 5 [1980] 16-18).
- 3. It should, however, be noted that if all of the deletions in *Phoinissai* recommended by E. Fraenkel (Zu den Phoenissen des Euripides [SBAW 1963 Heft 1]) were made, this would result in the removal of about 250 trimeters with about 100 resolutions from the complete text, reducing the resolution-rate of the rest to about 33.1 per cent. Unfortunately, the one single suspect passage where inclusion or exclusion will have the greatest impact on the overall figures, lines 1104-1140 (with 23 resolutions in 37 lines), is also one of the most difficult to evaluate for authenticity: see now D. Mastronarde, "Are Euripides Phoinissai 1104-1140 interpolated?", Phoenix 32 (1978) 105-128. We have in fact excluded only lines 1116-8 and 1136 in this passage.
- 4. Earlier observers of this principle are mentioned by Ceadel, CQ 35 (1941) 68 n. 7.
- 5. According to our figures, proper-name resolutions as percentages of all resolutions in each play are as follows (rank-ordered):

Ion 6.9%, HF 7.0%, Med 9.3%, Alk 11.1%, Ba 13.8%, IA 19.8%, Tro 20.5%, Or 20.5%, El 21.0%, IT 21.4%, Hik 22.2%, Hel 23.1%, Hkld 26.8%, Pho 27.7%, An 30.8%, Hip 33.3%, Hek 35.6%.

Anapaestic substitutions, as percentages of all resolutions (including anapaestic substitutions), are:

Med 8.0%, Hip 8.3%, Ion 11.5%, HF 13.7%, IA 15.1%, Ba 15.5%, Hel 15.6%, Hik 17.1%, Tro 17.8%, Pho 17.9%, Alk 20.4%, Or 21.2%, El 21.2%, IT 21.2%, Hkld 21.5%, An 23.0%, Hek 24.4%.

Anapaestic substitutions outside the first foot only twice constitute more than 4 per cent of all resolutions: An 6.1%, Pho 5.0%.

- 6. Ceadel, CQ 35 (1941) 68.
- 7. Zielinski, 145, recognised the question of proper names in general, but refrained from a general exclusion because of the difficulty of distinguishing between compulsory and optional occurrences.
- 8. See Allen, Accent and Rhythm, 330–2.
- 9. The figures are listed in Webster, *Tragedies*, 3-5. The inconsistency we describe went unnoticed by reviewers of Webster's book, except for E.K. Borthwick, *JHS* 89 (1969) 128.
- 10. Zielinski, 213.
- 11. Webster's modifications of Zielinski's figures are set out in Webster, WS 79 (1966) 112-120, on which the summary list in Webster, *Tragedies* 3-5 is based.
- 12. Contrast Webster, WS 79 (1966) 114; the resolution-rate of 3 per cent for *Theseus* given by Webster, *Tragedies* 4, seems to be based on the assumption of 50 complete lines.
- 13. Use of proportions of resolved feet to resolvable feet has already been made by Philippides, Certain Features, where see especially pp. 55-8 (= Iambic Trimeter 49-52). Obviously the concept of a "resolvable foot" is theoretically odd, since it is syllables, not feet, which are resolved. But since no foot can contain more than one resolution or anapaestic substitution in spoken tragic trimeters, it is a practically useful concept for the present purpose.

CHAPTER 3

INTERPRETING THE RESOLUTION-RATES

The iambic-trimeter fragments from lost tragedies of Euripides constitute samples taken from populations, which we may for the present purpose define as all the iambic trimeters originally contained in each play.¹ Before the resolution-rates of the samples can be used as a basis for inference about the resolution-rates of the populations, two problems concerning the nature of the samples need to be addressed.

First, it is obvious enough that the resolution-rate found in a sample will not necessarily be identical with the resolution-rate of the population, and that the smaller the sample the more divergent its resolutionrate could be from that of the population. (None of the samples we are dealing with contains more than about one-fifth of the trimeters in a single play, and most of them much less than that.) Recognition of this simple fact in the past has led to doubts about the validity of inferences from the samples, especially the smaller ones. But the views taken have been, on the whole, arbitrary, and little if any attempt has been made to use the resources of statistical inference to establish the accuracy of the resolution-rate found in each sample as an estimate of the resolution-rate of its population. In principle, this can quite easily be done, but only (and here the second issue arises) if it is reasonable to make the general assumption that each set of fragments constitutes an unbiassed (that is, a random, or at least a representative) sample from its population – that is to say, so long as no factor influencing the selection or survival of the trimeters available to us has caused them to be, by definition, untypical in their resolution-rates. Even in the absence of bias, a sample is sure to differ from the population simply because no subset can be identical with the whole in all respects. One of our objectives will then be to display and quantify the information available concerning the differences between subset and whole, to assess the information available from each subset of fragments through the use of a simple model which describes the available resolution-rates. If, on the other hand, a sample is by definition unrepresentative, it must be admitted that inferences cannot be made from it for the present purpose.

We address first the question of inferences from samples which are assumed to be unbiassed.² Suppose a characteristic of a fixed and well-defined population is under study, such as a complete play's resolutionrate, which we will call R and which is unknown unless we have the complete play. Then a representative sample's resolution-rate, which we will call r, is a reasonable estimate of the quantity R. This estimate may be greater or less than R, and the closeness of the estimate to R will normally improve with increasing sample sizes. But it will be important to bear in mind that the estimate alone is useless unless we can numerically measure this closeness, and that the most meaningful interpretation of the estimate is one which offers a range or interval of plausible values of R. Such an interval will include the estimate r along with other values for R which are consistent with the data. As a matter of fact, a population with R = ris more likely than any other population to have yielded our sample. There are some populations with R so remote from the known value r that the probability of a sample with r = the known value being taken from them is negligible. And there are populations with R more or less close to r from which the probability of taking a sample with r = the known value is more or less close to the probability of taking such a sample from a population with R = r.

The Relative Likelihood Intervals which we give in Table 3.4 show the ranges of whole-play resolutionrates which are consistent in the sense described above with the samples constituted by the fragments of each play listed (provided that these samples are representative). The dividing-line between whole-play rates which are plausible and those which are implausible is somewhat arbitrary. What we have chosen to do is to give two intervals. Rates within a 50 per cent Interval we call "very plausible", and it can reasonably be said that any of them could *easily* have been the resolution-rate of the complete play in question. Rates *outside* the 10 per cent Interval we call "implausible", and it can reasonably be said that it would be *very surprising* if any of them were the resolution-rate of the complete play. Rates outside the 50 per cent Interval we call "plausible"; these would be the less surprising the closer they were to the limits of the 50 per cent Interval, and the more surprising the more distant they were from these limits.

More specifically, the Relative Likelihood Intervals can be understood as follows. If we knew the actual rate R for a complete play, we could compute the probability of obtaining the observed rate r in the sample taken from the play. When we do not know R (because we have only the sample), we can consider hypothetical values of R and observe that, from populations with values of R lying within a certain range, the probability of obtaining the given sample with observed rate r would be at least a certain proportion of the probability of obtaining that sample from a population with R = r (from which, as we mentioned above, the probability of drawing a sample with r = R is at its maximum). Thus, for example, in our sample of fragments from *Bellerophon*, r = 2.02 (see Table 3.4). If R for *Bellerophon* was exactly 2.02, we have obtained a sample with r = its most probable value. But if R for *Bellerophon* was at one of the limits of the 50 per cent interval (R = 1.33 or 2.91) the probability of obtaining our sample with r = 2.02 was 50 per cent of the probability of obtaining our sample when R = r = 2.02. If R for *Bellerophon* was within the limits of the 50 per cent interval, this proportion was greater than 50 per cent, and it was closer to 100 per cent the closer the value of R was to 2.02.³

It will be apparent immediately from Table 3.4 that even with the largest available samples (for instance, *Hypsipyle*) there may easily be substantial differences between sample resolution-rates and whole-play resolution-rates. In the case of a smaller sample such as *Temenidai* the 10 per cent Interval may include rates characteristic of three of Zielinski's four Euripidean "styles", and even the 50 per cent Interval may include rates characteristic of two such "styles" (though other criteria may, of course, help to narrow the possibilities in a particular case).

But before proceeding to an analysis of the implications of Table 3.4, it is necessary to consider the second issue raised above — the possibility of bias in the samples. It seems clear that metrical features have very seldom been a direct condition of selection or survival of our trimeter-fragments, and that the risk of the most direct kind of bias can therefore be ruled out. On the other hand, the selection has been nothing like random in any technical sense. The samples we have are nothing like the samples we would have if individually-numbered resolvable feet had been selected for our perusal with (say) the aid of a random-number table. Instead, we have from each play a relatively small number of fragments which contain clusters of resolvable feet. It is also known that resolutions are not evenly distributed throughout each play, and Philippides' analysis confirms that in each of the six plays she examines there are a few passages which are so high or so low in resolutions (relative to the average for the play) that some explanation other than chance is demanded.⁴

This observation has two implications. First, where the number of trimeter-fragments in a sample is very small, it is clearly possible that the sample may happen, purely by chance, to include a disproportionate number of passages which are unusually high or unusually low in resolutions. Inferences from the resolution-rate of the fragments about the resolution-rate of the play may then be misleading, and for this reason we have in fact refrained from listing in Table 3.4, or offering statistical inferences about, plays which are represented by ten or fewer fragments.⁵ The number of plays thus ruled out is 18, but the real loss is minimal, since some of the plays in any case have firm dates or *termini*, and for most of them (naturally enough) the few available fragments also comprise few resolvable feet, so that even if relative likelihood intervals were reliably established for them, they would be rather uninformative. Table 3.1, which lists the plays ruled out, will make this clear. Further comments on these plays will be made in Chapter 5.

Play	No. of fragments	Resolvable feet (weighted)	Resolutions	External date- indications	Unreliable R.L. Intervals for resolution-rates:		
Aigeus	10	72	1		0.3-3.7	0.1-6.6	
Alope	8	67	0		0.0-1.0	0.0-3.3	
Chrysippos	4	40	0		0.0-1.7	0.0-5.6	
Ixion	3	30	2		2.6-13.4	0.9-20.7	
Kadmos	0	0	0				
Kretes	4	323	0		0.0-0.2	0.0-0.7	
Likymnios	3	15	0		0.0-4.5	0.0-14.2	
Melanippe S.	5	157	9		3.8-8.2	2.6-10.6	
Oineus	9	107	1	+425	0.2-2.5	0.0-4.5	
Oino mao s	7	120	0		0.0-0.6	0.0-1.9	
Palamedes	8	132	4	415	1.6-5.1	0.8-7.4	
Peleus	6	68	1	≁ 417	0.3-3.9	0.1-7.0	
Peliades	10	115	1	455	0.2-2.3	0.0-4.2	
Pleisthenes	7	69	3	≁ 414	2.0-7.9	0.9-11.7	
Skyrioi	5	60	0		0.0-1.1	0.0-3.7	
Temenos	5	33	0		0.0-2.1	0.0-6.7	
Theseus	5	105	0	+422	0.0-0.7	0.0-2.2	
Thyestes	8	71	1	* 425	0.3-3.7	0.1-6.7	

Table 3.1 Tragedies represented by ten or fewer fragments

(* means "not later than")

As the number of available fragments for a play increases, the risk that they by chance misrepresent its resolution-rate diminishes. But the second implication of uneven distribution of resolutions remains: if some passages are relatively higher or lower in resolutions than can be accounted for by chance alone (see above, p. 15), it is also conceivable that some types of passage which are regularly high or low in resolutions are also, through some factor in the selection-process, under-represented or over-represented in the fragments. Unfortunately, it is not easy to generalise about the motivation of high- or low-resolution passages, but it does seem worthwhile to consider some possibilities.⁶

There are some kinds of *rhesis*-passage which are readily defined in formal terms and which have distinct stylistic characteristics which might seem likely to make them typically high or low in resolutions. These include (at least) prologue-speeches, report-narratives, *deus-ex-machina* speeches, and stichomythic passages. Table 3.2 gives the results of comparing the resolution-rates of such passages in each play with the resolution-rates for each whole play. (For the sake of clarity, *whole*-play resolution rates are the basis of comparison in all cases, though it is true that the ratios higher than 1.0 would be slightly greater, and those lower than 1.0 slightly smaller, if the resolution-rates for each category in question were compared with the rates of the *remainder* of each play). The following observations can be made:

Prologue-speeches are here defined as the initial speeches of each play, along with the quasi-prologue-speech at Hel 386-436. They prove to be the only category which shows a clear propensity to higher-than-average resolution-rates, and this propensity is much more pronounced in the first eight plays listed (down to and including *Elektra*), where the average ratio of prologue-speech rate to whole-play rate is 1.89:1, than in the

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remainder, where it is 1.15:1. Philippides, who observed high prologue-speech rates in five of the six plays she studied, has suggested that they are due to a high level of emotional commitment in the speakers.⁷ But a more likely explanation lies in two factors inherent in the expository nature of Euripidean prologue-speeches. First, they usually contain a number of personal, genealogical and geographical terms (not necessarily proper names, though often enough many of them are). Second, their typically rather prosaic narrative style seems to encourage the admission of relatively loose rhythms. At any rate, since the fragments often do include extracts from prologue-speeches, it is clearly necessary to bear in mind that such extracts may well contain an unrepresentatively high number of resolutions.⁸

	a	b		с		d		e	
Play	Whole play	Prologue- speech	b÷a	Report- narrative ²	c ÷a	Deus-ex-m. speech ³	d÷a	Sticho- mythiai ⁴	e÷a
Alk	1.35	4.44	3.3	2.63	1.9	1		0.88	0.7
Med	1.45	3.33	2.3	0.93	0.6			1.24	0.9
Hkld	1.53	2.22	1.5	1.59	1.0			1.52	1.0
Hip	1.23	2.81	2.3	1.59	1.3	0.00	0.0	1.38	1.1
An	3.18	5.19	1.6	3.16	1.0	2.93	0.9	3.90	1.2
Hek	3.96	4.48	1.1	2.00	0.5			4.48	1.1
Hik	3.46	4.39	1.3	4.21	1.2	5.91	1.7	3.80	1.1
El	4.30	7.17	1.7	5.24	1.2	5.19	1.2	3.11	0.7
HF	4.64	4.07	0 .9	4.52	1.0			6.06	1.3
Tro	5.37	6.67	1.2					(1.54) ⁵	
Ion	5.57	4.44	0.8	5.28	0.9	7.17	1.3	6.82	1.2
IT	5.88	8.52	1.4	(a) 6.32	1.1	4.88	0.8	7.01	1.2
IT				(b) 4.29	0.7				
Hel	7.10	(a) 8.31	1.2	7.61	1.1	5.00	0.7	7.17	1.0
Hel		(b) 7.84 ¹	1.1						
Pho	6.96	8.05	1.2	6.89	1.0			6.26	0 .9
Or	9.85	14.70	1.5	10.65	1.1	10.00	1.0	8.87	0. 9
Ba	8.76	11.74	1.3	(a) 11.09	1.3	(15.70)		9.57	1.1
Ba				(b) 7.25	0.8				
IA	8.71	8.21	0.9	(5.14)				9.13	1.0
Average ratio		1.5		1.0		1.0		1.0	

 Table 3.2
 Comparison of resolution-rates in some types of passage with whole-play resolution rates

General note: The same exclusions of spurious and suspect lines are made here as elsewhere in this study.

Notes

1. Hel 386–436.

- Alk 158-195, Med 1136-1221, Hkld 800-862, Hip 1173-1248, An 1085-1160, Hek 521-580, Hik 650-725, El 774-858, HF 922-1014, Ion 1122-1228, IT (a) 260-335, (b) 1327-1410, Hel 1526-1617, Pho 1090-1195 + 1223-1258 + 1359-1424 + 1428-1477, Or 866-952, Ba (a) 677-768, (b) 1043-1147, (IA 1543-1577 incomplete: not counted in general comparison).
- 3. *Hip* 1296-1341, *An* 1231-1272, *Hik* 1183-1226, *El* 1238-1291, *Ion* 1553-1605, *IT* 1453-1474, *Hel* 1642-1679, *Or* 1625-1655, *(Ba* 1330-1343 incomplete: not counted in general comparison).

4. All stichomythic or hemistichomythic passages of four or more lines.

5. Only three passages totalling 26 lines: not counted in general comparison.

Report-narratives are here defined as the purely narrative parts of report-speeches, without any introductory remarks or concluding reflections which may accompany them. It might be suspected that the (usually) epicising tone and diction of report-narratives, along with the need for reference to persons by name and the generally high emotional level of these speeches, would raise their resolution-rates above the average. But the figures show that this is not the case. In early and late plays alike the rates vary around, and usually not far from, those of the whole plays. So the fact that report-narratives may be under-represented in (at least) the book-fragments need not cause concern.

Deus-ex-machina speeches are also strictly defined here to exclude anything other than the gods' main speeches. Philippides observed a tendency towards relatively low resolution-rates in the endings of the plays she studied,⁹ but as far as these speeches are concerned it seems that, if solemnity and calmness of tone tend to lower the resolution-rate, this is usually balanced by the fact that the gods' references to people, places and cult-activities encourage resolutions in much the same way as similar references in prologue-speeches.

Stichomythiai. Here the figures are based on all strictly stichomythic (or hemistichomythic) passages of four or more lines in each play. Stichomythiai are very probably under-represented in the book-fragments (or at least in those of more than one line), and it could be suspected that their compression and lively tone might be reflected in higher-than-average resolution-rates. Again, however, the figures confirm Philippides' observation that this is not so;¹⁰ stichomythiai are, in general, remarkably "normal" in this respect.

Some other categories could be proposed for examination. For example, since anthologised gnomai are a large proportion of the book-fragments, one might enquire whether gnomic passages have peculiar resolution-characteristics.¹¹ But in this case severe problems of definition arise, and in fact the contexts of gnomic statements are so varied that it seems doubtful whether it would be useful to lump them into a single category. Certain other observations of Philippides¹² – that high-resolution passages occur more often early in the plays she examined (this of course includes prologue-speeches, isolated above) and low-resolution passages late, and that high or low resolution-rates are sometimes associated with particular characters in the plays – are interesting in themselves, but not of much further help in the present enquiry since the tendencies are not sufficiently uniform and we know too little about the positioning of fragments, ascriptions to speakers, or the general characteristics of individual speakers in the lost plays.

In sum, the only clear possibility of some serious systematic bias in the figures for the fragmentary tragedies (where the fragments are sufficiently numerous) seems to be in the fragments of the prologuespeeches of the earlier tragedies (including at least those in Severe or Semi-Severe style). This possibility will need to be taken into account in interpreting (below, Chapter 5) the statistical findings for a few plays.¹³ There are, however, two means of reassurance against the fear that sets of fragments may be quite unrepresentative. First, cross-validation for the fragments of the lost tragedies can be obtained from the "fragments" of the extant tragedies – that is, those passages available on papyrus or through indirect tradition.¹⁴ Table 3.3 compares the resolution-rates of the "fragments" of eight of the less well-represented extant tragedies (seven of the alphabetic plays and Alkestis). These "fragments" are comparable in scope with those of many of the better-represented lost tragedies, and it will be seen that, when properly interpreted, they do give a reasonably accurate reflection of the known resolution-rates of their plays. In fact, the 50 per cent Relative Likelihood Intervals include the known whole-play resolution-rates of every play except IT, whose known whole-play rate falls just outside the upper limit of the 50 per cent Interval obtained from the sample of "fragments". It is interesting to note that for Herakleidai, where the known whole-play rate is nearly three times the rate obtained from a rather small sample of "fragments", it still falls within the 50 per cent Interval.

		a	Ь				
	No. of frr.	Resolvable feet (weighted total)	Resolutions	b <u>+</u> a(%)	50%RLI	10%RLI	Actual
Alk	24	268	4	1.49	0.78-2.54	0.41-3.67	1.35
Hkld	13	172	1	0.58	0.14-1.55	0.02-2.81	1.53
Hik	21	438	16	3.65	2.69-4.81	2.04-5.91	3.46
El	15	241	10	4.15	2.81-5.84	1.95-7.50	4.30
HF	25	215	11	5.12	3.53-7.08	2.51-8.99	4.64
Ion	13	260	12	4.61	3.24-6.31	2.34-7.95	5.57
IT	22	223	.9	4.04	2.67-5.78	1.81-7.51	5.88
Hel	21	200	14	7.00	5.07-9.32	3.77-11.53	7.10

Table 3.3Comparison of actual resolution-rates of some extant plays
with estimates made from their "fragments"

Note: "Fragments" have been identified through the notes of ancient citations and papyri given in various editions: Alkestis (Garzya), Herakleidai (Garzya), Hiketides (Collard), Elektra (Parmentier), Herakles (Parmentier), Ion (Biehl), IT (Grégoire), Helene (Alt). If not exhaustive in all cases, these samples are still serviceable for the present purpose.

The second test of validity is to consider the fragmentary plays for which exact or near-exact dates are known, and to see whether the Relative Likelihood Intervals given for these in Table 3.4 include resolution-rates expected in plays of these dates. Again, the results are encouraging. For five out of ten such plays, the 50 per cent Intervals include the actual rates of extant plays known to be contemporary with them (Archelaos compared with Or, Ba and IA, Diktys with Med, Kressai with Alk, Philoktetes with Med, Hypsipyle with Pho), and for two others the contemporary extant play's rate is outside the 50 per cent Interval but well within the 10 per cent Interval (Alexandros compared with Tro, Andromeda with Hel).¹⁵ For the remaining three (Telephos compared with Alk, Antiope with Pho and Hyps, Erechtheus with Hik), even the 10 per cent intervals do not include the contemporary plays' known rates, and this leads us to consider possible explanations other than chance (since the likelihood of its having occurred by chance in any individual case is extremely low). Plausible explanations are, in fact available. The first 16 lines of Telephos (fr. 102 Austin) constitute 18 per cent of the sample (whereas the prologuespeech is unlikely to have constituted more than 6 per cent of all the trimeters in the play). Just as the openings of Alk and Med contain unrepresentative concentrations of resolutions (six in the first 25 lines and 21 lines respectively), so the opening of Telephos contains six resolutions in 16 lines, while the remainder of the sample has nine resolutions in the equivalent of about 71 lines. So it seems very likely that the sample has been biassed by the inclusion of the prologue-fragment.¹⁶ As for Antiope and Erechtheus, these are cases where the evidence for the generally accepted dates of ca. 409 and ca. 422 respectively is very slight, and it will be necessary to re-examine the validity of this evidence in view of the implications of the evidence from resolutions (see the sections on these plays in Chapter 5).

The test described in the previous paragraph may be extended to include fragmentary plays which are not closely dated but for which *termini* are known and imply fairly strict limits on expected whole-play rates. Thus *Hippolytos 1*, antedating *Hip 2*, should have a "severe" rate, and its 50 per cent Interval allows for this. *Bellerophon, Phoinix, Ino, Kresphontes, Aiolos* and *Stheneboia* are all parodied in comedies of Aristophanes produced in the mid- to late-420s, and should have "severe" or "semi-severe" rates; the 50 per cent rate-intervals accommodate one or both of these in all cases, and only for *Kresphontes* (from a rather small sample) are any rates as high as that of *Tro* given as plausible (by the 10 per cent interval).

We may proceed, therefore, with some confidence in our statistical method, subject to certain reservations. But before applying it we may introduce one further step. The known resolution-rates of dated extant plays provide the evidence of development in Euripides' resolution-practice which forms the basis for inferences about the dates of the undated plays. This has for long been an important and generally accepted basis for judgements about the dates of undated extant plays, although only recently has some attempt been made to express these judgements accurately by the use of a regression analysis.¹⁷ Now that we also have accurate counts of resolvable feet and resolutions in the fragments of the fragmentary plays, this procedure can be broadened in two ways. First, a regression analysis defining the trend of Euripides' resolution-rate increase can employ data from the dated fragmentary plays as well as the dated extant ones, and will be formulated in terms of the resolution-rates of *all* the material (from extant and fragmentary plays combined) firmly associated with certain years. Second, inferences from the regression analysis may be applied not only to the undated extant plays but also to the undated fragmentary plays.

Our procedure for the regression analysis is as follows. We have material, from extant plays or fragmentary plays or both, firmly associated with a number of particular years – 438 (Kressai, Telephos, Alkestis), 431 (Medeia, Diktys, Philoktetes), 428 (Hippolytos 2), 415 (Alexandros, Palamedes, Troades), 412 (Helene, Andromeda), 408 (Orestes), 407 (Archelaos), 406 (Bakchai, IA). In addition, non-metrical evidence indicates dates of 420 ± 3 for Hiketides and 409 ± 2 for Phoinissai, Hypsipyle and Antiope, and the data from these plays may be taken as associated with the years 420 and 409 for the purposes of this analysis.¹⁸ We may now regard all the available data associated with a particular year as a subset or sample of all the material composed by Euripides for the year.¹⁹ Taking the actual resolution-rate of each sample as the best estimate of its year's resolution-rate (in the sense that a population with rate identical to the sample rate is more likely than any other population to have yielded a sample with this rate), we observe that the later the year, the higher the resolution-rate generally tends to be:

Date	Resolvable feet	Resolutions	Resolution-rate (%)
438	4583	72	1.57
431	5600	81	1.45
428	4895	60	1.23
420	4560	158	3.46
415	4467	230	5.15
412	6525	457	7.00
409	7106	457	6.43
408	5695	561	9.85
407	453	38	8.39
406	8700	760	8.74

This information may equally well be depicted in a diagram where the x's mark the resolution-rates characteristic of particular years (the following is only a rough sketch):



The line drawn on the diagram is the line which in our opinion best delineates the trend of increase in resolution-rates, minimising a weighted sum of the squares of the vertical distances between the line and the points plotted around it.²⁰ In establishing this line we have not taken into account data for the year 438. By examination, it appears that the tendency to increase does not begin before at least 431, and it seems very likely that until that time Euripides had not begun to introduce his innovations in resolutionpractice (which we describe in Chapter 4), and that he typically composed at the low resolution-rates which are found in Alk, Med, and Hip and are also typical of Aeschylus and Sophocles.²¹ A line delineating a constant increase from 438 to 406 is therefore likely to be misleading (with a deceptively shallow slope, in fact). So we ignore the data from 438 for this purpose (thus circumventing, incidentally, the risks arising from possible bias in the sample from Telephos mentioned earlier). Instead, the line delineates, in accordance with the data, a constant increase from 431 to $406.^{22}$ The equation of this line is rate (%) = 138.70-0.32028 (date), and points on it co-ordinate particular resolution-rates with particular years, so that for each year a predicted resolution-rate is defined. Conversely, where we have a known sample resolution-rate for an undated play, the equation can be used to find the year of which this rate would be most characteristic. But since we are dealing with samples, this date cannot be regarded as uniquely appropriate. Rather, the Relative Likelihood Intervals for rates which we have already established will now, in effect, be transformed into intervals for dates, by the use of the regression equation. The date intervals so obtained are given, along with their associated rate intervals, in Table 3.4. The dates in the Table marked with an asterisk need to be re-interpreted, since our straight line is based on data from a limited time-period. If extended to years before 431 it would soon associate negative resolution-rates with the early years of Euripides' production, and if extended to rates higher than those of the latest plays (which are sometimes unrealistically included in our rate-intervals), it would soon associate years after Euripides' death with these. An interval which contains any rates typical of the "severe" style should in fact include all dates back to 455 (the year of Euripides' first production). Dates later than Euripides' death should, obviously, be ignored.

	mber of fragments	solvable feet (weighted)	solutions	Resc	olution rates:		ternal indications		
	nN	Re	Re	Sample	50% RLI	10%RLI	50% interval	10% interval	Ex
Aiolos	22	275	6	2.18	1.30-3.39	0.79-4.63	429.0*-422.4	430.7*-418.5	→ 421 (? → 423)
Alexandros	24	410	16	3.90	2.88-5.14	2.18-6.31	424.1-417.0	426.3-413.3	415
Alkmene	15	156	5	3.20	1.81-5.15	1.03–7.18	427.4-416.9	429.9*-410.6	
Andromeda	23	260	12	4.61	3.24-6.31	2.34-7.95	423.0-413.3	425.8-408.2	412
Antigone	19	225	17	7.55	5.65-9.81	4.34-11.92	415.5-402.4*	419.5-395.8*	
Antiope	38	930	29	3.12	2.49-3.84	2.05-4.50	425.3-421.0	426.7-419.0	409 <u>+</u> 2
Archelaos	32	45 3	38	8.39	6.94-10.01	5.87-11.47	411.4-401.8*	414.8-397.2*	407
Auge	15	150	16	10.67	7.94-13.87	6.06-16.86	408.3-389.7*	414.2-380.4*	
Bellerophon	24	445	9	2.02	1.33-2.91	0.90-3.80	428.9*-423.9	430.3*-421.1	+ 425
Danae	15	360	3	0.83	0.39-1.53	0.17-2.31	431.9*-428.3	432.6*-425.8	1
Diktys	17	270	3	1.11	0.52-2.04	0.23-3.08	431.5*-426.7	432.4*-423.4	431
Erechtheus	16	863	47	5.45	4.58-6.41	3.94-7.27	418.8-413.0	420.8-410.3	422 <u>+</u> 1?
Hippolytos 1	16	159	2	1.26	0.48-2.60	0.17-4.17	431.6*-424.9	432.6*-420.0	→ 429
Hypsipyle	28	1046	71	6.79	5.91-7.74	5.24-8.59	414.7-408.8	416.7-406.2	409 <u>+</u> 2
Ino	25	377	4	1.06	0.55-1.81	0.29-2.62	431.4*-427.4	432.3*-424.9	→ 425
Kresphontes	12	224	6	2.68	1.60-4.15	0.97-5.67	428.1*-420.1	430.1*-415.3	+ 424
Kressai	11	137	3	2.19	1.02-4.00	0.47-6.00	429.9*-420.5	431.7*-414.2	438
Melanippe Desmotis	11	440	18	4.10	3.07-5.30	2.37-6.44	423.5-416.5	425.7-412.9	+ 412
Meleagros	21	299	23	7.70	6.01-9.64	4.82-11.43	414.4-402.9*	418.1-397.3*	
Oidipous	16	227	18	7.93	5.99-10.22	4.64-12.35	4 14.4-401.1*	418.6-394.5*	
Phaethon	ca. 16	512	19	3.71	2.81-4.78	2.19-5.79	424.3-418.1	426.3-414.9	
Philoktetes	14	175	3	1.71	0.80-3.14	0.36-4.72	430.6*-423.2	432.0*-418.2	431
Phoinix	13	223	1	0.45	0.10-1.20	0.02-2.18	432.8*-429.4	433.1*-426.3	→ 425
Polyidos	12	171	13	7.62	5.44-10.22	4.00-12.71	416.1-401.1*	420.6-393.3*	
Protesilaos	12	91	0	0.00	0.00-0.80	0.00-2.50	433.1*-430.6	433.1*-425.3	
Stheneboia	11	253	4	1.58	0.83-2.69	0.43-3.89	430.5*-424.6	431.8*-420.9	+422
Telephos	35	436	15	3.44	2.51-4.57	1.88-5.65	425.2-418.7	427.2-415.3	438
Temenidai	12	154	11	7.16	4.95-9.85	3.53-12.45	417.6-402.3*	422.1-394.1*	

Table 3.4 Relative Likelihood Intervals for resolution-rates and dates of fragmentary tragedies

Notes + means "not later than".

* upper-limit dates with asterisks should be read as "455" (see page 21).

lower-limit dates with asterisks should be read as "406", the year of Euripides' death.

Having presented this regression analysis, we must stress that it has been considerably more speculative in nature than the procedure by which we established relative likelihood intervals for the resolution-rates of plays. Uncertainties about the representativeness of our samples have been compounded by uncertainties in the choice of data for the regression analysis and in the selection of an appropriate line. No one should suppose, after looking at Table 3.4, that we have conclusively proved that (for example) *Phaethon* was written between 427 and 414. That would not only mistake the interpretation of the relative likelihood intervals for rates (which admits the possibility that the interval obtained even from a representative sample might not include the true rate of the play), but would put too much trust in the accuracy of the assumptions we have made in designing a regression analysis to infer date-intervals from rate-intervals. The most we would claim is that the date-intervals are the best estimates we can reasonably give on the basis of what we regard as reasonable assumptions and procedures, and that there will be grounds for surprise if any of these estimates conflict with the indications of a play's date given by other evidence. In the case of plays lacking external indications of date, we would suggest that agreement between the results reached in this Chapter and any positive indications given by the qualitative analysis in the next Chapter will create a rather strong presumption of the reliability of the results just reached.

Finally, we may comment briefly on the dates inferred by this method for the extant tragedies. We are taking each extant tragedy as a large sample which should (other things being equal) quite closely approximate the "ideal" resolution-rate of the year in which it was produced. (See above, page 20 with n. 19.) There will, then, be a fairly narrow range of "ideal" rates which a given whole-play sample might "very plausibly" or "plausibly" be implementing, and hence a fairly narrow range of likely dates for each whole play. The relevant intervals are given in Table 3.5. In the first group (plays with known dates or *termini*), eight of the eleven 50% date-intervals include the known dates (or, for *Hik* and *Pho*, part of the known range of possible dates), while the known date of *Hippolytos* lies extremely close to the lower limit of the date-interval given. For *Hekabe* and *Orestes*, however, the intervals confirm that the actual resolution-rates exceed the "idealiy" expected rates to an extent which suggests the influence of some special factors, (possibly, in the case of *Hekabe*, an excessive incidence of proper-name resolutions – unless, after all, it was not in the first edition of *Clouds* that *Hekabe* was parodied). Thus the incomplete nature of our evidence is again advertised and must be borne in mind when assessing the reliability of the date-intervals given in Table 3.5 for the remaining six plays: these represent not a categorical assertion, but a strong working hypothesis, that the date of each play falls within the limits given.

		Resolution	-rates	Dates				
	Actual	50%RLI	10%RLI	50% interval	10% interval	Actual		
Alkestis	1.35	1.14-1.58	0.99-1.78	429.5*-428.2	430.0*-427.5	438		
Medeia †	1.45	1.26-1.65	1.12-1.84	429.2*-427.9	429.6*-427.3	431		
Hippolytos †	1.23	1.05-1.42	0.92-1.60	429.8*-428.6	430.2*-428.0	428		
Hekabe	3.96	3.63-4.31	3.37-4.31	421.8 -419.5	422.6 -418.6	→ 423		
Hiketides †	3.46	3.15-3.80	2.91-4.08	423.3 -421.2	424.0 -420.3	420±3		
Troades †	5.37	4.94-5.78	4.61-6.16	417.7 -414.9	418.7 -413.8	415		
Helene †	7.10	6.73-7.49	6.43-7.82	412.1 -409.6	413.0 -408.6	412		
Phoinissai †	6.96	6.55-7.39	6.22-7.75	412.7 -409.9	413.7 -408.8	409±2		
Orestes †	9.85	9.39-10.32	9.02-10.72	(403.8 -400.8)*	(404.9 -399.5)*	408		
Bakchai †	8.76	8.27-9.26	7.89-9.68	407.3 -404.1*	408.5 -402.8*	406		
Iphigeneia A. †	8.71	8.26-9.24	7.80-9.69	407.5 -404.2*	408.8 -402.8*	406		
Herakleidai	1.53	1.32-1.76	1.17-1.96	429.0*-427.5	429.5*-426.9			
Andromache	3.18	2.88-3.49	2.66-3.76	424.1 -422.1	424.8 -421.3			
Elektra	4.30	3.96-4.65	3.70-4.96	420.7 -418.5	421.6 -417.5			
Herakles	4.64	4.29-5.00	4.02-5.31	419.7 -417.4	420.5 -416.4			
Ion	5.57	5.22-5.98	4.93-6.31	416.8 -414.4	417.7 -413.3			
Iphigeneia T	5.88	5.49-6.25	5.20-6.58	415.9 -413.5	416.9 -412.4			

Table 3.5	Relative Likelihood	Intervals for	resolution-rates and	dates of	extant t	tragedies

Notes * means "not later than". *Upper-limit dates with asterisks should be read as "455" (see page 21). Lower-limit dates with asterisks should be read as "406", the year of Euripides' death.

† indicates plays used to provide most of the data for the regression analysis (above, pages 20-21).

NOTES TO CHAPTER 3

- 1. This is not the only possible definition. See n. 19 below.
- 2. In the following analysis we are using the concept of Likelihood, which differs from that of Probability. Whereas probability methods are designed to establish an absolute measure of plausibility, likelihood methods enable us only to reach a relative measure which in the present case allows us to compare with each other, according to their relative plausibility, possible values for population resolution-rates. We have preferred to employ a likelihood method because it does not require certain subjective prior assumptions which are fundamental to the use of probability methods.

For a discussion of the methods which we use here in constructing relative likelihood intervals, see J.G. Kalbfleisch, *Probability and Statistical Inference* Vol. 2 (New York and Berlin 1979). The underlying philosophy is well discussed by A.W.F. Edwards, *Likelihood* (London and New York 1972).

- 3. Relative Likelihood intervals can be called approximate confidence intervals, since they possess an additional property besides that already discussed. It can be demonstrated that about 76 per cent of all 50 per cent relative likelihood intervals will cover the true value for which the interval was designed (here, the true population resolution-rate), and that about 96 per cent of all 10 per cent intervals will cover the true value. The figures 76 per cent and 96 per cent indicate the success rate we might expect to obtain in using *many* such intervals. We have no legitimate means to check these so-called confidence intervals except by comparing sample resolution-rates with the known resolution-rates of the populations which yielded them (as we do for a small number of cases, pp.18–19). For a theoretical discussion of this point, see D.A.S. Fraser, *Probability and Statistics* (Toronto 1976).
- 4. Philippides, Certain Features, 55-145, with Table 5, pp. 269-272 (= Iambic Trimeter, 49-108, 220-5).
- 5. Numbers of fragments in each sample are given in Tables 3.1 and 3.4, though it should be noted that the counting is a little arbitrary in (for example) cases where a papyrus fragment contains several isolated passages. In general, we have simply accepted editors' identifications of individual fragments.
- 6. Some possibilities are examined by Philippides, Certain Features, especially pp. 58-66 and 143-5, along with comments about the individual plays she examined in pp. 68-142 (= Iambic Trimeter, 52-57, 107-8, 59-108).
- 7. Philippides, Certain Features, 63, 70, 81, 90, 104, 121 (= Iambic Trimeter 55, 61, 68, 73, 82, 93).
- 8. Disproportionately low representation of prologue-speech material will have only a marginal effect, since prologuespeeches contain only a small proportion of all trimeters (and indeed all resolutions) in a play.
- 9. Philippides, (n. 7) 65, 144 (= 57, 107).
- 10. Ibid, 59, 65, 72, 99, 130, 141 (= 52, 57, 62, 78, 99, 105).
- 11. A suggestion of E.K. Borthwick, JHS 89 (1969) 128.
- 12. Philippides (n. 7) 63-145 (= 55-108) (passim).
- 13. See the sections in Chapter 5 on Alkmene, Archelaos, Melanippe S., Oidipous, Stheneboia, Telephos.
- 14. Another comparison suggested by Borthwick (n. 11).
- 15. It will be clear from n. 3 above that not all intervals are to be expected to cover the true rates. But in fact the 50 per cent interval for the "year"-rate of 415 (see pp. 20-21 with n. 19) would certainly overlap with the 50 per cent interval for *Alexandros*.
- 16. This remainder has a rate of 2.53 per cent and would yield a 50 per cent Interval of 1.67-3.64, and a 10 per cent Interval of 1.13-4.74.
- 17. Devine / Stephens, TAPA 111 (1981) 47-55. They give regression analyses for trimeter resolution, tetrameter resolution, and the occurrence of monosyllabic appositives implementing heavy third anceps (before Porson's bridge). Their data differ from ours in using Ceadel's line-rates (proper-name resolutions excluded) and in assuming a known date (ca. 424) for Hekabe but not for Hiketides. Their method also differs in two respects. First, although the rate-intervals they give (pp. 44-5) also have an interpretation as approximate confidence intervals (see n. 3 above), they do not have the likelihood interpretation which we have used; our intervals are in fact exact insofar as their interpretation as likelihood intervals is precise and not asymptotic or otherwise approximate. Second, our approach to the use of regression analysis is more exploratory than theirs, since the grounds seem rather weak for formulating an elaborate model to describe rate in terms of date and we feel that their apparently subjective selection of an exponential curve rather than a straight line needs more justification than they give. (Standard objective procedures for selecting an appropriate curve seem far too elaborate for the available data: see G.E.P. Box and D.R. Cox, "Analysis of Transformations", Journal of the Royal Statistical Society, B. vol. 26 [1964] 211-243; D.A.S. Fraser, Inference and Linear Models [London 1979] Chapter 11). It is important to realise that any least-squares procedure is designed to be optimal within the constraints of the chosen model. There are inevitably many curves that could "fit" the available data in some meaningful way, but we accept the view of many authorities that simplicity in the form of the model should play a major role. We have therefore offered a simple straight line, based on a weighted

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least squares analysis, choosing as weights the number of available trimeters for each year. This is not necessarily the best theoretically available line, but we can observe that several other criteria for fitting lines to our data were tried, and that each yielded a line of very similar slope and intercept, suggesting minor differences (at most) from the upper and lower limits for dates which our intervals give. Calculations were performed by the MINITAB statistical computing system developed by T.A. Ryan, B.L. Joiner and B.F. Ryan (Handbook published by Duxbury Press, North Scituate, Mass.)

- 18. Data from the two Alkmaeons might be included for 438 and 406 respectively, but they would provide a negligible proportion of the total data, and for Alkmaeon K there is, in principle, some risk of bias because some fragments are assigned to it purely because of their resolution-content. Hekabe could with some confidence be included as dated 425±2 (and its data are used, dated "c. 424", in the regression analysis of Devine / Stephens [n. 17 above], but a large part of the case for excluding possible dates before 427 rests on its resolution-characteristics, and we have not used it because of the element of circularity that this entails. Temenos and Temenidai may well be associated with 407 along with Archelaos, but perhaps not certainly enough (and the quantity of data from them is in any case very small compared with the total volume available for Euripides' last years). Antiope is included, even though we shall proceed to suggest that the explicit indication we have of its date (409+2)may be incorrect; we prefer not to risk the circularity of ruling it out in anticipation of the results of our analysis. (Again, Antiope carries little weight in the total of data for 409). For Erechtheus, on the other hand, the evidence usually taken to imply a date 422±1 is so weak that the inclusion of its data here seems unjustified (see the section on Erechtheus in chapter 5).
- 19. As Devine / Stephens, TAPA 111 (1981) 45, point out, the resolution-rate of a play is not necessarily identical with that of its year. Even a whole play is, for this purpose, a sample from a population which may be defined either as all the trimeters representing the year, or as a theoretically infinite set of trimeters implementing an ideal rate of the year. (The general assumption that each play distinctly represents the year of its production is itself, of course, a little unrealistic, but it seems to be inevitable.) In practice, since we cannot quantify the total of material representing any year, our calculations are necessarily based on the assumption of infinite populations, so that there is no practical distinction between an interval for the resolution-rate of an undated play (whose data cannot be combined with a larger body of dated data) and an interval for the resolution-rate of its year. Extant plays, understood in this context as large samples of the material of their year, will of course provide fairly close estimates of their year's resolution-rate. Thus, for example, our method gives a 50 per cent relative likelihood interval of 5.22 per cent-5.98 per cent for the "year" of *Ion*, the rate of the play itself being 5.57 per cent. (The 68 per cent "confidence"-intervals given by Devine / Stephens, *TAPA* 111 (1981) 44, are very similar in range, though their data and method are different [above, nn. 3, 17]. Their interval for *Ion*, expressed in equivalent terms, is 4.85 per cent-5.48 per cent, from a play-rate of 5.17 per cent.)
- 20. On the selection of the line, see n. 17 above.
- 21. For Aeschylean and Sophoclean resolution-rates see Ceadel, CQ 35 (1941) 84, Tables 4A and 4B, with figures for proper-name resolutions in nn. 1, 2.
- 22. Alternatively, 428 might be selected as the base-date, since the rate for *Hippolytos* is still very low lower, in fact, than that of its predecessors. But the interval for the 428 rate implied by the data from *Hippolytos* overlaps with the interval obtained for 431, so the possibility of a trend beginning before 428 cannot be ruled out. Since 431 and 428 are so close together, the difference to the slope of our line made by excluding the data for 431 would be much smaller than the difference made by including the data for 438. Hence we have preferred not to dispense with the large quantity of 431 data. This is, however, another indication of the exploratory nature of our regression analysis.

CHAPTER 4

QUALITATIVE ANALYSIS

The previous chapter was concerned with the frequency of resolutions in general, without making qualitative distinctions among the numerous configurations which result from their placings in the line and their accommodating words or word-groups of different lengths and shapes. The purpose of the present chapter is to identify the qualitative features of resolutions in each set of fragments, by comparison with those in the extant tragedies. This will provide some additional grounds for inferences about chronology, which will be assembled with the other evidence when conclusions are offered in Chapter 5.

The qualitative analysis offered here is derived from the observations of Zielinski which he summarised in his 10 "laws",¹ but some modifications have been made in the light of subsequent work, especially Irigoin's² discussion of the eighth and tenth laws (*De solutione initiali* and *De polysyllabis*) and the recent demonstration by Devine and Stephens that some of the laws are either fallacious or without independent significance.³ Some specific features of resolutions at each position in the line are discussed below, but first some more general points relevant to the analysis may be made:

1. No account is taken of Zielinski's first law, *de solutionibus cumulatis*, since Devine and Stephens have shown that the rarity of two or more resolutions in a single line demands no explanation other than the relative rarity of resolutions in general and need not be ascribed to a specific "avoidance".⁴

2. No account is taken of Zielinski's ninth law, *de positione debili*, since Stephens has shown that the general rarity of words implementing *correptio attica* is a sufficient explanation of the rarity of its implementation by syllables in resolution.⁵

3. The occurrence of word-break after the second syllable in resolution or between the two syllables in resolution is documented, in the light of Zielinski's tenth law, *de polysyllabis* (compare Irigoin's discussion of "zeugma"), and of subsequent comments.⁶

4. The absence of word-break before the syllables in resolution, or its presence in the case of first-longum resolution, is documented, in the light of Zielinski's third law, *de primo pede*, and eighth law, *de solutione initiali*, and of subsequent comments.⁷

5. The quantities of the syllables preceding resolution in element two and following resolution in elements four and eight are documented, but not those of the syllables preceding resolution in element six: see below in the sections on each of these elements.

6. Elisions at the ends of words which contain resolution are documented (so that, for example, it will be clear when a word shaped \cdots has been accommodated by elision to the shape \cdots).

7. "Lengthening by position" is documented (since it may be useful to distinguish between word-shape and metrical shape).

The analysis given in Tables 4.1-4.5, which classify Euripides' resolutions into nearly a hundred Types according to their position in the trimeter and the word-shapes involved, takes into account the points made in items 3-7 above. Each Table is preceded by a few preliminary remarks on points of interest (though inferences for the chronology of the fragmentary plays are mostly reserved for Chapter 5) and is followed by a Supplement documenting the usage of each Type in the extant tragedies and *all* the instances in the fragments assigned to particular lost tragedies, as well as comparative information for the usages of Aeschylus and Sophocles.

The Supplements also contain comments on further distinctions which can usefully be made but can hardly be tabulated without obscuring the wood in favour of the trees — especially, between Proper-Name instances and others (where the former constitute a high proportion of the whole) and between word-breaks of different strength.

Distinguishing different kinds of word-breaks is a complex matter. Rather than applying a somewhat arbitrary distinction between non-independent words (such as enclitics) and independent words, we have preferred to mark all word-breaks, appositive and other, in the Tables, but to comment on the limited nature of word-breaks in certain contexts in the Supplements. This should make it possible to trace more precisely the gradations of word-break strength and the differing tendencies of different kinds of word (and in different contexts) to lose their status as independent phonological words and to be combined with others into higher-level phonological units. The present enquiry is not intended to pursue this issue and its linguistic implications thoroughly,⁸ but some preliminary observations may be useful:

1. The monosyllabic and elided disyllabic words which occur as syllables in or before resolution are nearly all non-lexical,⁹ and there is very rarely any need to posit an emphatic word-break after them. The few exceptions, almost all involving line-initial monosyllables, are documented in the Supplements.

2. The Supplements also document a distinction between lexical and non-lexical pyrrhic-shaped (\cup) words - the latter, of course, importantly including numerous prepositions and pronominal forms. The distinction is interesting.¹⁰ Pyrrhic-shaped words (unless given iambic shape through lengthening by position) occupy four kinds of position in the line: (a) They may implement resolved first, second, third, fourth or fifth longum - Types 2.2a, 4.1a, 6.1a, 8.1a, 10.2. There are 30 instances of Type 4.1a (none in "severe" plays, none in Aeschylus, one in a lyric context in Sophocles), 48 of Type 8.1a (none in "severe" plays but several in Aeschylus and early Sophocles), and four of Type 10.2 (one in Arch, one in Ba, two in IA; compare A. Pe 501, S. OT 967). Only two of these involve an apparently strong word-break after the pyrrhicshaped word, and both of these are very late (Or 1092 $\lambda \dot{\epsilon} \chi \sigma_{\beta} \dot{\epsilon} \pi \dot{\eta} \nu \epsilon \sigma a$, Alk. K. 67.5 $\dot{\epsilon} \nu \iota \kappa \dot{\nu} \delta \nu \nu \sigma_{\beta}$). All the rest involve the following words: the disyllabic prepositions, $i\nu a$, $\delta\tau\iota$, $\delta\tau a\nu$, $\tau \dot{w}a/\iota/o\varsigma$, $\dot{\epsilon}\mu\dot{\epsilon}$, $\delta\delta\epsilon$, $\tau\dot{a}\delta\epsilon$, άμα, πόθεν, ὄσον/α, έμά and φέρε (in the idiomatic phrase φέρε δή, An 333). But the more numerous instances of Types 2.2a and 6.1a - that is, at the beginning of the line (with non-lexical monosyllable preceding) or after penthemimeral caesura, where stronger disruptions of rhythm are tolerated – also include many pyrrhic-shaped nouns and adjectives, and even a few verbs. (b) In just 11 instances they implement resolved first anceps (Type 1.2); in ten of these the pyrrhic-shaped word is a preposition, while in the other it is followed by an enclitic (Antiope 48.109 $i\tau \epsilon v \nu \nu$). (c) They may implement the second syllable of resolved first, second, third, fourth or fifth longum plus the following short syllable – that is, Types 2.3b (17 instances, earliest Hik), 4.2cS/P (36 instances), 6.2c (about 75 instances), 8.2bS (two instances), 10.3 (one instance). In these cases adjectives and nouns are the large majority, but the rhythmic disruption is alleviated not only because they implement zeugma but because they are always preceded by a monosyllabic appositive, usually the article. (Or $632 \pi \delta \delta^2 \epsilon \pi \epsilon$, after penthemimeral caesura, is a unique exception). (d) In the four late instances where a pyrrhic-shaped word starts at element three (Type 4.4), appositive word-break and zeugma always follow.

3. The Tables assign separate categories (for example, Type 4.3a, and so on) to exceptions to the general rule that syllables in resolution are word-initial (except in element 2). There are, of course, further virtual exceptions where the preceding word-break is weak, and an attempt is made in the Supplements to note at least the clearest of these, such as those where the preceding word is an article or preposition. (See especially the notes under various sub-categories in Types 4.1 and 8.1, and Type 6.3.)

Preliminary remarks on resolutions at specific positions

1st-longum resolutions (element 2: see Table 4.1)

As is well known, only the type made by a line-initial tribrach-shaped word is regular and numerous throughout the extant tragedies. Zielinski's third law stressed that "dactylic" types, once established, soon (and increasingly) came to outnumber "tribrachic" types, but some qualification of this general point is needed.¹¹ First, tribrach-shaped words (Type 2.1aT) do in fact continue generally to outnumber dactyl-shaped words (Type 2.1aD) in this position. Second, words shaped usua (Type 2.1cT) are indeed outnumbered by words shaped - use (Type 2.1cD), but this is partly due to certain frequent proper names (for example, all ten instances in Hip), and the ratio is not nearly so high as it is among first-longum resolutions with preceding word-break (all of Types 2.2 and 2.3). These occur only once in Alk/Med/Hkld/Hip (though there are several in Aeschylus and early Sophocles), but still constitute some 37 per cent of all first-longum resolutions in all the extant tragedies. In nearly 90 per cent of these the line-initial monosyllables are heavy, largely (it seems) because naturally light monosyllabic words are few in themselves and their use to make light monosyllables is further restricted by avoidance of hiatus (if they end in a vowel) or by positional lengthening (if they end in a consonant). Hence we see only a few forms of \dot{b} , $\tau i\varsigma$, $\delta \varsigma$ and the words $\sigma \dot{v}$, $\sigma \dot{\epsilon}$, $\dot{\epsilon} \varsigma$, $\dot{\epsilon} \pi$, and $\delta \delta \varsigma$ (uniquely at Or 1659) making light line-initial monosyllables in resolution. By contrast, there is a wide range of common monosyllabic or elided disyllabic words which always make a heavy syllable – for instance, $o\dot{v}(\kappa)$, $o\dot{v}\delta'$, $\ddot{\eta}$, $\ddot{\omega}$, $\mu\dot{\eta}$, $\dot{\omega}\varsigma$, $\epsilon\dot{i}$, $\kappa\alpha\dot{i}$, $\dot{a}\lambda\lambda$, and most forms of \dot{o} and $\dot{o}c$. So it is probably irrelevant to consider Euripides' rhythmic "preferences" here.

It is worth noting that although Alk 802 où β ioc and the numerous instances of the name Hippolytos make the only "dactylic first feet" in the extant "severe" tragedies of Euripides, there are several "split" instances (Types 2.2a-eD) in Aeschylus and Sophocles which make Alk 802 less surprising. On the other hand, while all the "unsplit" instances (Types 2.1a-dD) in Aeschylus and early Sophocles involve proper names (except the muchquestioned A. Ag 7), the Euripidean fragments include Tel 102.10 $\mu\eta\tau\dot{\epsilon}\rho a$ and Phil 799.3 ä $\theta a\nu a\tau \sigma c$, as well as Tel 102.6 $\Pi a\rho\theta\dot{\epsilon}\nu\iota\nu$. For type 2.1cT ($\circ\circ\circ\circ\circ$) the earliest Euripidean instance is Phil 793, but note A. fr. 195.2 (PN) and S. Ant 1083. Lastly, Erec 18.117 kai $\tau \dot{a} \pi \epsilon [\rho \iota$ (Type 2.3bD) seems earlier than any exactly similar instance, if the date of the play is about 422 – though see Hik 157 $\tau \dot{o} \delta \dot{\epsilon} \pi \lambda \dot{\epsilon} o\nu$ (Type 2.3bT) and S. Ant 1056 $\tau \dot{o} \delta \dot{\epsilon} \gamma \epsilon$ (Type 2.3aT); it would be even more surprising if $\pi \epsilon$ [were the beginning of a polysyllabic word, Type 2.3c.

2nd-longum resolutions (element 4: see Table 4.2)

Zielinski's sixth law observes that, after resolved second longum, heavy second anceps outnumbers light second anceps by about 3 to 1. But this is only about the same proportion as that of heavy second anceps to light second anceps in general in Euripides' trimeters, and tells us nothing specifically about his resolution-practice. Devine and Stephens have, however, pointed out that the proportion of all his anapaest-shaped words (in all positions) which Euripides places before the penthemimeral caesura is significantly greater than the proportion of all his tribrach-shaped words which he places there – apparently because there are fewer alternative locations for the anapaest-shaped words.¹² (In particular, anapaest-shaped words cannot precede hephthemimeral caesura or Porson's bridge, whereas tribrach-shaped words can.)

Among the fragmentary instances, it is interesting to find Alkmene PHamb. 119 col. 3.15 $\lambda \lambda \tau \epsilon \nu \epsilon \bar{\iota} \varsigma$ (Type 4.3cL) in fairly late company. The same might be said of Erec 14.31 $\lambda \delta \delta \kappa \eta \tau$ ' (Type 4.1dL), though the total number of occurrences of Type 4.1d is extremely small.

3rd-longum resolutions (element 6: see Table 4.3)

Third-longum resolutions, as a whole, are more numerous than any others. The prevalence of preceding heavy second anceps over preceding light second anceps (that is, of "dactylic third feet" over "tribrachic third feet"), stressed by Zielinski's seventh law, does not need special notice in a discussion of resolution-practice since it merely corresponds with the prevalence of heavy over light second anceps in general.¹³ It is hardly surprising, in fact, that there should be no special relationship between third-longum resolutions and the preceding second anceps, since penthemimeral caesura intervenes in virtually all instances. But this prevalence of penthemimeral caesura before third-longum resolution – over 99 per cent – is significantly greater than the prevalence of penthemimeral over non-penthemimeral caesura in general – about 80 per cent,

according to Descroix, who suggested a rather elaborate explanation of this in terms of rhythmic considerations.¹⁴ It seems in fact to be simply a reflex of Euripides' avoidance (except at element 2) of resolution outside the initial syllables of a word.¹⁵ There are, incidentally, no instances in the fragments assigned to specific tragedies of the absence of penthemimeral caesura (Type 6.3). Nor are there any very strong instances of the virtual elimination of penthemimeral caesura in an appositive word-group.¹⁶

The classification in Table 4.3 is therefore limited to the actual word-shapes accommodated by third-longum resolution. A large majority, of course, are those where the resolved syllables are the first two syllables of a word of three to six syllables, so that there is zeugma; Types 6.1b to 6.1h in Table 4.3 total two-thirds of about 1700 instances in the extant tragedies. A further 20 per cent are pyrrhic-shaped words (Type 6.1a, found in all styles) on which there is detailed comment above (p. 28) and in the Supplement to Table 4.3.

4th-longum resolutions (element 8: see Table 4.4)

These constitute about 23 per cent of all resolutions in *Med*, 19 per cent in *Pho*, and 7–15 per cent in each of the other extant tragedies. From Table 4.4 it will be seen that the large majority of them (especially in the plays from *Alk* to *Hik*) accommodate words of at least three syllables, with the first two syllables in resolution (Types 8.1c-8.1g), and those with the third syllable light predominate in the earlier plays. Those with the third syllable heavy become frequent in the later plays¹⁷ (especially Type 8.1fL), but non-proper-name instances are very rare before *El*, as they are throughout Aeschylus and Sophocles. Types 8.1a, 8.1b and 8.2a also show a scarcity of heavy ninth element, suggesting (as Devine and Stephens note¹⁸) that the incidence of word-break in or after the resolved syllables compounds the difficulty of tolerating a heavy ninth element.

It will be noted that an instance of Type 8.2bS is listed for *Telephos*. The line $\dot{\omega} \Phi o i \beta$ 'Ano $\lambda \delta \nu \Lambda \dot{\nu} \kappa \epsilon$, $\tau i \pi \sigma \tau \dot{\epsilon} \mu$ ' $\dot{\epsilon} \rho \gamma \dot{a} \sigma \eta$; occurs in Ar. *Knights* 1240, where the Scholiast says $\dot{\delta} \sigma \tau i \chi \sigma \varsigma \dot{\epsilon} \kappa T \eta \lambda \dot{\epsilon} \varphi \sigma \nu E \dot{\nu} \rho \pi i \delta \sigma \nu$. Wilamowitz denied that $\tau i \pi \sigma \tau \dot{\epsilon} \mu$ ' $\dot{\epsilon} \rho \gamma \dot{a} \sigma \eta$ could belong to Euripides, "wie die Auslösungen zeigen" (*Der Glaube der Hellenen* I. 147 n. 3); and this has been accepted by, for example, Austin in his edition. But two resolutions in a line are not unknown in the Severe plays (see *Tel* 113.1, for example) and cannot be regarded as "avoided" in them.¹⁹ As for the form of the fourth-longum resolution, this is exactly parallelled in Euripides only in *Alk* 3 $\tau \dot{\sigma} \nu \dot{\epsilon} \mu \dot{\sigma} \nu$, from the same year as *Telephos*. Thus, while the line would be metrically unusual anywhere in Euripides, there is no reason to assume that it would be metrically impossible in *Telephos*, nor to reject the explicit testimony of the Scholiast.

5th-longum resolutions (element 10: see Table 4.4)

Of 40 instances in the extant and fragmentary tragedies, only four accommodate proper names and only five do not accommodate an integral word shaped $\Box \Box \Box \Box \Box$ (see Supplement). The disputed early instances $- ava\beta a\lambda o\bar{v}$ (Alk 526) and $ava\mu \acute{evei}$ (An 444, Hek 1281) – have since Nauck often been emended away (by writing $a\mu$ for ava-) on the grounds that Euripides avoided fifth-longum resolutions in the earlier plays. But the fact is that fifth-longum resolutions are rare in all the plays (less than one per cent of all resolutions in the 17 extant tragedies), and if fifth-longum resolutions were equally tolerated throughout, the expected number of fifth-longum resolutions in a Severe-style tragedy would be none or one per 1000 trimeters, and in a Semi-Severe-style tragedy one or two per 1000 trimeters. So there are no grounds for eliminating the few instances which are transmitted in the Severe and Semi-Severe plays.

"Resolutions" of anceps and breve (elements 1, 3, 5, 7, 9: see Table 4.5)

These occur in elements 3, 5, 7 and 9 only to accommodate proper names and are few in all of these except element 7. By contrast, "first-foot anapaests" total nearly 700, with about 46 per cent accommodating proper names. "Split first-foot anapaests" are only 14 of these (Types 1.2 and 1.3).²⁰

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Symbols used in denoting resolution-types

- Word-break of any kind (including elision) before or between syllables in resolution.
- ' Elision after the second syllable in resolution, or later; (but elided postpositives are not so marked; thus $\delta\iota\dot{\alpha}\varphi\rho\rho$ ' is marked $\upsilon\upsilon\upsilon$ ' but $\pi a\tau\dot{\epsilon}\rho a\tau$ ' is marked $\upsilon\upsilon\upsilon$).
- Light syllable.
- Heavy syllable.
- \cup A syllable which is heavy "by position" that is, only because the following word begins with a consonant; (not distinguished in the case of line-initial monosyllables).
- x Light or heavy syllable.
- T denotes "1st-foot tribrach" types.
- D denotes "1st-foot dactyl" types.
- S denotes types where the *anceps* following resolved element 4 or 8 is implemented by a light syllable.
- L denotes types where the *anceps* following resolved element 4 or 8 is implemented by a (naturally) heavy syllable.
- P denotes types where the *anceps* following resolved element 4 or 8 is implemented by a syllable made heavy "by position".
- () The bracketed item occurs in some instances only.
- [] Items not counted in the totals given in Table 2.1 (because of textual uncertainties, alternative scansions, or exclusion of possibly interpolated passages).
- PN (or P in Table 4.6) denotes instances due to Proper Names, where identification of these is needed.

In the Supplements, the extant tragedies of Aeschylus and Sophocles are cited from the texts of Page and Pearson respectively. Tragic fragments of Aeschylus are cited from Nauck (for instance, A. fr. 249) and Mette (for instance, A. fr. 269M), and of Sophocles from Radt, whose numeration follows Pearson's. For the extant plays of Euripides, the Oxford texts of Murray (vols 1 and 3) and Diggle (vol. 2) have been used, with some minor adjustments.
		Al	Ме	Hd	Нр	An	Hek	Hik	El	HF
2.1 aT	1	6	5	3	5	3	6	6	9	9
2.1 aD	- 00					1?		1	5	6
21 bD	- 00 '				1					
2.1 cT	0000					2		[2?]		1
2.1cD	- 000				10	3	2	2	3	2
2.1dT	$\cup \cup \cup \cup $							[2?]		
2.1dD	<u>-</u>									_
2.2aT	U! UU						1			
2.2aD	_! _{UU}	1						[1?]	1	5
22bT	U! UU'									
2.2bD	_1.001									
2. 2cT	U ¹ UUU									1
2.2cD	-1000					2	5	2	2	2
2. 2d D	-1000'									
2. 2eT	\cup									
2.2eD	-' ₀₀₀ ⊻									1?
2.2fT	u' uuu– x									
2.2fD	-' -'									
2. 3aD	(^{י)} ر. ان ا									
2.3bT	U' U' UU							1		
2.3bD	_!0!00									
2.3c	x ' u' uu-(x)									
2.4	x ∪' ∪(∪)									
	Unclassified									

Table 4.1Resolutions of the 1st longum (element 2), by word-shape

Tr	Io	IT	H1	Ph	Or	Ba	IA	Fra	gments
11	16	10	11	11[+4]	13	14	8	26	
3	5	12	10	7[+3]	9	7	13	7	Arch, Erec, Hyps(3), Pha, Tel.
			1	0[+1]	3	1	1	1	Arch
3			4	3	6	5	3	6	Antig, Arch, Erec, Hyps, Phil, Temenid
3	1	7	8	6	6	8	9	5	Alex, Hyps, Pal, Phil, Tel
			1?	1?[+14	?] 1			0	
							1	2	Erec, Arch
	4	2			2	2		1	Alk.K
4	1	3	5	3[+1]	18	6	10	3	Auge, Hyps, Mel.S
			1				1	0	
		2						1	Pha
	2	1	3	1	1	1		1	Mel.S
7	10	6	6	11	14	4	3	7	Andr, Auge, Erec(2), Hyps(2), Temenid
						1		1	Antig
						1	1	1?	Alex(?)
	1			3	2	3	6	3?	Hyps(1 or 2), Alex(?)
							1	0	
	3		1[+1]	1	2[+1]	5	1	1?	Hyps(?)
	1		<u> </u>		1	2	4	0	
				1				0	
	3		1	1	2	3	2	3	Alk.K, Andr, Erec
					1	2	1	1	Auge
				1	2	1	2	1	Poly
								5	Tel, Pha(2), Hyps(2)

Supplement to Table 4.1 (1st-longum resolutions)

2.1aT (000)

- Extant 146[+4], all plays.
- Fragments 26. Alex 37, Antig 173.2, Antiope 16.4, 48.85, Arch 1.1 (PN), 26.2, 29.5, Dikt 339.1, Erec 18.73, Hyps 1.iv.18, 1.iv.35, 1.v.2, 60.20, 60.31, Kresph 2B.35, Mel.D PBerol. 9772.15, ibid. 16, Oid 91.2, 95.1, 95.2, 100.2, Pha 126, Tel 147.32, Temenid 729.2, 736.3, Thy 396.2. The proportion followed by unelided enclitics, and hence akin to 2.1cT, is very small.
 - Aeschylus 24 instances, Sophocles 56.

2.1aD (-uu)

Extant An 656? (PN), Hik 93, and so on. Total 79 [+3].

Fragments Arch 2.20 (PN), Erec 18.56, Hyps 1.iv.26, 1.iv.30, 18.5, Pha 3(PN), Tel 102.10.

The proportion followed by unelided enclitics, and hence akin to 2.1cD, is very small. Aeschylus, Ag 7(?), Cho 986 H $\lambda \omega \varsigma$. Sophocles, Aj 846 and fr. 582 H $\lambda \iota \epsilon$, OK 1634 $\mu \dot{\eta} \pi \sigma \tau \epsilon$.

2.1bD (-uu')

Extant Hip 1436(PN), Hel 1209, [Pho 1630], Or 394, 1189, 1577, Ba 741, IA 929.

Fragments Arch 2.11(PN).

Aeschylus fr. 138 (PN) only.

Sophocles Ph 1392 only.

2.1cT (0000)

Extant An 746, 803, [Hik 872, PN?; 1037, PN?], and so on. Total 27.

Fragments Antig 168, Arch 30.1, Erec 18.17, Hyps 1.i.10, Phil 793, Temenid 735.1.

See also under 2.1aT above. Aeschylus fr. 195.2 only. Sophocles, Ant 1083, OT 1401, Ph 309, fr. 185.

2.1cD (-000)

Extant *Hip* (10xPN), *An* 1157, 1256, 1266(PN), *Hek* 487(PN), 503(PN), *Hik* 392(PN), 535, *El* 61, 580, 1090 and so on. Total 70 (60%PN).

Fragments Alex 23a.19 (PN), Hyps 60.78 (PN), Pal 585.2, Phil 799.3, Tel 102.6 (PN).

Includes instances of αθάνατος (scanned 0000 by Zielinski): An 1256, Hel 987, 1016, Ba 9, Pal 585.2, Phil 799.3. See also under 2.1aD above. Aeschylus (all PN) Sep 450, PV 730, frr. 55.13M(?), 179.1. Sophocles, Aj 575PN, Tr 749PN, El 326PN, Ph 425PN, 999, 1003, 1420.

Extant [Hik 401 (PN), 739(PN)], Hel 1168(PN), [Pho (15xPN)], Or 555. All but Or 555 are PN's (Eteoklees, Theoklymenos, Periklymenos) which might alternatively be scanned 00-0- or 0-00-.

Aeschylus, Sep 272, PV 817?, and the name Eteoklees. Compare Eum 806.

Sophocles none, but see fr. 725 àvuµevaιoūvtes.

2.1dD $(-\cdots)$

Extant IA 1409 $\epsilon \xi \epsilon \lambda o \gamma i \sigma \omega$.

Fragments Erec 2 Αίθιοπίαν, Arch 1.4 Αίθιοπίδος.

Aeschylus only fr. 300.2 Αἰθιοπίδος.

Sophocles none.

2.2aT (v'vv)

Extant Hek 320, Ion 244, 429, 1353, 1537, IT 1072, 1157, Or 941, 1588, Ba 923, 194.

Fragments Alk. K 67.1 $\circ \varphi \circ \beta \circ \varsigma$.

The monosyllable is always \dot{o} , $\tau \dot{o} \nu$ or $\tau \dot{\iota}$. Elision never follows it. Enclitic never follows the disyllable. Aeschylus none.

Sophocles only τί ποτε, Aj 341, 1356, OT 1073, Ph 740, 914.

2.2aD (- 'uu)

Extant Alk 802, [Hik 669?], El 234 and so on. Total 57[+1].

Fragments Auge 265a.1 ή φύσις. Hyps 60.50 ὤ ξένε. Mel. S 484.1 κοὺκ ἐμός.
The monosyllable is always non-lexical. Elisions at Hel 802 οὐδ', 975 εἰ δ', Pho 1619 àλλ', Or 1134 νῦν δ', Ba 352 οἰ δ', IA 961, 1188 àλλ', 1270 οὐδ'. Enclitic follows the disyllable only at HF 460.
Aeschylus, Cho 216 καί, fr. 99.7 καί(?), fr. 392 ή. Sophocles Ph 791 ὦ.

2.2bT (u'uu')

Extant Hel 502 ὅς ὄνομ', ΙΑ 957 ὅς ὀλιγ'.

Aeschylus and Sophocles none.

2.2bD (- ' uu ')

Extant IT 703 και δάκρυ', 248 οὐδ' ὄνομ'.

Fragments Pha 258 $\dot{a}\lambda\lambda$ ' $\ddot{\epsilon}\sigma\theta$ '.

Aeschylus and Sophocles none.

2.2cT (u'uuu)

Extant HF 1134, Ion 976, 1224, IT 477, Hel 43, 456, 813, Pho 952, Or 643, Ba 485. Monosyllables are $\delta, \tau i$, $\tau \delta \nu, \tau \delta, \tau \delta, \epsilon \varsigma$. Elided $\delta \epsilon$ follows monosyllable at Hel 43, Or 643, Ba 485.

Fragments Mel.S Prolog. 12 $\epsilon \pi$ ' ovoµa.

Aeschylus none.

Sophocles Aj 467 πρός.

2.2cD (- ' uuu)

- Extant An 169, 387, and so on. Total 74. Elision after first syllable at Tro 1285, Ion 305, 1543, IT 248, 499, Hel 751, Pho 1400, Or 248, 721, Ba 1345, IA 850. First syllable is lexical only at IT 626 $\pi \tilde{\nu} \rho$, Pho 44 $\pi a \tilde{\iota} \varsigma$, 1403 $\tilde{\eta} \nu$, Or 721 $\varphi \rho o \tilde{\nu} \delta$ ', Ba 758 $\pi \tilde{\nu} \rho$.
- Fragments Andr 132.2 εἴτ', Auge 266.3 κοὺ, Erec 10.1 τάς, 14 ἤ, Hyps 1.i.8 εἰ, 1.iv.43 ѽ, Temenid 736.4 κἄν. Aeschylus, Ag 1312 οὐ + PN, fr. 255.1 ѽ.

Sophocles, Aj 854 &, Ant 746 &, Tr 318 obb', and nine times, all non-lexical, in OT, El, Ph.

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2.2dD (- ' uuu ')

Extant Ba 1345 $\ddot{o}\psi$ ' $\dot{\epsilon}\mu\dot{a}\theta\epsilon\theta$ '.

Fragments Antig 158 $\epsilon i \tau' \epsilon \gamma \epsilon \nu \epsilon \tau'$.

Aeschylus and Sophocles none.

2.2eT $(\cup \cup \cup \cup \bigcup)$

Extant Ba 490 $\sigma \dot{\epsilon} \delta' \dot{a} \mu a \theta \dot{a} \varsigma$, IA 1408 $\tau \dot{o} \theta \epsilon o \mu a \chi \epsilon \tilde{w}$.

Fragments (? Alex 6.8: see 2.2eD).

Aeschylus none. Sophocles Ph 815 τί.

2.2eD (- $1 \cup \cup \cup \bigcup^{\cup}$)

Extant HF 1292 aì (?), Ion 1354 ὦ, Pho 356 κaί, 407 οὐδ', 502 πλήν, Or 670 κοὐχ, 1141 ἀλλ', Ba 199 οὐ, 286 κaί, 45 ὅς, IA 487 ἀλλ', 1115 τοῖς, 1201 ἤ (PN), 1218 μή, 1269 οὐ (PN).

Fragments Alex 6.8. .μα]κάριον (? υ' υυυ -), Hyps 1.i.5 ὤ μακαρία, 22.7 κἇν διαριθμ[(? - 'υυυ - x). Aeschylus Sep 653 ὤ.

Sophocles none.

2.2fT (v' vvv - x)

Extant IA 1232 σύ δ' ἐπιλέλησαι.

Aeschylus and Sophocles none.

 $2.2fD (-' \cup \cup - x)$

Extant Ion 1512 &, 1522 καὶ, 1288 àλλ', Hel 722 νῦν, [1675 τῶν δ'], Or 681, 1227 τοῖς, [1566 τούς], Ba 253 οὐκ, 325 κοὺ, 692 aἰ δ', 731 ἡ δ', 482 πãς (N.B.), IA 1003 εἰ δ'.

Fragments (? Hyps 22.7: see 2.2eD).

Aeschylus none.

Sophocles OK 1376 $\nu \tilde{\nu} \nu \tau$ '.

2.3aT [• ' • ' • (')]

Sophocles Ant 1056 $\tau \dot{o} \delta \dot{\epsilon} \gamma \epsilon$.

2.3aD (- ' u ' u ('))

Extant Ion 1335 μὴ σύ γε, Or 1106 πῶς; τὸ γάρ, Ba 951 μὴ σύ γε, 492 εἴρ' ὅ τι, IA 498 εἰ δέ τε, 941 εἰ δι' ἕμ', 1440 οὐ σύ γε, 1453 ἔσθ' ὅ τι.

Aeschylus and Sophocles none.

2.3bT (• ' • ' • •)

Extant Hik 157 τὸ δὲ πλέον, Pho 390 τίς ὁ τρόπος.

Aeschylus none Sophocles Ph 601 τίς ὁ πόθος.

2.3bD (- ' u ' uu)

Extant Ion 365, 825, 1519, Hel 390, Pho 398, Or 492, 550, Ba 310, 1128, 1249, IA 694, 734.

Fragments Alk.K 84.1 $\ddot{\eta}$ $\tau i \pi \lambda \dot{\epsilon} ov$, Andr 144 $\mu \dot{\eta} \tau \dot{o} v \dot{\epsilon} \mu \dot{o} v$, Erec 18.117 κai $\tau \dot{a} \pi \epsilon [\rho i]$.

Aeschylus and Sophocles none.

2.3c $(x' \cup ' \cup \cup - (x))$

Extant Or 1659 δός· \dot{o} δ' ἐπιών, Ba 314 οὐχ \dot{o} Διόνυσος, 299 και το μανιῶδες, IA 541 ὡς ἐπ' ἐλαχίστοις. Fragments Auge 274 το γὰρ ἐπιεικές.

Aeschylus and Sophocles none.

2.4 $(x \cup ! \cup (\cup))$

Extant Pho 401 ποτè μέν, Or 2 οὐδè πάθος, 99 ὄψε γε, Ba 285 ὥστε διά, IA 308 οὐδέ γε, 1104 αὐτὸ δέ. Fragments Poly 643 βαρὺ τὸ φόρημ'.

On "line-initial split dactyls", see Devine and Stephens, CPh 78 (1983) 8-9.

Aeschylus and Sophocles none.

Unclassified (lacunose texts)

Fragments Tel 147.53, Pha 145, 327, Hyps 4.3, 18.6.

		Al	Ме	Hd	Нр	An	Hek	Hik	El	HF
4.1aS	A'u(-)((ب							1	1
4.1aP	$\cup \cup^{\dagger} \cup$									
4.1aL	···'-(-)(J)				3	1			
4.1cS	000	3	2	1		6	6	5	1	10
4.1cP	 ()	1		2		1	2	3	4	1
4.1cL	-00	2	3	4	2	7	10	7	15	11
4.1dS	, <u> </u>									-
4.1dL	<u></u> -'									1
4.1eS	∪∪∪ [_] (∪)			1	1		2	1		1
4.1eL	~~⊻(v))					1	1	2	3
4. 2a										•
4.2b	ן יי _x (י) _	· u								
4.2cS	0100						1		1	5
4.2cP	J'JU		1	1		1	2	1		1
4.2cL	JU					1	1			
4.2d	∪'∪x-(∪)								
4. 3a			1						1	-
4.3b	000'									
4.3cS	0000									
4.3cP	000U									1
4.3cL	000-									2
4.3d	ບບບx່									_
4.4										-
4.5	2000 x									
4.6	1 x- 000	[1?]							1	

Table 4.2Resolutions of the 2nd longum (element 4), by word-shape

Tr	Іо	IT	H1	Ph	Or	Ba	IA	Fragments	
			1		3	1		0	
				1	2			1	Hyps
2			2		3	2	5	1	Alk.K
5	9	8	10	6[+1]	6	8	4	14	
5	2	2	8	2	12	5	6	5	Alex, Erec, Kresph, Mel.D, Oid
11	18	13	25	13[+4]	24	27	18	25	
					2			0	
1	1	1					[1?]	2	Auge, Erec
1	3	1	4	2	4	5	3	0	
	5	3	1	6	13	2	7	5	Bell, Hyps, Mel.S, Pha, Temenid
	1	1	·	· · · · · · · · · · · · · · · · · · ·	1	1	<u> </u>	0	
				0[+1]			1[+1]] 0	
	3	1	2	1	1	3	1	0	
1	2		3	2	2			0	
	1			2	1	2	3	0	
1				1	2			0	
	1					3	2	0	
						I		0	
	1?	1	1		4	4	4	2	Hyps, Arch
1?	1				6	3	1	0	
2	2		5	5	9	8	11	3	Alex, Alkmene, Auge
					1			0	
	1					1	2	0	
		1	1		1			1	Arch
	1		[2?]					0	

Supplement to Table 4.2 (2nd-longum resolutions)

4.1aS,P,L, general note On the nature of the pyrrhic-shaped words in resolution, see p. 28 above. There are no instances of type 4.1a in Aeschylus or Sophocles, except S.Tr 1264 in a lyric context.

4.1aS $(\cup \cup \cup \cup (-)(\cup))$

Extant El 504, HF 935, Hel 392, Or 396, 483, 915, Ba 961.

4.1aP (uu!U)

Extant Pho 432, Or 471, 495. All ἐπί.

Fragments Hyps 60.28 $\delta i \dot{\alpha} \gamma \dot{\alpha} \rho$.

4.1aL $(\cup \cup ! - (-) (\cup))$

Extant An 225, 333, 389, Hek 1004, Tro 496, 1028, Hel 59, 1247, Or 490, 647, 889, Ba 830, 831, IA 647, 1148, 1219, 1237, 1449. Akin to **4.3cL**: IA 1219 $\tau \dot{a} \delta' \dot{v} \pi \dot{\rho} \gamma \eta \varsigma$.

Fragments Alk.K 67.5 ένι κίνδυνος.

4.1cS (uuu)

Extant Total 90 [+1], all styles.

Fragments Alk. K 73a.1, 73a.2, 80, Andr 134, Antig POxy 3317.5, ibid 7, ibid 8, Antiope 20.2, Erec 7.3, 10.19, Hyps 60.30, Mel.D 492.5, Mel.S 482, 487.

Akin to **4.3cS**: Ba 811 èν ὄρεσι, Alk.K 80 τὰ μεγάλα. Aeschylus, Pe 314(PN), Sep 268, 593, Cho 6, PV 715(PN), frr. 249, 313. Sophocles, Aj 30, Ant 419, OT 1379, and 16 times in El, Ph, OK, frr.

4.1cP (uuU)

Extant Total 56.

Fragments Alex 6.3(PN), Erec 18.87, Kresph 2B.15, Mel.D 492.2, Oid 96. Akin to 4.3cP: Or 1180 τὸ συνετόν, Ba 494 ὑ πλόκαμος.

> Akin to 4.5: El 410 ἀμφὶ ποταμόν, IA 1233 πρός σε Πέλοπος. Aeschylus none. Sophocles, OT 1428, Ph 1006, 1232, OK 54, 284, 493, 1357, 1545, fr. 698 δ θάνατος.

4.1cL (uu-)

Extant Total 210[+4].

Fragments Aiol 15.3, Antiope 9.1, 37.1, Arch 22.1, Auge 275.2, Erec 18.18, 18.80, Hyps 1.i.6, 1.iv.31, 20/21.7, 60.25, 64.101, 64.102(PN), Ino 415.4, Mel.D PBerol.9772.13, Mel.S Prolog. 14, Meleag 517, 518.5, 526.2, Oid 84.1(PN), Pha 222, Poly 641.3, Sthen Prolog. 7, Tel 102.4(PN), Temenid 732. Akin to 4.3cL (article or preposition precedes): An 1065, Ion 806, 1190, Hel. 1260, Pho 1098, Or 473, Ba 38, 468, 684, 742, 1334, IA 467, 468, 647, 976, Hyps 64.102, Mel.D PBerol.9772.13.

Akin to 4.5: $\pi\rho\delta\varsigma$ $\sigma\epsilon$ $\gamma\sigma\nu\dot{a}\tau\omega\nu$ in Med 324, Hip 607, Tro 1042, Pho 923, Hyps 60.25. Aeschylus, Pe 405, 475(PN), Ag 539?, fr. 199.1(PN). Sophocles, Aj 862, 1008(PN), OT 26, 775(PN), 1276, El 30, Ph 1015, 1420, OK 634. 4.1dS (uuu')

Extant Or 519, 1614.

Aeschylus and Sophocles none.

4.1dL (uu-')

Extant HF 240(PN), Tro 890(PN), Ion 449, IT 789, IA 506(?, PN).

Fragments Auge 265.2, Erec 14.31. Akin to 4.3d: Auge 265.2 τὸ δ' ἀδίκημ'.

Aeschylus and Sophocles none.

4.1eS (uuu ⊻ (u))

Extant *Hkld* 1005, *Hip* 78, *Hek* 416, 1159, *Hik* 676, and so on. Total 29. Aeschylus, *Pe* 463, 631. Sophocles, *Aj* 727, *Ant* 917.

4.1eL $(\cup \cup - \bigcup (\cup))$

Extant Hek 752, Hik 136(PN), El 332, 855, HF 10, 488, 716, and so on. Total 44 (34% PN).

Fragments Bell 286.7, Hyps 57.2(PN), Mel.S Prolog. 13(PN), Pha 248, Temenid 730(PN). Preposition precedes at IA 693.

Aeschylus, *Hik* 248. Sophocles, *OK* 1414.

4.2a (∪'∪'x)

Extant Ion 411 ă $\tau \epsilon \nu \tilde{\omega} \nu$, IT 768 ö $\tau \iota \tau \epsilon$, Or 439 ö $\tau \iota \kappa a \iota$, Ba 515 ö $\tau \iota \gamma \dot{a} \rho$. Aeschylus and Sophocles none.

4.2b $(\cup' \cup ' x^{(\cdot)} - \cup)$

Extant [Pho 1117 τὰ δὲ κρύπτοντα], IA [112 ἁ δὲ κέκευθε], 77 ὁ δὲ καθ' Ἑλλάδ'. Aeschylus Pe 814 τὰ δὲ μέλλουσι. Sophocles none.

4.2c (∪'∪x)

Extant Med 1347, Hkld 871, An 98, 571, Hek 10, 882, 1207, 1225, Hik 226, El 506, and so on. Total 47. All τον εμόν, or δ + noun/adj., or monosyllabic preposition + noun/adj., except Or 236 το δοκεΐν, Ba 1301 τί μέρος, 1338 σε δ' Άρης, IA 657 το θελεψ, 1419 δι' εμέ, Ion 365 δ λαθεΐν. (Pho 538 το γαρ ισόν is more akin to type 4.4.)

> Aeschylus, fr. 350.9 τὸν ἐμόν. Sophocles, OT 537 ἐν ἐμοί, OK 26 ὁ τόπος, Tr 4 τὸν Ἐμόν.

4.2d $(\cup ' \cup x - (\cup))$

Extant Tro 425 ev, Pho 840, Or 634, 1651 (all ev).

Aeschylus and Sophocles none.

4.3a (³00)

Extant Med 375, El 970, Ion 968, Ba 18, 261, 662, IA 932(?), 1222. Caesura is penthemimeral after the first three, hephthemimeral after the rest.

Aeschylus, Ag 1590+ $\delta \dot{\epsilon}$, Cho 1.

Sophocles, Ph 1235+ $\delta \eta$, 1314.

4.3b (³...')

Extant Ba 1302.

Aeschylus and Sophocles none.

4.3cS (3000)

Extant Ion 1325, IT 545, Hel 976, Or 251, 472, 546, 665, Ba 54, 664, 697, 1081, IA 502, 691, 1220, fr. 857N. Fragments Arch 2.5 ἐγένετο, Hyps 60.88 γενόμενα. See also under 4.1cS above.

Aeschylus none.

Sophocles, Ant 420, Tr 917.

4.3cP (3∪∪∪)

Extant HF 454, Ion 1005, Or 4, 246, 541, 594, 723, 1142, Ba 974, 1067, 1204, IA 1156. Akin to 4.5: Or 541 èς θυγατέρας. See also under 4.1cP above.

> Aeschylus none. Sophocles, *Ph* 1226, 1323.

4.3cL (300-)

Extant HF 93, 493, Tro 504, 704, Ion 1576, 1582, and so on. Total 44.

Fragments Alex 34.1 διαβολαί, Alkmene PHamb 119 col. 3.15 ἁλιτενεῖς, Auge 864 μεταβολάς. See also under 4.1aL and 4.1cL above.

Aeschylus fr. 223a5M (??, PN).

Sophocles, Tr 878[lyric?], OK 1295 (PN).

4.3d (300x')

Extant Or 294 àvak $a\lambda v\pi \tau$ '. See also under 4.1dL above.

Aeschylus and Sophocles none.

4.4 $(\underbrace{3}{00} \underbrace{1}{0}(x))$

Extant Ιοη 931 τώνα λόγον, Ba 940 παρὰ λόγον, IA 1164 ἐπὶ τρίσι, 1459 μετά γε σοῦ. Compare Pho 538 τὸ γὰρ ἰσόν.

Aeschylus and Sophocles none.

4.5 $(\frac{2}{2} + \frac{1}{2} + \frac{1}{2})$

Extant IT 1284, Hel 493, Or 597.

Fragments Arch 31.2 $\dot{\eta} \tau$ à $\xi v \nu \epsilon \sigma \dot{a}$. See also under 4.1 cP, 4.1 cL and 4.3 cP above.

Aeschylus none.

Sophocles fr. 143 ώς ναοφύλακες.

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4.6 (x - 000)

Extant [Alk 839?, PN], El 1260 (PN), Ion 999 (PN), [Hel 9?, PN; 1643?, PN]. Aeschylus and Sophocles none.

		Al	Ме	Hd	Нр	An	Hek	Hik	El	HF
6.1a	.6	2	1	1	2	10	11	10	21	22
6.1b	'	1	1			3		1	6	5
6.1c	000	14	18	15	21	38	37	42	33	36
6.1d	000'		[1]	1		4			2	1
6.1e	U		2	2	3		3	1	4	8
6.1f	000-	7	18	9	4	11	14	26	21	16
6.1g	000-'							1	1	5
6.1h	۰۰۰۰-x ^(۰) (۲	<u>ل)(</u>)(ال		2	1	1	3	4		4
6.2a	 ران					2		1	4	6
6.2b	utu'									
6.2c	U 100	1			1	2	3	2	1	3
6.2d	0100 1									1
6.2e	JJJJ									
6.2f	0100-			1						1
6.2h	u'uu-x(⊻))							[1?]	2
6.3 No	penth. caesura									

Table 4.3	Resolutions of the 3rd longum (element 6), by word-shape
	6 (···································

Unclassified

Tr	Ιο	IT	H1	Ph	Or	Ba	IA	Fragmen	ts
20	23	40	42	35[+6]	49	37	32	29	
6	5	3	3	3[+2]	3	1	1	12	
37	42	46	60	45[+8]	45	35	17	80	
2	3	1	6	1	7		8	3	Pha, Auge, Arch
1	3	1	9	7	9	4	5	7	Bell, Dan, Hyps (3), Meleag, Oid
18	28	27	44	25[+3]	43	19	20	33	
2		2	2	2	3		3	3	Pha, Oid, Hyps
1	6	2	5	5[+1]	4	8	9	3	Erec, Mel.D, Temenid
2	7	9	13	4	14	5	6	6	Aiol, Andr, Auge, Hyps, Meleag, Temenid
1			3			1		2	Hyps (2)
4	7	2	3	7[+2]	10	11	8	8	Andr(2), Antig, Arch(2), Meleag, Pal, Pha
		1			1			1	Meleag
		1		1	4		4	0	
1		2	2	1	1	4	1	1	Sthen
		1	1	3[+1]	3[+1]	2	2	1	Oid
	[1?]	1(?)	3		1	3	3	0	
								3	Hyps, Oid, Tel

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Supplement to Table 4.3 (3rd-longum resolutions)

6.1a (uu)

Analysis by word-types (see above, p. 28, and note the late appearance of adverbs and verbs):

Prepositions

Extant	Med 872, then An, and so on. Total 79 [+1].
Fragments	Alex 44, Alkmene PHamb, 119 col. 3. 19, Andr 124.2, Antiope 48.91, Auge 273.3,
	Bell 285.15, Hyps 60.17, 60.96, Ino 420.1, Oid 83.2, Phrix. 1 821.2, Pleis 626.6.
Aeschylus	13 instances.
Sophocles	16 instances.

-

Pronouns

Extant	Alk 137, then Hek, and so on. Total 59 [+1].
Fragments	Auge PKöln 264.
Aeschylus	Six instances.
Sophocles	Six instances.

Numerals

Extant	Alk 246, Hkld 327, An 698, and so on.	Total 25 [+1].
Fragments	Arch 31.2, Erec 10.18.	
Aeschylus	<i>Pe</i> 181, fr. 304.5.	
Sophocles	Ant 55, Ph 117, fr. 581.5.	

Adverbs (and conjunctions)

Extant	<i>El</i> 318, <i>HF</i> 1417, <i>Tro</i> 875, and so on. Total 48 [+1].
Fragments	Alex 6.2, 43.44, Mel.D PBerol. 5514.3, Pha 166.
Aeschylus	None.
Sophocles	None.

Adjectives

Extant	An 47, 592, El 940, 1084, and so on. Total 28 [+1].
Fragments	Andr 140.1, Hyps 60.21, Ixion 425.1.
Aeschylus	Pe 782.
Sophocles	<i>OK</i> 305.

Nouns

Extant	Hip 476, 1048, An 455, 921, and so on. Total 109 [+1].
Fragments	Andr 124.3, Arch 1.8, 13, Auge 276.1, Meleag 530.7, Oid 94, Pha 256.
Aeschylus	<i>Hik</i> 516, fr. 175.3.
Sophocles	<i>Aj</i> 343, 443, <i>Ph</i> 1347, fr. 284.2.

Verbs

Extant	El 817 λαβέ, Ion 984 φέρε, 1348 λέγε, Hel 1043 φέρε, Ba 841 μεν, 1106 φέρε, Or 313 μένε, 702 ένι.
Fragments	None.
Aeschylus	None.

Sophocles None.

Exclamation

Sophocles Ph 759 iù iú.

6.1b (uu')

Extant 42 [+2].

Fragments Alex 32.1, Antiope 48.83, Auge 275.4, Dikt 336.1, Erec 10.28, 18.93, Hyps 60.5, 64.95. Meleag 515.2, Oid 100.1, Peliad 606, Tel 102.16.

Aeschylus ten.

Sophocles six.

6.1c (uuu)

Extant 581 [+8].

Fragments Aiol 16.1, 16.3, 30, Alex 27.2, Alk.K 73a2, 80, Alkmene 89.1, Andr 126, 136.7, Antig 167.1, 170, 176.3, Antiope 1.3, 9.5, 19.2, 24.1, 38.1, 48.80, 48.82, 48.85, 48.86, 48.112, 48.114, Arch 2.13, 2.14, 7.2, 17.1, 22.1, 29.1, Auge 275.3, Bell 285.8, 289.1, Danae 322.4, Dikt 340.3, Erec 6, 10.11, 10.15, 10.21, 10.33, 10.34, 11, 18.83, Hip 1 N3, Hyps 1.iv.26, 1.iv.30, 1.iv.40, 1.v.21, 18, 60.25, 60.31, 64.75, Ino 421, Kresph 2B.4, 468, Mel. D PBerol, 9772.9, PBerol, 5514.11, ibid 34, 492.4, 493.5, Meleag 530.2, 530.3, 531, 537.2, Pha 1, 168, 251, 257, 259, Phoinix 816.4, Phrix. 2 819.5, Plei 625, Poly 636.2, 641.3, 642.3, 645.2, Tel 102.9, 102.13, 106, 113.1, Temenid 728.1.

Aeschylus 104.

Sophocles 143.

6.1d (uuu')

Extant 36.

Fragments Auge 265, Arch 2.9, Pha 226.

Aeschylus, PV 735(PN).

Sophocles, OT 1285, 1289, Ph 777.

6.1e (uuu∪)

Extant 62.

Fragments Bell 301.2, Danae 328.4, Hyps 63.2, 63.4, 64.101, Meleag 516.1, Oid 83.117.

Aeschylus 12.

Sophocles 12.

6.1f (uuu-)

Extant 340 [+3].

Fragments Aiol 38, Alex 18.8, Alk.K 73a.1, Antig POxy. 3317.6, Antiope 8.2, 9.3, 19.4, 48.9, 48.35, Arch 2.6, 9, Bell 301.3, 305.1, Danae 317.2, Erec 10.9, 10.23, 18.86, 18.88, 18.97, Hip. 1 G, Hyps 1.i.6, Kressai 460.1, Mel.D PBerol.9772.26, PBerol.5514.29, 502.6, Mel.S Prolog. 10, Meleag 530.5, Oid 92, 97.2, Pha 173, Phrix.2 819.7, Sthen 667, Tel 111.2.

Aeschylus 55.

Sophocles 33.

6.1g (uuu-')

Extant 21 (earliest Hik 678).

Fragments Hyps 32, Oid 83.3, Pha 162.

Aeschylus, Ag 1264, fr. 269M.

Sophocles, Aj 6, OT 1254.

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6.1h $(-) - x^{(-)} (-) (-)$

Extant 55 [+1].

Fragments Erec 18.91, Mel.D PBerol, 9772.29, Temenid 739.4.

Aeschylus eleven.

Sophocles seven.

6.2a (u'u)

Extant An 395, 902, Hik 234, and so on. Total 73. Second word only $\mu \dot{\epsilon} v$, $\delta \dot{\epsilon}$ or $\tau \epsilon$ in An/Hik/El.

Fragments Aiol 35.1 τὸ δέ, Andr 141.3 ὅ σε, Auge 276.1 τὰ μέν, Hyps 1.i.10 τὸ δέ, Meleag 534 τὸ δέ, Temenid 736.4 τὸ γάρ.

> Aeschylus, Eu 446 $\tau \dot{o} \sigma \dot{o} \nu$, fr. 359 $\sigma \dot{v} \mu \epsilon$. Sophocles, Tr 292 $\tau \dot{a} \delta \dot{\epsilon}$ and 11 or 12 instances in OT, El, Ph, OK.

6.2b (∪'∪')

Extant Tro 424, Hel 1102, Ba 214: all τί ποτ'. Hel 52, 609: both δι' ἕμ'.

Fragments Hyps 1.i.9 $\tau i \pi \sigma \tau'$, 60.10 $\delta \nu \epsilon \pi'$.

Aeschylus and Sophocles none.

6.2c (u'uu)

- Extant Alk 802, Hip 420, and so on. Total 65[+2]. 46 of these are article plus noun or adjective, including all the ten instances in Alk/Hip/An/Hek/Hik/El. Or 632 $\pi\delta\delta$ ' $\epsilon\pi\iota$ is unique in starting with a lexical word.
- Fragments Andr 136.2, Antig 168.1, Arch 10, 31.10, Pal 538.2: all article plus noun or adjective. Andr 154 το κατά, Meleag 533.1 ο δ' ὑπό, Pha 165 τί ποτε.

Aeschylus, Sep 1029, Ag 600, 1584 τὸν ἐμόν, Eu 586 πρὸς ἔπος.

Sophocles, Aj 585, Tr 412 τί ποτε; OT 568, 936, Ph 767, fr. 918, all art. + noun/adj.

6.2d (u'uu')

Extant HF 338, IT 556, Or 390.

Fragments Meleag 526.2 $\tau \dot{o} \delta' \ddot{o} \nu o \mu'$.

Aeschylus and Sophocles none.

6.2e (u'uu∪)

Extant IT 1037, Pho 390, Or 486, 568, 1126, 1617, IA 501, 815, 982, 1415. Aeschylus and Sophocles none.

6.2f (u'uu-)

Extant Hkld 254, HF 106, Tro 1168, IT 334, 601, Hel 826, 1598, Pho 534, Or 1057, Ba 471, 816, 1061, 1280, IA 1237.

Fragments Sthen Prolog. 24 $\dot{\epsilon}\pi$ ' $\dot{a}\rho\epsilon\tau\dot{\eta}\nu$.

Aeschylus, Cho 569, Eu 232 $\tau \delta \nu$ iké $\tau \eta \nu$.

Sophocles, OT 1382, 1391, 1441 and nine instances in Ph, OK.

6.2h (\cup ' \cup \cup - x ($\stackrel{\bigcup}{=}$)

Extant [*El* 353], *HF* 838 (PN), 1231, *IT* 416 (PN), *Hel* 293, *Pho* 408, 544, 1215, [1312], [*Or* 82 (PN)], 266, 1038(PN), 1146(PN), *Ba* 675, 1322, *IA* 621 (PN), 624.

Fragments Oid 96 τὸ δ' ἐπικρύπτεσθαι.

Aeschylus none.

Sophocles, OT 422, Ph 501, 1029.

6.3 No penthemimeral caesura

Extant [Ion 60?], IT 385?, Hel 753, 767, 1016, Or 444, Ba 54, 278, 1342, IA 630, 846, 1563. Compare very weak penthemimeral caesura (resolved element 6 preceded by article, preposition, ώ or καί) at El 886, HF 63, 95, Tro 1169, Ion 828, IT 670, Hel 267, Or 439, 694, 889, Ba 45, IA 713, 931.

Aeschylus, Eu 485.

Sophocles, Aj 340 (PN), OT 301, El 1361, Ph 241(PN), OK 1316 (PN).

6 Unclassified (lacunose texts)

Fragments Hyps 1.v.18, Oid 83.4, Tel 147.33.

		Al	Ме	Hd	Нр	An	Hek	Hik	El	HF
8.12S 8.12L 8.12P	^{&} い(ビ)(ぃ(ビ) ぃぃ-(ビ)(ぃ)(ビ) ぃぃ'∪					1 1		[1]	1	4
8.1bS	$\mathcal{U}^{\prime}\mathcal{U}^{(\mathcal{U})}(\mathcal{U})(\mathcal{U})$			1						
8.1bL							1			_
8.1cS		1	1		1				1	1
8.1eS		1	5				4		3	5
8.1eL	U	1	1				5		0	1
8.1 fS	000-		7	7	2	7	8	7	3	6
8.1fL		1		1	1	1	3	6	5	3
8.1gS	$\left\{\begin{smallmatrix} v \circ v - v \\ v \circ v - v (\underline{\nabla}) \end{smallmatrix}\right\}$		2	1		1	2		1	2
8.1gL	$\left\{ \begin{matrix} v v v v v v v v$									
8.2aS 8.2aL	, ,,,,,(₍₎) ,,,,,(₍₎) ,,,,,(),() ,,,,,(),() ,,,,,(),(),(),(),(),(),(),(),(),(),(),()					1			1	_
8.2bS 8.2c 8.2dS	∪'∪∪ ∪'∪x ⊻ ∪'∪∪- ∪ ⊻	1							2 2	
8 39	7									_
8.3b	x(⊻)		1							
8.4 a	<u>6</u> 000						2		2	1[+1]
8.4b	- 0000									
10.1 10.2 10.3	 10 <u>リ</u> いいい いいい いいい	1				1	1		1	3
10.4	8(') uuu (Aeschyl	us and S	Sophocles	only.)						

Table 4.4 Resolutions of the 4th and 5th longa (elements 8 and 10), by word-shape

Tr	ю	IT	HI	Ph	Or	Ba	IA	Fragr	nents
3	1[+]] 2	1	3	6	4	5	2	Erec, Poly
	1	1	1		1	2	7	0	
							1	0	
	2		2	1			1	0	
								0	
	3		2[+1]	2[+1]	1	5	1	1	Mel.D.
				0[+1]				0	
1	4	1	1	3	3	5	1	6	Aig, Antiope, Arch, Hyps, Plei, Sthen
		1	1	4[+2]	8	3	4	2	Erec, Pha
5	6	8	17	9[+2]	16	10	5	12	
4	4	11	15	34[+8]	13	16	13	7	Erec, Hyps (2), Kresph (2), Meleag (2)
2	4	4	6	4	5	2	3	3	Hyps, Antiope, Poly
			4		1	4		0	
	1		3	0[+1]	2	1		0	
			1			1	1	0	
								1	Tel
1			1	1[+1]		2	2	1	Alk.K.
		1		1	4			0	
		1			3	2		0	
		1				1	1	0	
	1	1?	1	1	1	2	2	1	Alex
	1							0	
		· · · · · · · · · · · · · · · · · · ·							
2	3	2	8	3	2	6	[1]	2	Erec, Hyps
						1	2	1	Arch
							1	0	

Supplement to Table 4.4 (4th and 5th longum resolutions)

8.1aS, L, P, general note: On the nature of the pyrrhic-shaped words in resolution see p. 28 above.

8.1aS $(\cup \cup \cup (\cup) (\cup) (\cup) (\cup))$

Extant An 555, El 361, and so on. Total 31.

Fragments Erec 10.36 δύο, Poly 641.3 διά.

Aeschylus, Se 534, Ag 1265, PV 273, frr. 99.4, 180.3 – all $\delta \iota \dot{a}$ or $\pi \epsilon \rho \iota \dot{c}$. Fr. 216 $\dot{\iota} \sigma \rho v$? Sophocles, Aj 685, 822, Ant 1060, El 671, frr. 565, 799 – all $\delta \iota \dot{a}$ or $\pi \epsilon \rho \iota \dot{c}$ or $\pi a \rho \dot{a}$.

8.1aL
$$(\neg \neg' - (\stackrel{\bigcup}{}) (\neg) (\stackrel{\bigcup}{}))$$

Extant An 1105, Ion 825, IT 260, Hel 138, Or 896, Ba 59, 649, IA 500, 641, 689, 811, 821, 1185, 1452. Aeschylus, Se 650 τώα. Sophocles none.

8.1aP (uu 'U)

ΙΑ 1273 ὄσον ἐν σοί, τέκνον.

Aeschylus and Sophocles none.

8.1bS $(\neg \neg (\stackrel{\smile}{\rightarrow}) (\neg) (\stackrel{\smile}{\rightarrow}))$

Extant Hkld 162, Ion 733, 1594, Hel 490, 613, Pho 553, IA 962.

Aeschylus and Sophocles none.

8.1bL (vv'--v)

Extant Hek 435.

Aeschylus and Sophocles none.

8.1cS (000)

Extant Alk 50, Med 597, Hip 1206, and so on. Total 19[+2].

Fragments Mel.D 491.1.

Akin to 8.4b: Hel 1234 ἀντὶ χάριτος. Aeschylus, Cho 889, Eu 703(PN), PV 809. Sophocles, El 1467, Ph 485, fr. 284.1.

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8.1dS (uuu')
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Extant [Pho 1316].
```

Aeschylus and Sophocles none.

8.1eS (0000)

Extant Alk 655, and so on. Total 37.

Fragments Aig 4.1, Antiope 48.40, Arch 2.8(PN), Hyps 1.iv.21(PN), Plei 625, Sthen Prolog. 15. Akin to 8.3b: Euripides, Ba 671 το βασιλικόν.

Aeschylus 12 instances.

Sophocles nine instances.

8.1eL (uu-∪)

Extant Med 960, Hek 428 (PN), 553 (PN), 784 (PN), 895 (PN), 1267 (PN), HF 1370, IT 30, and so on. Total 28[+2].

Fragments Erec 12, Pha 260 (PN).

Aeschylus, Pe 284 (PN), 447 (PN).

Sophocles, Aj 569 (PN), Ant 902 (PN), Tr 9 (PN), 743.

8.1fS (uuu-)

Extant 123[+2].

Fragments Antig 163.1, POxy 3317.13, Antiope 48.89, Arch 1.1, 29.5, Auge 265.1, Erec 18.83, Hyps 1.iv.18, 60.6, Meleag 515.1 (PN), Pal 585.2, Poly 645.3.

Aeschylus 13 instances.

Sophocles 26 instances.

8.1gS (vvv-' or vvv-v(-))

Extant Med 572, 796, Hkld 1034, and so on. Total 39.

Fragments Hyps 60.46, Antiope 48.62, Poly 645.5. Akin to 8.3b: Hyps 60.46 τὰ διαφέρονθ'.

Aeschylus, Eu 869, Ag 19, Pe 260.

Sophocles, Tr 784, El 693, 715, 962, OK 260, frr. 472, 911.

- 8.1fL (uu--)
- Extant Alk 483(PN), Hkld 70(?), Hip 339(PN), An 167 (PN), Hek 276, 1114(PN), 771, Hik (6xPN), and so on. Total 131[+8] (ca. 50% PN).
- Fragments Erec 18.76(PN?), Hyps 1.iv.40(PN), 753N(PN), Kresph 2B.4(PN), 2B.8(PN), Meleag 530.4(PN), 537.2(PN).

Aeschylus 8xPN, *Hik* 334, *Eu* 450?, fr. 314? Sophocles 13xPN, *Ant* 1209, *Ph* 932.

8.1gL (--) or ---(-)

Extant Hel 825, 907, 981, 1010, Ba 508, 726, 930, 934, Or 527.

Aeschylus and Sophocles none.

8.2aS $(\cup'\cup'\cup(\bigcup))$

Extant An 75, El 355, Ion 1132, Hel 491, 822, 923, [Pho 1015], Or 81, 305, Ba 1137.

Aeschylus, Se 547.

Sophocles, Ant 1108, OK 985.

8.2aL $(\cup ' \cup ' - (\stackrel{\smile}{\smile}) (\cup) (\stackrel{\smile}{\smile}))$

Extant Hel 87, Ba 809, IA 1141.

Aeschylus and Sophocles none.

8.2bS (u'uu)

Extant Alk $3 \tau \partial v \dot{\epsilon} \mu \partial v$.

Fragments Tel 106 $\tau i \pi o \tau \epsilon$.

Aeschylus none.

Sophocles, Aj 530, OT 967 τον ἐμόν.

8.2c (u!ux ⊻)

Extant El 335, 1123, Tro 1128(PN), Hel 1559(PN), Pho 471, [1647], Ba 475, 278(PN), IA 663(PN), 1177. Fragments Alk.K 67.5 δ δ' αθώος.

Aeschylus and Sophocles none.

8.2dS (∪'∪∪-∪⊻)

Extant El 4, 571, IT 1487, Pho 124, Or 371, 463, 720, 923. All accommodate 'Aγaμέμνονος except Pho 124 τίς ονομάζεται, which is in a lyric context.

Aeschylus and Sophocles none.

8.3a (200)

Extant Med 505, IT 566, Or 244, 487, 671, Ba 731, 1147. Monosyllable or (at IT 566) pyrrhic-shaped disyllable necessarily precedes, to allow penthemimeral caesura.

Aeschylus, Pe 332.

Sophocles, OT 826, fr. 12.

8.3b $(\sqrt[7]{2} \cup x (\stackrel{\bigcirc}{2}))$

Extant IT 1371, Ba 1275, IA 523. Monosyllable precedes all. See also under 8.1eS and 8.1gS above. Aeschylus and Sophocles none.

8.4a $(\frac{6}{2}, 0, 0, 0)$

- Extant ~ 727(PN), 1240, El 13(PN), 806(PN), HF [460?], 543, Ion 607, IT 986?, Hel 1404, Pho 79, Or 60, Ba 674, 1064, IA 49(PN), 1270.
- Fragments Alex 23.11 (PN).

Aeschylus, Pe 491, Se 1022, Eu 107.

Sophocles, Ph 4(PN), OK 42(PN), 486(PN), fr. 432.4 + $\tau\epsilon$.

8.4b (⁶)

Extant Ion 54. See also under 8.1cS above.

Aeschylus and Sophocles none, but compare S. fr. 432.4 obpavia $\tau\epsilon$.

10.1 (↓↓↓)

Extant Alk 526, An 444, Hek 1281, El 616, and so on. Total 33 (PN only at Tro 996, Hel 123, IT 985). Preceding caesura is weak at Tro 996 and IT 985 (both τά).

Fragments Erec 18.85 πολυπόνου. Hyps 1.iv.36 Δαναίδων.

Aeschylus, Pe 447 (δ+), Pe 492 (ĕς τε+), PV 52, Eum 40. Sophocles, Ph 1302, 1327 (τόν+), fr. 255.

10.2 $(\cup \cup \cup \cup ()) -)$

Extant Ba 1260 διὰ τέλους, IA 1247 δύο $\varphi(\lambda\omega)$, 1414 διὰ μάχης.

Fragments Arch 14.1 $\dot{\epsilon}\mu\dot{\epsilon}\delta'\dot{a}\rho'o\dot{v}$.

Aeschylus, Pe 501 διὰ πόρον, see also Sophocles, OT 967 $\delta \delta \hat{\epsilon} \theta a \nu \hat{\omega} \nu$.

10.3 (" " " " -)

Extant IA 844 τὰ παρὰ σοῦ.

Aeschylus and Sophocles none.

10.4 (- ^{(1) 9})

Euripides none. Aeschylus, *Hik* 388, *Eu* 480, 797. Sophocles, *Aj* 459, *Ant* 418, *OT* 719, 1496, *El* 326.

		Al	Ме	Hd	Нр	An	Hek	Hik	El	HF
1.1a	JUU PN	2								
	Other	1				1		2	3	3
1.1b	oo- PN	1	3	1	1	6	18	1	10	4
	Other	6	2	8		5	5	14	7	10
1.1c	{vu -' }PN			6		11	17	4	12	
	(er	1		2	2	5	2	8	9
1.2a										
1. 2 Ь	UUI – U	1							1	1
1.3	J1J <u></u> –									
3	All types, PN							1		1
5	All types, PN					1			1	1
7	All types, PN				1	3		3	1	2
9	All types, PN				1	5			1	

Table 4.5 "Resolutions" of elements 1 (by word-shape), 3, 5, 7 and 9

Tr	Іо	IT	H1	Ph	Or	Ba	IA	Fra	gments
	1	3				1		3	Alex, Erec, Meleag
2	2	1	5	3	8	5	4	5	Antig, Arch, Erec (2), Hyps
11	1	14	21	8	27	7	7	12	
10	11	16	14	7	21	13	9	24	
6		12	14	10[+3]	21	14	10	14	
0		12	14	10[+2]	21	14	10	14	
6	14	8	9	7	20	8	13	17	
			1		1	1		1	Antiope
			1	1	1	1		0	
						1	2	0	
	3	1	1		2		1	2	Antiope, Hyps
		3		3	3		2	0	
2[+	-1] 1	5	4	8[+2]	11	11	4	4	Hyps, Arch (3)
		3		7	3	2[+1]	2	3	Hyps (2), Mel.S. (?)

Supplement to Table 4.5 ("resolutions" in elements 1, 3, 5, 7, 9)

1.1a (uuU)

Extant PN 7; other 40.

Fragments, PN: Alex 18.13, Erec 18.107, Meleag 530.4.

Fragments, other: Antig 176.1, Arch 2.22, Erec 10.25, 18.87, Hyps 1.i.9.

Aeschylus 2 + 3 PN.

Sophocles 5+1 PN.

1.1b (uu-)

Extant PN 141; other 158.

Fragments, PN: Alex 13, 43.37, Alkmene PHamb. 119 col. 3.14, ibid 18, Arch 1.8, 2.8, 2.9, Auge PKöln 264, Hyps 60.108, Kresph 12.2, Meleag 515.1, 530.1.

Fragments, other: Alex 36.3, Andr 149, Arch 2.10, 5.2, 18, Auge 265.1, Bell 285.5, 285.13, Erec 10.45, 14.11, 21, Hyps 27.5, 60.56, 60.62, 60.103, Kressai 467.5, Mel.S Prolog. 10, Oid 86.1, 86.4, Peleus 621.2, Poly 640.2, 641.3, Temenid 734.1.

1.1a or 1.1b: *Pha* 145 – if not 2.1aT or 2.1cT.

Aeschylus 22+13PN Sophocles 27+14PN.

1.1c (-) (-) (x)

Extant PN 145[+2]; other 114.

Fragments, PN: Antig 177.2, Erec 18.74, Hyps 752N, PHamb. 118b col. 2.8, 1.v.9, 60.34, Ino 399.2, Ixion 424, Meleag 517, 530.3, Oineus 558.2, Pal 580.1, Tel 113.1, 147.46.

Fragments, other: Antig 162.2, 176.4, Antiope 20.4, Erec 10.49, 12.1, 14.22, 18.78, 18.79, Hyps 64.65, Mel.D 492.4, 502.6, Meleag 518.5, Oid 83.9, Phil 792, Poly 636, 644.3, Temenid 736.6.

Aeschylus 15+14PN. Sophocles 17+18PN.

1.2a (uu'^U)

Extant Hel 1234 ἐπί τῷ, Or 1336 περί τοῦ, Ba 334 παρά σοι.

Fragments Antiope 48.109 ite vov.

Aeschylus and Sophocles none.

1.2b (uu'-u)

Extant Alk 375, El 1030, Hel 838, Pho 1240, all επί τοισδε, HF 940 επί τοισι, Or 898 επί τῷδε, Ba 1247 επί δαίτα.

Aeschylus none.

Sophocles fr. 388?

1.3 (,',',')

Extant Ba 502, IA 646, both παρ' εμοί, IA 1199 εν ίσω.

Aeschylus none.

Sophocles, Ph 795 tov ioov.

59

Element 3 (all PN)

Extant Ten.

Fragments Antiope 48.19, Hyps PHamb 118(b) col. 2.9.

Aeschylus and Sophocles none.

Element 5 (all PN)

Extant 14.

Aeschylus none.

Sophocles four instances.

Element 7 (all PN)

Extant 56[+3].

Fragments Hyps 63.6, Arch 2.11, 2.16, 2.17. (The last two are both 'Hρaκλέους, which might be scanned - - - by synizesis.)

Aeschylus none.

Sophocles seven instances.

Element 9 (all PN)

Extant 24[+1].

Fragments Hyps 1.iv.42, 60.25, Mel.S Prolog. 19. (The last, Κωρύκιόν τ' ὄρος, is sometimes emended, for instance, by the deletion of τ'.)

Aeschylus two instances.

Sophocles seven instances.

Excursus 1. Euripides' introduction of rarer resolution-types

The classification used in this qualitative analysis could no doubt be modified by the splitting of more or fewer hairs, but it serves as well as any to illustrate the fact that Euripides' versification in trimeters shows not merely a proliferation of resolutions over time but also a diversification in the types of resolution he used. According to this classification, *Alk, Med, Hkld* and *Hip* each contain 18 or 19 different resolution-types, and in these four plays taken together there are only 24 types. At the other end of the scale, *Orestes* alone contains 72 types, and *Or, Ba* and *IA* taken together contain 95 types. Proliferation of numbers and proliferation of types are to some extent interrelated, but it seems safe to say that the proliferation of types was not caused solely by the proliferation of numbers, but was also the result of Euripides' willingness to adapt the rhythm of the trimeter to accommodate an increasing variety of effects. There is therefore some independent significance, and some support for the inferences made purely from resolution-frequency, in the fact that counting by resolution-types results in a grouping of the extant plays very similar to the grouping which results from counting the gross number of resolutions (or their percentile rates). The groups are as follows:

- 1. Alk 18, Med 18, Hkld 19, Hip 18.
- 2. An 32, Hek 29, Hik 27.
- 3. El 40, Tro 38.
- 4. HF 48, Ion 53, IT 52.
- 5. Hel 60, Pho 55 [+ 4].
- 6. Or 72, Ba 70, IA 70.

For comparison, there are 48 types found in all the surviving plays and fragments of Aeschylus (each surviving play having from 12 to 21 types), and 48 in the surviving plays of Sophocles other than *Philoktetes* and *OK* (with individual plays ranging from 18 in El to 28 in OT).

Pursuing this analysis, Table 4.6 is designed to trace the introduction of new types in the apparent phases of Euripides' development. It omits those types which can safely be described as "regular" in tragedy – that is, all of types 1.1, 2.1T, 4.1c, 6.1, 8.1c-gS, 10.1, 5, 7 and 9 – although, of course, some of these are much more numerous than others and not all occur in every play. It also omits a few types (2.1eT, 2.3aT, 10.4) which are found in Aeschylus or Sophocles but not in Euripides. What remain are the less usual Euripidean types, ordered according to their first appearance in Euripides, although the order in which *El, Tro, HF, Ion* and *IT* are listed is hypothetical and requires further comment below.

Table 4.6 suggests a number of observations:

1, Most of the types listed as occurring first in the "Severe" or "Semi-Severe" plays of Euripides (columns E.1, E.2) do have some parallel in Aeschylus and/or early Sophocles, while those which do not tend to be very rare anywhere in Euripides. On the other hand, most of the types occurring first after the "Semi-Severe" group are not so parallelled in Aeschylus or Sophocles.

2. The table does support the impression of a development from Hel/Pho to Or/Ba/IA given by the totals of resolution-types for these plays (Hel 60, Pho 55 [+ 4], Or 72, Ba 70, IA 70), since the last group contains 11 "new" types – that is, types not previously found in Euripides.

3. On the other hand, the distribution among *El, Tro, HF, Ion, IT, Hel* and *Pho* of the "new" types listed for these plays is much more patchy. For example, of the five "new" types under *El*, only one or two appear in each of *Tro, HF, Ion* and *IT*; and of six "new" types in *Ion*, only two occur in *IT*, two in *Hel* and one in *Pho*. If the numbers of "new" types in these plays are counted, the results give a slightly different impression from the gross numbers of resolution-types, which themselves give a slightly different impression from the overall resolution-rates of the plays:

	(1)	(2)	(3)	(4)			
	Resolutions per 1 000 lines	Total of resolution-types	Total of "post-semi-severe" resolution-types	Total instances of "post-semi- severe" resolution-types			
El	215	40	4[+1?]	6[+1?]	(6.28 per 1000 lines)		
Tro	268	38	5	6	(7.56)		
HF	232	48	8	10	(10.21)		
Ion	279	53[+1]	13[+1]	19[+1]	(18.50)		
IT	293	52	12	13	(12.10)		
Hel	355	60[+1]	16[+1]	29[+2]	(23.05)		
Pho	348	55[+4]	12[+2]	20[+18]	(19.49)		

Thus the three (partly interrelated) criteria agree in placing the group El/Tro/HF before the other four. But within that group there is some confusion in the ordering. We might surmise that the resolution-rate of HF is low for its year, because it has a very low proportion of proper-name resolutions (7 per cent, compared with 20.5 per cent for Tro and 21.0 per cent for El), and that the actual numbers for Tro in columns (2) and (3) would be higher but for the unusually small amount of trimeter-material in Tro (785 trimeters, compared with 954 in El and 992 in HF). This would tend to strengthen the case for the priority of El, but would leave HF and Tro very evenly matched.

As for the other four plays, the priority of *Ion* and *IT* to *Hel* and *Pho* is supported at least by columns (1) and (2). The relationship of *Ion* and *IT* is not so clear (the overall resolution-rate of *Ion* may be a little depressed by its very low proportion -6.9 per cent - of proper-name resolutions), but if both belong between 415 and 412 a precise ordering can hardly be expected from the resolution-data.

A = Aes Hkld, H	chylus (all); S.1 = Sophocles ip; E.2 = E. An, Hek, Hik;	s, Ajax, Ant, Trach, (El = E. Elektra	<i>O.T., El</i> ; E.1 =	= Euripides Alk, 2	Telephos, Med, Ph	niloktetes,
Rare in	E.1	Α	S.1	E.1	E.2	El
1.2b	<u>, , , , , , , , , , , , , , , , , , , </u>			1		1
2.1aD	<u>1</u>	1 P(+ 1?)	1 P	1	1, 1P	5
2.1bD	<u>1</u> '	1 P		1P		
2.1cT		1P	2	1	2[+2?]	
2.1cD	<u>1</u> 000	4P	2P	1, 11P	3, 4P	3
2.2aD	<u>1</u> ,00	2(+1?)		1		1
4.1eS	5 ∪(.)	2	2, 1P	2	3	
4. 2c P	J' JS		1	2	4	
4. 3a	300	2		1		1
6.2c	515	4	4	2	7	1
6.2f	J'JJ_	2	3	1		
8.16S	··· [·] ⁹ ([⊔]) (·) ([⊔])			1	1	
8.1eL	<u></u> 20	2P	1,3P	1	5P	
8.1fL	<u></u> 2 -	1(+2?), 8P	1, 9P	3P	2, 8P	2, 3P
8.2bS	J' J2		2	2		
8.3a	7	1	1	1		
Not in E			3		1	
2.2cD	<u>1</u>	1. 1P	5. 1P		7. 2P	2
2.3bT	ปีเป็น	-,	0, 11		1	-
4.1aL	$u_{1} \stackrel{5}{=} (\stackrel{\bigcup}{=}) (u_{1})$				4	
4.1eL	$\frac{5}{2} \underline{\nabla}(\omega)$	1			1. 1P	2
4.2cS	u 105	1			1	-
4.2cL	010 <u>5</u>	-	1		2	-
6.2a	 Ulu	2	- 4(+1?)		3	4
8.1aS	19 (L) (J) (L)	4 (+1?)	4		1	1
8.1aL	$12(\underline{\nu})(\underline{\nu})(\underline{\nu})$	2			1	
8.1bL					1	
8.2aS	υ'υ' ⁸ (Ψ) (υ)(Ψ)	1	1		1	1
8.4a	<u>6</u> 000	3			1, 1 P	2 P
3					1P	
Not in E	E.1 or E.2		[1]			1
4.145	$\frac{2}{x}$		[-]	[107]		1 1 P
6.2h	x = 000		1	[11.]		[1]
8.20			•			2
8.245	<u>, , , , , , , , , , , , , , , , , , , </u>					2 2 P
4.1dT	<u> </u>					~1
4.2d	ູ່ ບາບ 5 - (ພ					
4.3cL			1			
			-			

Table 4.6 Introduction of rarer resolution-types in Euripides: approximate chronological ordering

Tro	HF	Ion	IT	E.3	E.4	S.2	S.frr
	1			2	2		1?
3	4, 2P	2, 3P	8, 4P	16[+3],4P	24, 5P	1	1 P
				1[+1]	5,1P	1	
3	1			8	15	1	1
2, 3P	2	1	4, 3P	12, 3P	8, 15P	3, 1P	
4	5	1	3	9[+1]	34	1	
1	1	3	1	6	12		
1	1	2		5	2		
		1			5	2	
5	3	7	2	12[+2]	31	1	1
1	1		2	3	6	9	
		2		3	1		
	1	1		3, 2P[+2]	14, 1P		
4P	3	3, 1P	8, 3P	23[+3] ,29[+5] P	23, 18 P	1, 4P	
			1		5		1
		4	2		5	2	
7	2	10	5	18. 2P	18. 3P	-	
	-	10	·	1		1	
2				2	11	-	
	3	5	2. 1P	2. 6P	18. 4P	1	
	5	3	1	3	5	1	
		1		2	6		
2	6	7	9	19	25	7	
3	4	1	2	4	15		2
		1	1	1	10		
		1		3[+1]	3	1	
1	1	1	12	2	4. 1P	3P	1
	1 P	3P	1P	2P	3P		
	1	1 P		1 [2P?]	4		
	1, 1P		1P	4[+1]	4, 4 P	2	
1P				1[+1], 1P	3, 2P		
			1 P	1	4P		
1 P	1 P	1	1		1 P ?		
1				1	2		
2	2	2		8, 2P	26, 2P	1 P	

Tro = E. Tro, Alexandros, Palamedes; E.3 = E. Hel, Pho, Andromeda, Hypsipyle; E.4 = E. Or, Ba, IA, Archelaos; S.2 = Sophocles, Philoktetes, O.K.

Not in E	.1 or E.2 (cont.)	Α	S.1	E.1	E.2	El
6.2b	ں اں ' م					
2.2cT			1			
2. 2e D	_ 1 ₀₀ 3 <u>0</u>	1				
4.3cP	300U					
6.2d	0107					
2.2fD	-1003 - x					
2.3bD	_1J1J3					
2. 3a	$\underline{1}$		1			
4. 2a	U101X					
4.4	0015 x					
8.4b	<u>6</u> 0000					
2.2bD	<u>1</u> ''					
4.3cS	3000		2			
4.5	$\frac{2}{2}$ 000x					
6.2e	J.70		1			
6.3	No penth. caesura	1	2, 1P			
8.3b	ζ _{υυχ (} Υ)					
A., E.3,	E.4 only					
1.2a	2					
2.1dT	0003-	1 [+2?]			[20 9 1	
2.2bT	1100'	×[·=·]			[21:]	
2.4	$\frac{1}{2}$					
4.1aP						
8.1gL	$\frac{9}{(1)}$					
8.2a L	$\frac{1}{2}$ $\frac{2}{2}$ $\frac{2}{2}$ $\frac{2}{2}$ $\frac{2}{2}$ $\frac{2}{2}$ $\frac{2}{2}$ $\frac{2}{2}$					
8.1dS						
A., S., F	4 only					
<i></i> , <i></i> , <i>.</i>						
4. 2b	טוטו _X (י) <u>6</u> ט	1				
2.1dD		1 P				
2.2dD	-'					
2.2eT	J1JJ3⊻					
2.2fT	$0^{1}00^{3} - x$					
2.3c	$x^{1} \cup 1 \cup \frac{3}{2} - (x)$					
4.1dS	JJ5 '					
4.3d	300x'					
10.2	'(`)⊻	1	1			
10.3	uuui⊻					
1.3	<u>ل ب گ</u>					
8.1aP	B					
2.1dD 2.2dD 2.2eT 2.2fT 2.3c 4.1dS 4.3d 10.2 10.3 1.3 8.1aP		1P 1	1			

Tro	HF	Ion	IT	E.3	E.4	S.2	S.frr
1				5	1		
	1	2	1	4	2		
	1	1		3	8, 2P		
	1	1			10		
	1		1	14.01	1		
		3		1[+2]	8[+1]	1	
		3		3	8		
		1			7		
		1	1		2		
		1			3		
		1	2				
		1?	2	2	12		
			1	2	13		1
			1	1	2		1
		[12]	1	1	8 7	20[+102]	
		[1:]	1	5	2	2F[+IF:]	
			1		2		
				1	2		
				1[+15]P	1		
				1	1		
				1	2		
				1	2		
				4	5		
				1	2		
				[1]			
				[1]	1[+1]		
					1, 1P		
					1		
[19]					2	1	
[1.]					1		
					3, 1P		
					2		
					1		
					4		
					1		
					3	1	
					1		

Excursus 2. Resolutions in trochaic tetrameters

Resolutions in trochaic tetrameters have been excluded from the general scope of this study, largely because they hardly occur in the fragments. Only *Meleagros* fr. 536N, *Archelaos* fr. 19 Austin and *Oidipous* fr. 88 Austin are clear instances²¹ and none contains a resolution. In the extant tragedies (where they occur in *HF*, *Tro*, *Ion*, *IT* and the later plays), only in *IA* (with 209 tetrameters and 823 trimeters) do they number more than 10 per cent of the trimeters counted. Thus while it might be reasonable to add the evidence of tetrameters to that of trimeters when counting by resolvable feet, this would not much affect the overall resolution-rates in the other plays, while in *IA* the resolution-rate in the three tetrameter-passages (taken together) is in fact very close to that of the trimeters.

On the other hand, it would be as well to confirm that resolutions in tetrameters do not alter the picture gained from the trimeters so far as qualitative features are concerned.²² Table 4.7 provides this confirmation. In the Table, the description of resolution-types in tetrameters is accommodated to that which we have used for resolution-types in trimeters. The first and second *longa* of the tetrameter are numbered X and O respectively, and the remaining resolvable elements are numbered 1-10. Thus, for example, "6.1a" is the label for a pyrrhic-shaped word implementing resolution of the *ninth* element of the tetrameter (following the medial diaeresis, equivalent to that following the trimeter's penthemimeral caesura), while "X.1a" is the label for a pyrrhic-shaped word implementing resolution of the first syllable of the tetrameter. Examination will show that there are no resolutions in tetrameters which are unusual when compared with the equivalent resolutions in the trimeters of the play concerned, and that nearly three-quarters of the resolutions in tetrameters which are unusual when (about 43 per cent).

The tetrameter-passages in question are:

A. Persai 155–175, 215–248, 697–758; A. Ag 1344, 1346–7, 1649–1673; S. OT 1515–1523 (the doubtful 1524–1530 has no resolutions); S. Ph 1402–8; S. OK 887–890; E. HF 855–873, Tro 444–461, IT 1203–1233, Ion 510–565, 1250–1260, 1606–1622, Hel 1621–1641, Pho 588–637 (the doubtful passages 1308–9, 1335–9, 1758–63 contain only one resolution), Or 729–806, 1506–1536, 1549–1553, Ba 604–641, IA 317–375, 378–401, 855–916, 1338–1401.

(a)	Commoner ty	pes											
		Aesch.	Soph.	HF	Tro	Ion	m	Hel	Pho	Or	Ba	IA	
X.1a	00	1	2	2		3			1	2		5	
X.1c	000	3	1		1	2	2		3	6		6	
X.1f	000-	2				1			1	3	1	5	
X. 2a	JU		1			1	1			1		7	
6.1a	00	1				2	1			10	1	10	
6.1c	000	3	1			3	2	2	3	1	1	12	
6.1e	$\cup \cup \cup \cup$					2				2		2	
6.1f	000-	3		1	1	2		2	2	4		12	
6.2a	U'U			2				1		1		3	
6.2c	U100					1			1		1	2	
(b) Occasional types													
X.1e	$(\cup \cup \cup)$ Pho 1 2.3c $(x^{\dagger} \cup ^{\dagger} \cup -(x))$ IA 1												
X.1g	()	Ion 1, Ba 1			3			С	Dr 1				
X. 1h	(uuu- x)	A. Pe 1; E. Ba 1	, IA 2		4.1c	s (ບບບ)	C	Dr 1. IA	3			
X.2c	(u'uu)	Or 1, IA 1			4.1cl	р ((uul) Pho 1 IA 2						
X. 2d	(ບ'ບບ')	···') A.Pe 1				Г ((uu-) Or 1. IA 8						
X.2e	(∪'∪∪U)) IA 1				- ((u'uu) Or 1						
X.2f	(0'00-)	Or 1, IA 2			4.2cl	Р ((יייי)	I	on 1				
0.1 a S	()	Ba 1, IA 1			4.3c	s ('	3)	ľ	Т 1				
0JaL	(uu)	IA 1			4.3 c	L (3)	L	A 2				
0.1cS	(000)	Ba 1			6.1b	(')	Р	ho 1, E	a 1			
0.1eS	(vvvV)	IA 1			6.1g	() I	on 1				
0.1fS	(000-)	Or 1, IA 1			6.1h	(x) I	on 1, I/	A 1			
0.1fL	(uu)	Or 1			6.2b	(J'J')	B	Ba 1, IA	. 1			
0.3a	(viù)	A. Pe 1; Ba 1,	IA 2		6.2e	(ں ! تارین) н	Iel 1				
0.4a	(- ంచ్ర	A. Pe 1; IA 2			6.2h	(u'uu-;	() L	A 3				
1.1c	(- vv² v)	IA 1			8.1a	s (·) I.	A 1				
2.1aT	່ (ບບບ)	HF 1, Pho 1, IA	. 1		8.1 a	L (•) I	A 1				
2.1 aD	(- 00)	IA 1			8.1e	s (•)	C)r 1				
2.1 cD	(- 000)	IA 1			8.1e	L (···-··``) ($\mathbf{Dr} 1, \mathbf{Ba}$	1 . Dha 1	0-1	Do 2	
2. 2aT	(u'uu)	IA 1				5 (L (() Pho 2. IA 4						
2.2cT	(u'uuu)	IA 1			8.1g	- (s (····	.) I	on 1				
2.2dT	(ບ'ບບບ')	IA 1			8.1g	L (<u> </u>	.) C	Or 1				
2.2eT	(⊍'∪∪∪ [_])	IA 1			8.3b	(ບໍ່ບບx)	I	A 1				
2. 2fD	(-'uuu-x)	IA 1			8.4 a	(ຍ)	A	A. Pe 1				
2. 3bT	(ບ'ບ'ບບ)	IA 1			10.1	(ωΨj) I	on 1, P	ho 1	•		

Table 4.7Resolutions in trochaic tetrameters
NOTES TO CHAPTER 4

- 1. Zielinski 142-153, with related comments in his Chapters III-V.
- 2. Irigoin, REG 72 (1959) 67-80. Mention should also be made of the discussion of these and other features of resolution by Allen, Accent and Rhythm 316-333.
- 3. Stephens, Phoenix 29 (1975) 171-180; Devine / Stephens, TAPA 110 (1980) 63-79.
- 4. Devine/Stephens, TAPA 110 (1980) 64-66.
- 5. Stephens, Phoenix 29 (1975) 171-180; note also Devine / Stephens, TAPA 110 (1980) 75-77.
- 6. Irigoin (n. 2); Allen, Accent and Rhythm 317; Devine / Stephens, TAPA 110 (1980) 77-78 and CPh 78 (1983) 5-7.
- 7. Irigoin (n. 2); Allen, Accent and Rhythm 316-7, 320-9; Devine / Stephens, TAPA 110 (1980) 67-68, 74-75 and TAPA 112 (1982) 42-49.
- 8. See Allen, Accent and Rhythm, 22-26, 248-253, 304-313; Devine / Stephens, CPh 73 (1978) 314-327, TAPA 111 (1981) 45-64, TAPA 112 (1982) 33-63, CPh 78 (1983) 1-25. The analysis by Schein of word-ends and resolutions in the trimeters of Aeschylus and Sophocles is a little limited by his decision to count enclitics as parts of the words they follow and proclitics and other appositives as individual words (Schein, The Iambic Trimeter, xi, notes 2 and 3). See also M. Olcott (above, p. 4 n. 8) Chapter 1 for a discussion of word-groups in the analysis of the tragic trimeter, following that for the hexameter by H. Fränkel, Wege und Formen fruhgriechischen Denkens (3rd ed., Munich 1968) 100-156, esp. 142-147.
- 9. For a full discussion of the distinction between lexical and non-lexical words, see Devine / Stephens, CPh 78 (1983) 15-22.
- 10. Some comments on pyrrhic-shaped words in resolution are made by Devine / Stephens, *TAPA* 110 (1980) 68, 69-70, 78 and *TAPA* 112 (1982) 49-51, where a prosodic explanation of the phenomena is suggested.
- 11. On the "dactylic" types, see Devine / Stephens, TAPA 110 (1980) 67-8.
- 12. Devine / Stephens, TAPA 110 (1980) 70-72.
- 13. Ibid 72–74.
- 14. Descroix, Le Trimètre Iambique, 160-1, 183-5.
- 15. See Zielinski 147, 159, 176, 193.
- 16. For instances in the extant tragedies, see under Type 6.3 in the Supplement to Table 4.3, and note also Descroix, Le Trimètre Iambique 161, 184. In the fragments, the strongest instances are Antiope 19.2 εls τ' að πόλεμον, Phrix. B. 819.7 καί Κιλικία.
- 17. Devine/Stephens, TAPA 110 (1980) 69.
- 18. Ibid 69-70.
- 19. Above, p. 27, with note 4.
- 20. See now Devine / Stephens, CPh 78 (1983) 5-8.
- 21. See T. Drew-Bear, "The Trochaic Tetrameter in Greek Tragedy", AJP 89 (1968) 385-405, esp. 387. Doubtful or irrelevant instances in Euripides are Alkm.Ps. fr. 66N (parody, 1 line, no resolution); Andromeda fr. 147N (corrupt, 1 line, no resolution); Autolykos fr. 283N (satyric, 1 line, no resolution); Phoinix fr. 811N (? trimeter, 1 line, no resolution); fr. 909N (12 lines, 3 resolutions, but 2 of doubtful authenticity).
- 22. Qualitative developments in Euripides' use of trochaic tetrameters are traced by W. Krieg, "Der trochaische Tetrameter bei Euripides", *Philologus* 91 (1936) 42-51. For resolutions see *ibid.* 50, using the material collected by J. Kanz, *De tetrametro trochaico* (Giessen 1913).

CHAPTER 5

CONCLUSIONS

The evidence assembled in this study may now be reviewed and compared with the rest of the evidence for the dates of Euripides' fragmentary tragedies, so that the best reasonable estimates of their dates may be given. This will be done largely through discussion of each play individually, but at the outset we may anticipate the detailed summaries to survey the general usefulness of the inferences that can be made from resolutions.

Of the 50 fragmentary tragedies studied, 14 are exactly or almost exactly dated from non-metrical evidence (if we include the doubtful case of *Erechtheus*). Fourteen are provided with bottom dates by external evidence, and one (Ixion) with a probable top date. For the remaining 21 we rely essentially on the metrical evidence, especially of resolutions. Of the 29 plays with dates or termini known from nonmetrical evidence, there are 16 for which the evidence of resolutions would suggest a range of dates excluding some part(s) of Euripides' career and including the actual date of the play - although in several cases the range of dates suggested by metrical indications alone would be wide, and for only Melanippe D can this evidence be said with any confidence to improve on the external evidence. These 16 plays are Aiolos, Alexandros, Andromeda, Archelaos, Bellerophon, Diktys, Hippolytos 1, Hypsipyle, Ino, Kresphontes, Kressai, Melanippe D (unless the actual date was many years before the known bottom date), Philoktetes, Phoinix, Stheneboia, and Telephos (with due allowance for bias from the prologue-fragment: see p. 19 above). For a further nine plays the metrical evidence, without the external indications, would be of no real help – Ixion, Melanippe S, Oineus, Palamedes, Peleus, Peliades, Pleisthenes, Theseus, Thyestes. For the two Alkmeons, we could say on qualitative grounds that one of them must have been very late. For the remaining two plays, *Erechtheus* and *Antiope*, the evidence of resolutions is in conflict with the external indications, and the implications of these contradictions remain to be assessed below.

Turning to the other 21 plays, there are ten for which neither metrical nor other evidence offers more than some questionable indications, at best. These are Aigeus (vase-painting evidence?), Alope, Kadmos, Likymnios (evidence from Kratinos Archilochoi fr. 1?), Chrysippos and Oinomaos (grouped with Phoinissai??), Phrixos A and Phrixos B (van Looy's ascriptions of the fragments, vel.sim., would allow late dates to be ruled out on metrical grounds), Skyrioi, and Temenos (grouped with Archelaos?). On the other hand, there are 11 otherwise undated plays for which the evidence of resolutions gives quite useful chronological indications. Danae, Kretes and Protesilaos are very likely to belong in the "severe" group. Six plays are either late or very late – in order of their earliest "plausible" dates (according to our 10 per cent Relative Likelihood Intervals), Temenidai (422+), Antigone (420+), Oidipous (419+), Meleagros (418+), Polyidos (421+, but later on qualitative grounds), Auge (414+). Phaethon is fairly firmly fixed between 427 and 414, while for Alkmene a plausible range of 455–410 might tentatively be narrowed to (say) 420–410 on a single qualitative argument.

Thus the positive outcome of assessing the evidence of resolutions is to give useful guidance on the dates of these last 11 plays and of *Melanippe D*, and to raise important doubts about the accepted dates of *Erechtheus* and *Antiope*. The usefulness of our findings about the other plays lies in the absence of conflict between the metrical and the non-metrical evidence (which tends to reinforce confidence in the validity of the metrical evidence as a whole), and in correcting (if only with negative effect in some cases) many of the inferences made in the past from the evidence of resolutions. The differences between our findings and Webster's are summarised in Table 5.1. This omits the definitely dated plays (and the mysterious *Kadmos*). Those listed under "Cropp/Fick" are based on a strictly limited interpretation of the evidence, and should in all cases be read in the light of the note at the head of Table 5.1 and of the more detailed discussions below; dates given as plausible are not all equally likely for a given play.

Table 5.1 Comparison of date-estimates of Webster (Tragedies, 3-5) and Cropp/Fick

Note: The estimates of Cropp/Fick are the 10 per cent Relative-Likelihood date intervals from Table 3.4 (or for some plays the whole of Euripides' production-career: see Table 3.1), narrowed where possible by other evidence. By definition, the dates included in each interval have differing degrees of likelihood (see pages 14-15). A detailed discussion of each estimate is given in the rest of Chapter 5.

	Webster	Cropp/Fick	
Aigeus	soon after 450	any (or 455–430?)	
Aiolos	427–423 455–421 (or 455–		
Alkmene	455-428	455(420?)-410	
Alope	455-428	any	
Antigone	ca. 416–409	420-406	
Antiope	411-409	427-419	
Auge	408-406	414-406	
Bellerophon	455-428	455-425	
Chrysippos	455-428	any	
Danae	455-428	455-425	
Erechtheus	422	421-410	
Hip. 1	455-429	455-429	
Ino	455-428	455-425	
Ixion	ca. 420-ca. 417	ca. 420–406	
Kresphontes	427-424	455-424	
Kretes	455-428	455-428	
Likymnios	455-448	any	
Mel. D.	427–ca. 417	426-412	
Mel. S.	427–ca. 417	455-411	
Meleagros	ca. 416–414	418-406	
Oidipous	408-406	419-406	
Oineus	455-428	455-425	
Oino mao s	455-428	any	
Peleus	455-428	455-417	
Phaethon	ca. 416–409	427-414	
Phoinix	455-428	455-426	
Phrixos A	455-428	any (or 455-ca. 416?)	
Phrixos B	427–ca. 417	any (or 455-ca. 416?)	
Pleisthenes	ca. 416–414	455-414	
Polyidos	ca. 416-409	421 (414?)-406	
Protesilaos	455-428	455-425	
Skyrioi	455-428	any	
Stheneboia	455-428	455-422	
Temenidai	408-406	422-406	
Temenos	408-406	any	
Theseus	455-428	455-422	
Thyestes	455-428	455-425	

The detailed summaries below are organised as follows:

- (a) Fragments included as evidence.
- (b) List (not necessarily exhaustive) of possibly relevant fragments which have *not* been included, because of doubts about ascription, text, and so on.
- (c) Number of fragments included as evidence (see pp. 15-16).
- (d) Weighted (and, where different, unweighted) count of resolvable feet; number of resolutions; resolutions as percentage of weighted resolvable feet.
- (e) 50 per cent and 10 per cent Relative Likelihood Intervals for resolution-rates, and corresponding estimates for dates. (Not applicable [N/A] to plays represented by ten or fewer fragments; see pp. 15-16).
- (f) Chronologically distinctive (or possibly distinctive) resolution-types in the fragments included as evidence.
- (g) Discussion of the chronological evidence.

AIGEUS

- (a) Nauck frr. 1, 3–8, 10; Snell frr. 11a, 11c.
- (b) Nauck frr. 271, 389 (alternative attributions), 858, 905 (conjectural attributions).
- (c) 10.
- (d) 72.23 (unweighted 71), 1, 1.38.
- (e) N/A.
- (f) None.
- The number of fragments is just below the limit of what we regard as likely to make a reliable (g) sample (above, pp. 15-16), and the small size of the sample would in any case make it rather uninformative (the 10 per cent rate-interval would include rates as high as 6.6 per cent). In Hermes 15 (1880) 482-4, Wilamowitz suggested that Aigeus must be prior to Medeia, but in 1925 (Kleine Schriften V.2, 114 n. 1) he acknowledged that it need not have been Aigeus which established Medeia's sojourn at Athens as part of her legend. (The ascription of fr. 858 N to Aigeus would put the play before Acharnians, as Wilamowitz says in Analecta Euripidea, 150; but the ascription is quite uncertain.) Vase-paintings have suggested a date around 430 to B. Shefton, AJA 60 (1956) 159-163; but Webster (Tragedies, 77, 297-8; AC 34 [1965] 519-520) and earlier authorities inferred a date around 450. Burnett (CPh 63 [1968] 310-3) has expressed scepticism about the relevance of the vase-paintings and also (more compellingly) about Webster's suggestion that a putative reference in the play to the Ilissos temple confirms a date in the early 440s. (Later dates for the Ilissos temple are now favoured - the 420s by C. Picón, AJA 82 (1978) 47-81, the late 430s by M. Miles, Hesperia 49 [1980] 309-325.) The evidence of resolutions neither adds to nor detracts from the value of any of these speculations.

AIOLOS

- (a) Nauck frr. 15, 16, 19–26, 28–38; Snell fr. 13a.
- (b) Nauck fr. 14 (ascription conjectural and disputed).
- (c) 22.
- (d) 275, 6, 2.18.
- (e) 50%: 1.30-3.39 very plausible (455-422.4). 10%: 0.79-4.63 plausible (455-418.5).
- (f) (6.2a).

(g) Scholiastic identifications of parodies in Ar. *Peace* (note especially frr. 17 and 18) and a reference in *Clouds* 1371 seem reliable; hence a bottom date of 421 (or 423 if *Clouds* 1371 belonged to the first version). Webster (*Tragedies*, 157, 303) also cites a Lucanian hydria which he dates 420-410. The intervals in (e) above conform well with this evidence, although they also accommodate earlier dates. The 420s are only slightly favoured by the occurrence in fr. 35 of a split type (6.2a) which, as Zielinski noted, is familiar in the later extant plays but occurs only twice in An, once in Hik, and not at all in Alk, Med, Hkld, Hip, Hek. There are a couple of instances in Aeschylus and one in S. Tr.

ALEXANDROS

- (a) B. Snell, Euripides Alexandros (Hermes Einzelschriften, Heft 5, Berlin 1937): frr. 2, 4–7, 13, 16, 18, 23, 26–29, 32–39, 43.36–51 (for the remainder of fr. 43, see Coles, cited below), 44.
 R. Coles, A New Oxyrhynchus Papyrus: The Hypothesis of Euripides' Alexandros (London, Institute of Classical Studies, Bulletin Supplement no. 32, 1974): POxy 2457.2; fr. 23b (revision of Snell fr. 43.29–35); fr. 23a (revision of Snell fr. 43.85–105).
- (b) B. Snell, *ibid.*, frr. 9, 11, 14, 25, 30, 31, 45, 62, 64–68 (conjectural ascriptions: 83 resolvable feet in all [unweighted] with four resolutions).
- (c) 25.
- (d) 410.08 (unweighted 413), 16, 3.90.
- (e) 50%: 2.88-5.14 very plausible (424.1-417.0). 10%: 2.18-6.31 plausible (426.3-413.3).
- (f) 2.2e, 4.3cL, 8.4a.
- (g) The date of 415, known from Aelian (VH 2.8) lies a little below the lower limit given by the 50 per cent interval but within the 10 per cent interval. If qualitative evidence were needed, the first two items listed in (f) above would disfavour Severe or Semi-Severe style.

ALKMEON IN PSOPHIS

Since the date (438) is known, there is little need to discuss the metrical evidence. The only fragments which are both clearly trimeters and attributable with reasonable certainty to this play are Nauck frr. 72 and 79, comprising four lines in all. For attributions and reconstruction see above all H. van Looy, Zes Verloren Tragedies van Euripides (Brussels 1964) 78–102 and 310–2.

ALKMEON IN KORINTH

The date is again known (406), and again only a handful of trimeters can be ascribed with reasonable certainty – Nauck frr. 75, 76; Snell fr. 73a; seven lines in all, with four resolutions all in 73a. To these Nauck frr. 67, 80 and 84 can be added on the grounds that they belong to one of the *Alkmeons* and that they contain resolutions which are extremely unlikely in the earlier one. But to include fragments only because of their resolution features is to create a biassed sample, and this is why the rate of 62 resolutions per 100 lines given by Webster (*Tragedies 5*) is so high.

ALKMENE

(a) Nauck frr. 88–90, 92–102.

PHamburg 119, col. 3 (Austin, Nova Fragmenta Euripidea in Papyris Reperta, Berlin 1968: no. 151).

- (b) Nauck fr. 91 (text uncertain).
- (c) 15.
- (d) 156.12 (unweighted 147), 5, 3.20.

- (e) 50%: 1.81-5.15 very plausible (427.4-416.9). 10%: 1.03-7.18 plausible (455-410.6).
- (f) 4.3cL.
- (g) Much depends on the ascription to Alkmene of the prologue-fragment in PHamb, 119, which contains four resolutions in nine fragmentary lines. The fragment refers to Alkmene's refusal to accept Amphitryon in her bed until he has avenged her brothers' death at the hands of the Taphians. The probability that this belongs to Alkmene seems overwhelming (so, for example, Austin ad loc.), and Webster's rejection of the ascription (Tragedies 86, 92 n. 75) in view of the low resolution-rate of the book-fragments is, apart from its circularity, fallacious: the intervals implied by the book-fragment figures of one resolution in 121.37 (weighted) resolvable feet would be quite wide compare the similar figures for Peliades in Table 3.1.

We therefore include the data from the papyrus. An early date remains plausible, according to the quantitative evidence, the more so because *if* the play was early the resolution-rate of the prologue-fragment could be misleadingly high (see above, pp. 16–18); this fragment contains about 22 per cent of our data). But our intervals now also include dates as late as 416 (50 per cent) or even 410 (10%), and these later dates are, if anything, slightly favoured by the occurrence of Type 4.3cL in line 6 of the papyrus-fragment, since non-word-initial resolutions in element 4 scarcely occur at all in the Severe or Semi-Severe extant tragedies, or in Aeschylus or Sophocles (see the Supplements on types 4.3-4.6).

ALOPE

- (a) Nauck frr. 105–111. Mette fr. 147.
- (b) Nauck frr. 112 and fr. adesp. 510 (ascriptions unclear).
- (c) 8.
- (d) 67.19 (unweighted 65), 0, 0.00.
- (e) N/A.
- (f) None.
- (g) Webster (*Tragedies* 4, 86) gives 7 per cent (in our terms, 1.4 per cent) as the resolution-rate, and counts *Alope* as Severe. But this appears to depend on the inclusion of fr. adesp. 510 as belonging to this play, and this ascription is too uncertain. By contrast, Zielinski (218) included the equally uncertain fr. 112 and inferred lateness from the resolution in its first line (Type 2.2aT) while rejecting Canter's emendation in the second line which gives a split anapaest of a type (cf. Type 1.2b) unlikely to have occurred in tragedy. It seems more likely that Canter's emendation is right, that the fragment is not tragic at all, and that there is no qualitative metrical evidence as to the date. As for the quantitative evidence, the 10 per cent interval given in Table 3.1 would suggest a lowest plausible date of 422, but the number of fragments in the sample is too small to make this inference reliable.

ANDROMEDA

- (a) Nauck frr. 124–126, 129–136, 138, 140–146, 149–151, 154.
- (b) Nauck frr. 123, 127, 128, 139, 114a, 125a (lines from *Thesmophoriazousai* ascribed to *Andromeda* by conjecture only).
- (c) 23.
- (d) 260.15 (unweighted 258), 12, 4.61.
- (e) 50%: 3.24-6.31 very plausible (423.0-413.3).
 10%: 2.34-7.95 plausible (425.8-408.2).

- (f) 2.2cD $\epsilon i \tau$, 2.3bD, 6.2a $\delta \sigma \epsilon$.
- (g) The actual date is known from Σ Frogs 53 to be 412, which falls just outside the 50 per cent interval derived from our sample but well within the 10 per cent interval. (Inclusion in the sample of all the doubtful fragments listed in (b) above would raise the sample resolution-rate from 4.61 to 4.89, but in these cases we cannot be sure that we have completely accurate quotations from Andromeda.)

ANTIGONE

- (a) Nauck frr. 157, 158, 160–173, 176, 177.
 POxy 3317.1–15* (includes Nauck frr. 175, fr. adesp. 524).
- (b) Snell fr. 164a (conjectural ascription); Nauck frr. 174 (doubtful ascription), 212–215 (ascribed to Antiope in Stobaios MSS, sometimes reassigned to Antigone), 216 (ascribed to Antigone by MS A, to Antiope by MSS SM, of Stobaios); POxy 3214.3–4 (Antigone or Antiope?).
- (c) 19.
- (d) 225.04 (unweighted 225), 17, 7.55.
- (e) 50%: 5.65-9.81 very plausible (415.5-406).
 10%: 4.34-11.92 plausible (419.5-406).
- -----
- (f) 2.2dD.
- (g) The 50 per cent interval comprises Euripides' last ten years, and the 10 per cent interval allows a slightly greater span. The qualitative evidence does not add much; $\epsilon t \tau' \epsilon \gamma \epsilon \nu \epsilon \tau'$ (Type 2.2dD) in fr. 158 is strictly paralleled only by *Ba* 1345 $\delta \psi' \epsilon \mu \delta \theta \epsilon \theta'$, but the very similar Type 2.2cD occurs regularly except in the Severe extant plays.

ANTIOPE

- (a) J. Kambitsis, L'Antiope d'Euripide (Athens 1972) frr. 1, 2, 4, 5, 7–27, 29–40, 48.
- (b) Kambitsis frr. 41-45 (= Nauck frr. 212-216: Antiope or Antigone?), POxy 3214.3-4 (= Nauck fr. 1058; Antiope or Antigone?) POxy 3317 (see Additional Note, below). Frr. adesp. 546 Nauck and 88a Snell (conjectural ascriptions: see Borthwick, CQ 17 [1967] 42, CQ 18 [1968] 198-9.) Possible Euripidean wording in Olympiodoros' commentary (p. 161 Norvin) on Plato, Gorgias 503D (reconstruction uncertain: see Borthwick, CQ 18 [1968] 198-9.)
- (c) 38.
- (d) 929.73 (unweighted 942) 29, 3.12.
- (e) 50%: 2.49-3.84 very plausible (425.3-421.0). 10%: 2.05-4.50 plausible (426.7-419.0).
- (f) 1.2a, 3.

*Additional Note. POxy 3317 has been ascribed to Antigone because of the coincidence of lines 14-15 of the papyrus with fr. 175N, a citation of Stobaios with ascription to Antigone. It has recently been suggested that it is in fact from Antiope (W. Luppe, ZPE 42 [1981] 27-30, Archiv 27 [1980] 243 and CR 31 [1981] 267-8), though this may create more difficulties than it solves (see R. Scodel, ZPE 46 [1982] 37-42). If it is excluded from the calculations for Antigone, the figures will be 12 resolutions in (weighted) 168.61 resolvable feet: hence the 50% RLI will be 5.01-9.66 (417.3-406) and the 10% RLI 3.62-12.12 (421.7-406). If it were added to the large body of evidence for Antiope, it would raise the sample resolution-rate somewhat (from 3.12 per cent to 3.45 per cent), but not enough to affect substantially the arguments which we make about Antiope in the next section. (The date-interval limits would all be about one year later.)

(g) Σ Ar. Frogs 53 groups Antiope with Hypsipyle and Phoinissai as having been produced not long $(\pi\rho\dot{o}\ \delta\lambda\dot{i}\gamma ov\ \delta\iota\delta a\chi\theta\dot{e}\nu\pi a)$ before the Frogs (of 405) and more recently than Andromeda (of 412). This implies the date of 409±2 which we have assigned so far to the three plays concerned, with a further possibility of 406 (if Euripides' death occurred late in that year), and with some preference for dates later rather than earlier in this period. (On this chronology, see G.W. Bond, Euripides: Hypsipyle [Oxford 1963] 144.) The scholiast's remark has regularly been accepted as reliable for approximate dating of the production of Antiope, though the surprisingly low rate of resolutions in the fragments has not gone unnoticed by Zielinski and others. The questions of the precise date within the period 411-407 and the grouping with other plays are discussed by Kambitsis pp. xxxi-xxxiv, and his review of earlier opinions need not be repeated here; he takes the scholiast's $\pi\rho\dot{o}\ \delta\lambda\dot{i}\gammaov$ to imply 409 or later.

Our statistical analysis, however, seems to confirm forcefully the impression that the resolutionrate of the fragments is too low for a play of so late a date. The sample is our largest except for that from *Hypsipyle*, and it must represent some 15-20 per cent of all the trimeters in the play. Consequently the relative likelihood rate-intervals derived from the sample rate of 3.12 per cent are quite narrow, the 10 per cent interval being 2.05 per cent-4.50 per cent and suggesting a 10 per cent date-interval of 426.7-419.0. We have stressed that the regression analysis by which the date-interval is derived is only tentative, but in any case the rate-intervals suggest an affinity with Andromache, Hekabe, Hiketides and Elektra and tell strongly against the rate's having been anywhere near as high as those of Helene, Phoinissai, Orestes, Bakchai and IA (or indeed Hypsipyle and Archelaos, where the 10 per cent rate-intervals are far from overlapping with that of Antiope). It is therefore necessary to consider whether some special factors might have made the number of resolutions in the Antiope sample misleadingly low.

Nearly half of the sample consists of fr. 48, which includes 106 wholly or partially preserved trimeters from the ending of the play. The largest single element in this is the 37-line speech of Hermes *ex machina*, which is preceded by the highly dramatic confrontation between Lykos and the twins. The resolution-rate of fr. 48 is 3.67 per cent, and there is no presumption that the resolution-rate of such a passage, particularly when it is so extensive, would be greatly different from that of the whole play. We have seen in Chapter 3 that the rates of *deus-ex-machina* speeches in the extant tragedies are on average, and especially in the later plays, similar to those of their plays (see Table 3.2). The same is true of comparable final scenes in the extant plays: for example, the rate of *Pho* 1582–1624 *plus* 1683–1709 (omitting the highly-resolved 1625–1682 as possibly interpolated) is 8.29 per cent, compared with the whole-play rate of 6.96 per cent; of *Or*. 1554–1681 9.02 per cent (whole play 9.86 per cent); of *Ba* 1200–1367 7.86 per cent (whole play 8.76 per cent).

The remainder of the sample comprises 37 short book-fragments, and their composite resolutionrate (2.63 per cent) is even lower. If such a large number of fragments is untypically low in resolutions by a great margin, this is to the best of our knowledge a unique occurrence.

But this is not all. As Zielinski noted (220), the qualitative features of the resolutions also provide no confirmation of a late date. The case may be restated as follows. Twenty-seven of the 29 resolutions are of types familiar even in plays of Severe style (1.1c in fr. 20.4; 2.1aT in frr. 16.4, 48.85; 4.1cS in fr. 20.2; 4.1cL in frr. 9.1, 37.1; 6.1a in fr. 48.91 ($\delta \alpha$); 6.1b in fr. 48.83; 6.1c in frr. 1.3, 9.5, 19.2, 24.1, 38.1; 6.1f in frr. 8.2, 9.3, 19.4, 48.9, 48.35, 48.80, 48.82, 48.85, 48.86, 48.112, 48.114; 8.1eS in fr. 48.40; 8.1fS in fr. 48.89; 8.1gS in fr. 48.62). The remaining two are fr. 48.109 *ire vvv* (type 1.2a) and fr. 48.19 'Avrionn (type 3). Type 3 occurs at *Hik* 889, and since our case accommodates the heroine's name it is hardly informative chronologically. Type 1.2a occurs only in *Hel*, Or and Ba (once each), but the closely related type 1.2b occurs in Alk, El, HF and so on and the idiomatic appositive phrase *ire vvv* is not much proof of lateness (as Kambitsis says ad loc., the accentuation *ire vvv*, which made Zielinski describe the resolution as very free, is not needed). By contrast with Antiope, where other late-dated tragedies are represented by samples of substantial size, their fragments do contain resolution-types which support the late dates. *Hypsipyle*, in a sample only a little larger, has a dozen resolutions which are alien from the Severe Style, and of these six are alien from the Semi-Severe as well. Even Andromeda, with 28 per cent of Antiope's sample size, has one or two clearly late resolutions. (See item (f) in the sections of this chapter on these plays, and also on Alexandros and Archelaos.)

Webster's reconstruction of the play includes lyrics sung by Amphion before and/or during the parodos (*Tragedies* 206-7, note also *The Classical Tradition*, Studies in honour of H. Caplan, ed. L. Wallach [Ithaca 1966] 95). If this is right, the use of actor's lyrics would not be surprising anywhere after 428 (see Webster, *WS* 79 [1966] 113 and compare especially *Elektra* 112-212). The plot-structure of recognition followed by intrigue against a persecutor is also not necessarily very late (again, see *Elektra*).

Zielinski (219–221) took seriously the conflict between the evidence of resolutions and the statement of the Aristophanes scholia. He suggested (as he did for *Elektra*) that *Antiope* was produced some years after it was, or began to be, written. Our own analysis has confirmed that the problem is real and ought not to be ignored. If *POxy*, 3317 were added to the *Antiope* sample, this would raise the sample rate only a little (to 3.45 per cent: see Additional Note on page 74), and would make the date-interval limits only about one year later. The other fragments which might be ascribed (some 26 lines in all) muster at most three resolutions. Given the nature of our data, we cannot rule out categorically the possibility that chance or some undetected bias in the selection of fragments has given us a freak sample. But it is extremely unlikely, and it seems far preferable to accept as a working hypothesis that *Antiope* is essentially a product of the Semi-Severe period. If so, Zielinski's suggestion of a delay in production will save the credibility of Σ *Frogs* 53. But it seems at least as likely either that the scholium was simply wrong in naming *Antiope* originally, or that it named *Antigone* and this has been corrupted. We have already found that a date after 412 for *Antigone* would be entirely acceptable.

ARCHELAOS

- (a) C. Austin, Nova Fragmenta Euripidea In Papyris Reperta, (Berlin 1968) frr. 1, 2, 5–11, 13–18.
 20–36.
- **(b)** Austin fr. 12.
- (c) 32.
- (d) 452.88 (unweighted 452), 38, 8.39.
- (e) 50%: 6.94-10.01 very plausible (411.4-406).
 10%: 5.87-11.47 plausible (414.8-406).
- (f) 2.1aD, 2.1bD, 2.1dD, 4.3cS, 4.5, 10.2.
- (g) The Vita (ed. Schwartz, Scholia in Euripidem [Berlin 1887] vol. 1, page 2) connects the play with Euripides' visit to the court of Archelaos during the last two years or so of his life. This is consistent with the likely resolution-rate and with some qualitative points in the resolutions (Types 4.3cS and 4.5 do not occur before Ion, IT and Hel, and Type 10.2 occurs elsewhere only in Ba and IA). Webster (WS 79 [1966] 113; Tragedies, 3) also notes the trochaic tetrameters in fr. 19.

The prologue-speech fragments (frr. 1 and 2) comprise nearly a third of the sample and have a resolution-rate of 13.73 per cent, containing 20 of its 38 resolutions. The estimate may therefore be a little too high (see our discussion of bias in Chapter 3), but not wildly so since this is a late play.

AUGE

- (a) Nauck frr. 265-270, 272-7, 864.
 Snell fr. 265a.
 PKöln 264 (giving the first line of the play).
- (b) Nauck fr. 271 (alternative ascriptions). Snell fr. 264a (superseded by *PKöln* 264). Nauck frr. adesp. 399, 402, 570 (conjectural ascriptions). E. El. 373-9 (compare Diogenes Laertius 2.33; Wilamowitz, Analecta Euripidea [Berlin 1875] 190-3).
- (c) 15.
- (d) 149.93 (unweighted 149), 16, 10.67.
- (e) 50%: 7.94–13.87 very plausible (408.3–406). 10%: 6.06–16.86 plausible (414.2–406).
- (f) (2.2aD), 2.3c, 4.1aL, 4.3cL, (6.2a).
- (g) There is no external evidence of date. Both Zielinski (222) and Webster (*Tragedies* 238) interpret the sample resolution-rate as implying a very late date, Webster specifying 408. The intervals given above support this interpretation, though allowing a date as early as 414 to be plausible. Qualitatively, the instances of Types 4.1aL and 4.3cL suggest free or freest style; that of Type 2.3c (fr. 274) occurs elsewhere only in *Or*, *Ba* and *IA*, but there are a few earlier instances of the comparable 2.3b types.

The evidence therefore favours the last three or four years of Euripides' life, but not quite exclusively.

BELLEROPHON

- (a) Nauck frr. 285–302, 305, 306, 309–312.
- (b) C. Austin, Nova Fragmenta Euripidea, no. 155.
 Nauck fr. 68 (disputed ascription: see Carlini, SCO 14 [1965] 201-209).
- (c) 24.
- (d) 445, 9, 2.02.
- (e) 50%: 1.33-2.91 very plausible (455-423.9). 10%: 0.90-3.80 plausible (455-421.1).
- (f) (4.1eL).
- (g) A date not later than 425 is generally accepted in view of Σ Acharnians 426 (see also Σ Peace 135 and 146). Both Zielinski (223) and Webster (Tragedies 4, 101) interpret the sample resolution-rate as implying Severe style, but even the 50% interval has an upper limit close to the actual rate of An. The instance of Type 4.1eL in fr. 286.7 might favour Semi-Severe style (earliest extant: Hek 752, Hik 136 (PN)) but this is a very slight matter (see Type 4.1eS in Hkld 752 and Hip 78). Hence the evidence of resolutions supports, but hardly improves upon, the external evidence.

CHRYSIPPOS

- (a) Nauck frr. 840–843 (though in fact there is no explicit ascription of 840 and 841 to Euripides).
- (b) None.
- (c) 4.
- (d) 40, 0, 0.00.

- (e) N/A.
- (f) None.
- (g) Obviously there is little to be gained from considering the resolution-rate of a sample of four fragments comprising eight trimeters and no resolutions, and Webster (WS 79 [1966] 114; Tragedies 101-2) should not have assigned an early date to the play on this evidence alone. As he mentions, the garbled remains of the Aristophanic hypothesis to Phoinissai need not suggest that Chrysippos, Oinomaos and Phoinissai were produced together, for Aristophanes may have been saying only that they contained related subject-matter. (See further on Oinomaos below.)

DANAE

- (a) Nauck frr. 316–330.
- (b) Snell frr. 1007e, f (ascribed to Danae by R. Goossens, Chronique d'Égypte 16 [1941] 109; see Webster, Tragedies 95).
- (c) 15.
- (d) 360, 3, 0.83.
- (e) 50%: 0.39-1.53 very plausible (455-428.3). 10%: 0.17-2.31 plausible (455-425.8).
- (f) None.
- (g) The low resolution-rate in the fragments has long been recognised as indicating an early date, and the upper limit of the 50 per cent rate-interval (1.53) is comparable with the rates of the extant Severe plays. The upper limit of the 10 per cent rate-interval (2.31) is still somewhat below the actual rate of An (3.09).

DIKTYS

- (a) Nauck frr. 331–347.
- (b) None.
- (c) 17.
- (d) 270, 3, 1.11.
- (e) 50%: 0.52-2.04 very plausible (455-426.7). 10%: 0.23-3.08 plausible (455-423.4).
- (f) None.
- (g) The production-date, 431, is known from the Hypothesis to *Medeia*. The evidence from resolutions is quite consistent with this, though the upper limit of the 10 per cent interval is almost identical with the actual rate of An.

ERECHTHEUS

- (a) P. Carrara, Euripide: Eretteo (Firenze 1977) frr. 2, 3, 5, 6, 7, 10–16, 18–21.
- (b) Carrara fr. 9 (conjectural ascription), fr. 25 (disputed ascription).
- (c) 16 (or more, subdividing fr. 18).
- (d) 862.65 (unweighted 858), 47, 5.45.
- (e) 50%: 4.58–6.41 very plausible (418.8–413.0). 10%: 3.94–7.27 plausible (420.5–410.3).
- (f) 2.1aD, (2.1dD), 2.2cD twice, 2.3bD, 4.1dL, 8.1aS.
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Evidence for the date was fully reviewed by W.M. Calder, GRBS 10 (1968) 148-156, and again (g) by Carrara (above) 13-17. To summarise: (1) The references to Athena's "golden Gorgon" in frr. 10.46 and 12 suggest a date after the dedication of the Athena Parthenos in 438/7. (2) Quotations from the play in Ar. Lysistrata 1135 (= fr. 16) and Thesm. 120 (= fr. 23), and perhaps a parody in Ar. Horai fr. 576K, give a bottom date of 411. (That Erechtheus was parodied in Peace [Calder, 150] is much less certain.) (3) Fr. 18.90-96 refers to the construction of the Erechtheion, on which work was resumed in 409/8 after an interruption of work begun either during the Peace of Nikias or possibly in the late 430s; but it is not clear whether Euripides' Athena refers to work planned or work in progress. (4) If the date of the play were almost exactly known, some interesting references to the contemporary situation could be imputed to it (as, for instance, by M. Treu, Chiron 1 [1971] 130 ff.). (5) Similarities of theme between *Erechtheus* and *Hiketides* have been taken to suggest that the plays were produced together (Wilamowitz) or in adjacent years (J. Schmitt). (6) Plutarch Nikias 9.5, quoting the first line of fr. 17, has usually been taken to imply that the play was performed in 423 or 422 (according to Calder, only 422 would fit), although the risks of pressing Plutarch for an exact chronological inference have also been recognised. (7) In style and rate of resolutions, the play has been described as Semi-Severe, Zielinski attributing to the fragments a rate of 16.6 per cent (in our terms 3.3 per cent) and Webster, adding PSorbonne 2328 = fr. 18, a rate of "about 20%" (our 4 per cent) – a rate which has since been much quoted.

Clearly the last two points are crucial, and both need to be reconsidered. Zielinski counted 19 resolutions in 114 lines, but this omitted (as he regularly did) the anapaestic substitutions (numbering seven), inclusion of which would have given him a rate of 22.8 per cent. It is not clear how Webster reached his "about 20%", but by our method the actual rate of all the fragments is 5.45 per cent (equivalent to 27.25 per cent in terms of resolutions per line; we have omitted fr. 9 on principle, but its inclusion would raise the rate still further to 5.60 per cent). In all, 12 of the 47 resolutions we have counted are anapaestic substitutions, and only four at most (including fr. 18.76) involve proper names. What matter, of course, more than the actual resolution-rate of the fragments are the intervals inferred from it, which suggest that a rate for the whole play of less than 4 per cent is implausible. (The probability of randomly obtaining a sample of 862 resolvable feet with 47 or more resolutions if the rate of *Erechtheus* was 3.54 per cent - the "ideal" rate for the year 422 suggested by our regression analysis - was 0.0021, or odds of 475 to 1 against.) In the absence of any other evidence, the intervals would suggest that Erechtheus had a resolution-rate somewhere between those of Elektra and of Helene and *Phoinissai*. There would be no strong reason for suspecting that the dominance of the three long fragments 10, 14 and 18 (85 per cent of the sample, with 85 per cent of the resolutions) was causing much upward bias. (The rather high rate of 5.45 per cent in fr. 10 is balanced by the rather low rate of 2.35 per cent in fr. 14. Athena's incomplete ex machina speech has 19 resolutions at a rate of 8.02 per cent -16 of these are in fr. 18.73–97 at a rate of 12.8 per cent - but this rate for an *ex machina* speech is exceeded only by that of *Orestes* – see Table 3.2.) Moreover, the fragments contain two instances of resolution-types (2.3bD, 4.1dL) which rather strongly suggest free style.

What, then of Plutarch Nikias 9.5? What Plutarch says is that during the one-year truce preceding the Peace of Nikias the Athenians and Spartans enjoyed meeting each other once more on peaceful terms and "longed for the way of life which was undefiled by war, hearing with pleasure choruses singing such things as 'may my spear lie for spiders to weave a web around it', and recalling with pleasure the man who said that people wakening in peace are roused not by trumpets but by cockerels". Plutarch *might* have meant (or might have paraphrased a source which implied: see L. di Gregorio, Aevum 54 [1980] 56) that the Athenians and their Spartan visitors actually enjoyed hearing the first performance of *Erechtheus* during the one-year truce. If so, Calder's argument that only a production in 422 fell within the period of the truce is relevant. But Plutarch in this passage is in literary mood, and when he speaks of "choruses singing such things as... "he may well have been doing no more than quoting a well-known lyric line, which regardless of its date, summed up the mood which he wished to depict. (Nobody argues that his quotation of IA 455–6 in Nikias 5.4 shows that IA was produced before the death of Nikias!) This possibility seems to be strengthened by Plutarch's subsequent reference to the saying about cockerels. (If this implies literally that "they recalled an earlier comedy", as suggested by Calder 149, how would the Spartans know this comedy? More likely Plutarch quotes it for its proverbial relevance and nothing more.)

To summarise: the date of 422 supposedly implied by Plutarch can be accepted only on the assumption that our sample of fragments is somewhat misleading. The discrepancy between the two pieces of evidence is less serious than for *Antiope*, and it would be going too far (especially when we have no exact dates for Euripides' tragedies between 428 and 415, and when just three fragments dominate our sample) to assert that 422 is a totally implausible date for a play where the "most likely" date, according to our statistical analysis, is 416. But the discrepancy is sufficient to advertise the weakness of the argument adduced from Plutarch, and in the light of this and the resolution-evidence it seems reasonable to regard dates a few years later as the most plausible. This would not be inconsistent with the mood of the play and Athena's reference to the Erechtheion would fit well with a beginning (or resumption?) of work on it *during* the Peace of Nikias. There is even some temptation to move the date closer to 411, in view of the verbal allusions to *Erechtheus* in two plays of Aristophanes in that year, but a date after the resumption of hostilities does seem less compatible with the circumstantial points just mentioned and with the mood of the play (so far as we know it).

HIPPOLYTOS 1

- (a) W.S. Barrett, Euripides: Hippolytos (Oxford 1964) 18-22, frr. A, C, D, F, G, H, K-T.
- (b) None.
- (c) 16.
- (d) 158.61 (unweighted 159), 2, 1.26.
- (e) 50%: 0.48-2.60 very plausible (455-424.9).
 10%: 0.17-4.17 plausible (455-420.0).
- (f) None.
- (g) The date must be before that of the extant *Hippolytos*, 428, which the Aristophanic hypothesis says was the second. The evidence of resolutions, while consistent with this, does not help in narrowing down the date, nor is there any other real evidence for doing so (see Barrett, 29–30).

HYPSIPYLE

- (a) G.W. Bond, *Euripides: Hypsipyle* (Oxford 1963) frr. 752N, 61, 70+96, 764, 1.i, 2, 1.iv.15-44, 4, 1.v, 753N, 32, 20/21, 34/35, 18, 23, 24, 758N, 759N, 27, 22, 60, 63, 57.1-5, 64 (parts), 62, 761N, 762N (this list follows Bond's order). *PHamburg* 118b col. 2 (see Bond 157).
- (b) "Fr. apud Lydum" (Bond 48: but see Austin, Nova Fragmenta Euripidea, no. 154). PPetrie ii.49(d) (Bond 52: conjectural ascription).
- (c) 28.
- (d) 1045.79 (unweighted 1037), 71, 6.79.
- (e) 50%: 5.91-7.74 very plausible (414.7-408.8).
 10%: 5.24-8.59 plausible (416.7-406.2).
- (f) Not Severe or Semi-Severe: 2.2 e/f D twice, 4.1aP, 4.3cS, 6.2b twice. Not Severe: 2.1aD thrice, 4.1eL, (6.2a), 3.

(g) Σ Frogs 53 implies that Hypsipyle, Phoinissai and Antiope were all produced after 412. (See further on Antiope above.) For Hyps this is strongly supported by the evidence of resolutions, both qualitative and quantitative, though even from this large sample (about a fifth of the whole play's trimeters) the likelihood intervals do not encourage any greater precision.

INO

- (a) Nauck frr. 398–422.
- (b) None.
- (c) 25.
- (d) 377.14 (unweighted 378), 4, 1.06.
- (e) 50%: 0.55-1.81 very plausible (455-427.4). 10%: 0.29-2.62 plausible (455-424.9).
- (f) None.
- (g) Acharnians 434 clearly alludes to Euripides' play, and this gives a bottom date of 425, with which the metrical evidence from a fairly substantial sample is fully consistent.

IXION

- (a) Nauck frr. 424–426.
- (b) None.
- (c) 3.
- (d) 30, 2, 6.67.
- (e) N/A.
- (f) (6.1a).
- (g) No inference can be made from the resolution-rate of this very small sample (see Table 3.1). πλέον ἔχεω in fr. 425.1 might tell against Severe Style, but even that is uncertain (see under Type 6.1a in the Supplement to Table 4.3). A recently-published Athenian skyphos possibly reflecting the play's closing scene is dated a little too late to be of much help (E. Simon, WJA n.f. 1 [1975] 177-186, dating to the last decade of the fifth century). If Philochoros did record an allusion in Ixion to the death of Protagoras and was right in doing so, the death of Protagoras remains our only clear indicator of the play's date, giving an upper limit of about 420 (see J.A. Davison, CQ 3 [1953] 36, accepted by W.K.C. Guthrie, History of Greek Philosophy III. 262).

KADMOS

No relevant evidence.

KRESPHONTES

- (a) O. Musso, Euripide: Cresfonte (Milano 1974) frr. 2B+2C, 3, 5-13.
- (b) Musso fr. 1 (= Nauck fr. 1083: Temenos or Kresphontes? See below on Temenos.) Nauck fr. 1060 (identified by Mette with fr. 2B.28: see Musso pp. 28, 33).
 Nauck fr. 908 (conjectural ascription). See also Musso, Appendix 1.
- (c) 11.
- (d) 223.69 (unweighted 224), 6, 2.68.
- (e) 50%: 1.60-4.15 very plausible (455-420.1). 10%: 0.97-5.67 plausible (455-415.3).
- (f) None. (The two instances of Type 8.1fL in fr. 2B are hardly informative, since both involve an important proper name. Conjectural supplements proposed for fr. 2B.1 [= POxy. 2458 fr. 1 col. 2.1] would give a Type 2.2cD resolution, but cannot be confidently taken into account here.)

(g) The number of fragments is rather small, and over half the sample comes from the 57 fragmentary trimeters from the latter part of the Prologue contained in frr. 2B and 2C (that is, POxy. 2458 fr. 1 col. 2, fr. 3, fr. 2 col. 1, fr. 1 col. 3); five of the six resolutions in the sample occur within 12 of these lines. The sample needs cautious interpretation, and does not really confirm a date after 428 (as suggested by Webster, WS 79 [1966] 114 and Tragedies 137), but it is at least not inconsistent with the bottom date which is widely thought to be given by an apparent parody of fr. 4.1-2 in Aristophanes Georgoi fr. 109 Kock (of 424 B.C.).

KRESSAI

- (a) Nauck frr. 460, 461, 462 (supplemented in Austin, Nova Fragmenta Euripidea, no. 152), 463, 464.1-2, 465-470.
- (b) Nauck fr. 464.3-5 (= E. *El* 1097-9).
- (c) 11.
- (d) 137.07 (unweighted 137), 3, 2.19.
- (e) 50%: 1.02-4.00 very plausible (455-420.5).
 10%: 0.47-6.00 plausible (455-414.2).
- (f) None.
- (g) The date, 438, is known from the hypothesis to *Alkestis*. The resolution-evidence requires no comment.

KRETES

- (a) C. Austin, Nova Fragmenta Euripidea in Papyris Reperta (Berlin 1968) nos. 78, 80, 81.20–50, 82.
- (b) Nauck fr. adesp. 356 (identified by Barrett with fr. 81.48).
 Nauck fr. 988 (conjectural ascription). Nauck fr. adesp. 34 (conjectural ascription: see Mette fr. 634f).
- (c) 4.
- (d) 323.25 (unweighted 303), 0, 0.00.
- (e) N/A.
- (f) None.
- (g) This is another unusual sample. Three-quarters of it comes from fr. 82 (*PBerol*.13217), with a long speech of Pasiphae answered by a short speech of Minos. Nearly all the rest comes from the more lacunose fr. 81 (*POxy* 2461), largely a stichomythic passage. Strictly speaking, our usual method of statistical interpretation should be avoided, since there are only four fragments in all (see Chapter 3, pp. 15–16). Still, Pasiphae's speech of 38 virtually complete lines and no resolutions at all is fairly strong evidence of an early date, being comparable only with *Alk* 1008–1036, *Med* 908–924, *Hkld* 574–596, *Hip* 616–668. (Major speeches with very few resolutions, which are not uncommon in this earliest group, can also be found in *An* 693–726 [three resolutions], 957–986 [2], *Hek* 342–378 [2], *Hik* 297–331 [3], 334–364 [2], 426–462 [2].)

LIKYMNIOS

- (a) Nauck frr. 474–476.
- (b) None.
- (c) 3.
- (d) 15, 0, 0.00.
- (e) N/A.

- (f) None.
- (g) The evidence of resolutions tells us nothing. Webster's dating to before 448 (and perhaps therefore 455, if Euripides did not produce between 455 and 448) depends on the (not unreasonable) supposition that Kratinos, in Archilochoi fr. 1 Demianczuk, borrowed or parodied a phrase which is known to have occurred in Likymnios (fr. 473): see Webster, WS 79 (1966) 115-6 and Tragedies 36.

MELANIPPE DESMOTIS

- (a) H. van Looy, Zes Verloren Tragedies van Euripides (Brussels 1964) 244 ff. (using Nauck's numeration): PBerol 9772 (includes POxy, 1176 fr. 39 [col. XI], frr. 492.6–7, 494, 499); PBerol.5514 (includes fr. 495); frr. 490, 491, 492.1–5, 493, 498, 501, 502, 507.
- (b) Van Looy/Nauck frr. 489, 497, 500, 504, 505, 506, 508-513 (ascriptions uncertain: confusion with *Melanippe S.*).
- (c) 11.
- (d) 439.51 (unweighted 441), 18, 4.10.
- (e) 50%: 3.07-5.30 very plausible (423.5-416.5).
 10%: 2.37-6.44 plausible (425.7-412.9).
- (f) 6.1a (adverb), 4.1cL (akin to 4.3cL).
- (g) The difficulties of disentangling the fragments of *Mel. D* from those of *Mel. S* are considerable, and our sample represents a cautious interpretation of the evidence as reviewed by Van Looy and Webster, *Tragedies* 147–157. The fragments left out of account for this reason, and listed in (b) above, comprise 145 resolvable feet and three resolutions; none of these resolutions would be qualitatively informative. If our sample of *Mel. D* is well constituted, and if the rather small number of fragments is sufficient (see pp. 15–16), the intervals fit nicely our only clear piece of external evidence for the date the quotation of fr. 507.1 in Eupolis' *Demes* of 412 but allow a range of some 14 years before this. The two qualitative points mentioned in (f) above tend to confirm the validity of this range, but can hardly be used to narrow it. For $\varphi \eta \gamma \tilde{\omega} \pi a \rho' ie \rho \tilde{a}$ in *PBerol*.9772.16 compare $a\gamma \nu \sigma \tilde{s} \ e \nu ie \rho \sigma \sigma s$ at *An* 1065. The pyrrhic-shaped adverb in element 6 at *PBerol*. 5514.3 is $\pi d \lambda w$, for which see *Tro* 875, *IT* 1165, but there is already one at *El* 318 ($\check{e}\tau \iota$) and the lack of earlier instances may be fortuitous.

Webster (*Tragedies* 116-7, 150) rightly dismisses arguments based on the supposed connections of *Mel. D* with the Sicilian expedition and with Sophocles' *Tyro*, though Van Looy (301-2) thinks the former makes a date of 414 or 413 probable. Discarding these points, we are left with the supposition that *Mel. D* did not precede *Mel. S*, which is plausible on grounds of plot-content and plot-structure but is not confirmed by the evidence of resolutions (*pace* Webster, *Tragedies* 116): on any reasonable choice of data, there would be a substantial overlap between the intervals for the two plays, and inferences from the sample resolution-rate of *Mel. S* will in any case not be valid (see next section).

MELANIPPE SOPHE

- (a) Van Looy, Zes Verloren Tragedies van Euripides (Brussels 1964) 185 ff. (using Nauck's numeration): Prologue (ed. Rabe, RM 63 [1908] 147: includes fr. 481); frr. 482, 483.1, 484, 487.
- (b) Fr. 483.2-4 (Aristophanes' wording?); fr. 485 (wording uncertain); other fragments where the ascription to *Mel. D* or *Mel. S* is uncertain see above under *Mel. D* (b).
- (c) 5.
- (d) 157.07 (unweighted 157), 9, 5.73.

- (e) N/A.
- (f) (2.2aD), (2.2cT), 4.1eL.
- (g) The rather high sample resolution-rate is quite unreliable, since (a) the sample contains only five fragments; (b) 70 per cent of the sample is the Prologue-fragment, with six of the sample's nine resolutions, and we have seen similar concentrations of resolutions in the openings of early plays (above, pp. 16–17, 19). None of the possible qualitative hints is very strong: (a) Μελανίππην in line 13 of the Prologue is type 4.1eL, not known before Hek or Bellerophon except at A. Hik 248, but the heroine's name is a special case; (b) ἐπ' ὄνομα in line 12 of the Prologue is Wilamowitz's emendation of the transmitted ὄνομα τε, which Van Looy retains, and although the only early precise parallel for type 2.2cT is S. Aj 467, the very similar type 2.2cD is not so restricted. (c) the ninth-element resolution in line 19 of the Prologue (Κωρύκιών τ' ὅρος) is rare anywhere in Euripides (and the non-word-initial tenth-element resolution produced by deleting τ' would be unique in Euripides, though not in Aeschylus or Sophocles).

These qualitative points tell only shakily against a date before 428. A bottom date is known from the quotations of fr. 483.1 in Ar. Lys 1124 and of fr. 487 in Thesm. 272, both of 411. Webster (*Tragedies* 117) rejects Goossens' argument for placing Mel. S between Erechtheus and Ion, though Van Looy (241) accepts it.

On balance, the evidence favours a range of dates similar to that of *Mel. D.* It is also noteworthy that Euripides' celebrated heroine was mocked in Aristophanes' plays of 412 and 411 but not in those those of 425-421 (unless Gilbert Murray's suggestion of a reference to *Mel. S* fr. 484 in *Acharnians* is revived: see Murray, *Euripides and His Age* 27; Webster, *Tragedies* 117). The best guess might be that both the Melanippe plays were produced in the period 421-413, with *Mel. S* shortly before, or even simultaneous with, *Mel. D*.

MELEAGROS

- (a) Nauck frr. 515–522, 524–535, 537; Mette fr. 692.
- (b) Ashmolean papyrus, ed. D.L. Page, CQ 31 (1937) 178-181 and Select Papyri, III (Cambridge and London 1941) no. 27: conjectural ascription. 45.27 weighted resolvable feet; two resolutions, neither distinctive. Addition of this to the sample would put the upper date-interval limits less than a year earlier than those in (e) below.
- (c) 21.
- (d) 298.66 (unweighted 300), 23, 7.70.
- (e) 50%: 6.01-9.64 very plausible (414.4-406). 10%: 4.82-11.43 plausible (418.1-406).
- (f) (6.2a), 6.2c, 6.2d.

4.1cL thrice (compared with twice in each of *Alk* and *Hip*, thrice in *Med*, four times in *Hkld*.) Seven two-resolution lines in the sample (compare 2–4 in each of *Alk*, *Med*, *Hkld*, *Hip*, *An*, 12 in *Hek*, 7 in *Hik*, 16 in *El*, 18 in *HF*, 25 in *Tro*, 14 in *Ion*, 27 in *IT*, 40–72 in each of the rest: see Descroix, *Le Trimètre Iambique*, 110).

(g) The intervals tell strongly against a date earlier than *Elektra*, where the 10 per cent "year-rate" interval (see p. 23) barely overlaps with the 10 per cent interval of *Meleagros*. There is not much overlap with *Herakles* either. The high proportion of proper-name resolutions in the sample (eight out of 23) may suggest that the sample-rate is on the high side, or that the whole play's rate was high for its year. But the qualitative features confirm that the play was at least "free" in style – especially fr. 526.2 $\tau \delta \delta' \delta \nu o \mu'$ (type 6.2d, precisely comparable only with *HF* 338, *IT* 556, *Or* 390), and fr. 533.1 $\delta \delta' \delta \pi \delta$ (a rather free instance of type 6.2c). Fr. 536, unless more corrupt than it seems, is a trochaic tetrameter, and this too tells against Severe or Semi-Severe style.

Webster (WS 79 [1966] 117; Tragedies 3, 233) dates Meleagros to 416 or shortly before, following Fritzsche and Welcker in the speculation that fr. 522 was preceded by a line of which Ar. Birds 829 is a parody. On this guess Wilamowitz commented (Analecta Euripidea, 155): "Non omni ex parte certam coniecturam esse fateor. Frequens fabulae mentio in Ranis; numeri fere Ionis". Nauck, on fr. 522, says: "Similis sententia praecessisse videtur, sed Aristophanem suspicor Sophoclis fr. 622.1 aut Eur. Suppl. 447 expressisse."

Both Stoessl (*RE* Supp. XI, col. 659) and Collard (*Euripides*, [*Greece and Rome New Surveys* in the Classics no. 14, 1981] 2) ignore the suggestion in their chronological lists, and the grounds for it are indeed weak. The resolution-evidence does not quite rule out a date shortly before 414, but it better favours a later date, as do the three separate allusions in *Frogs* to *Meleagros* (frr. 516, 523, 531) which Wilamowitz noticed.

OIDIPOUS

- (a) C. Austin, Nova Fragmenta Euripidea in Papyris Reperta, (Berlin 1968). Hypothesis with line 1 (= 539a Snell = adesp. 378 Nauck), frr. 83-87, 90-98, 100.
- (b) Austin fr. 99 (ascription unclear).
 - Mette fr. 719 (author uncertain).

Mette fr. 722 = Menand. Samia 325-6 (note Σ ad loc.): $\dot{\omega} \pi \delta \lambda \iota \sigma \mu a K \epsilon \kappa \rho \sigma \pi \iota a \varsigma \chi \theta \sigma \nu \delta \varsigma / \dot{\omega}$ $\tau a \nu a \delta \varsigma a i \theta \eta \rho$, $\dot{\omega} \dots$ (K $\epsilon \kappa \rho \sigma \pi \iota a \varsigma$ is probably Menander's substitute for Euripides' Ka $\delta \mu \epsilon \iota a \varsigma$ or $\Theta \eta \beta a \iota a \varsigma$. If so, and if all the remainder is Euripides', we have one resolution in 7.9 weighted resolvable feet, which would raise the sample rate given in (d) below from 7.93 to 8.09 and lower the upper date-interval limits in (e) below by half a year.)

- (c) 16 (without subdivision of fr. 83).
- (d) 227.08 (unweighted 223), 18, 7.93.
- (e) 50%: 5.99–10.22 very plausible (414.4–406). 10%: 4.64–12.35 plausible (418.6–406).
- (f) 6.2h.
- (g) Webster (*Tragedies* 5, 238) took the sample resolution-rate as placing *Oidipous* in Euripides' last three years, but the rate-intervals allow a considerably longer period, and the qualitative features (including the tetrameter in fr. 88) confirm this without narrowing it. Inclusion of Mette fr. 722 (see (b) above) would raise the sample rate by at least a little, and dates after 415 are clearly the most likely.

The prologue speech provides over one quarter of our sample – that is, line 1 plus fr. 83 (though the ascription of fr. 83 to the prologue has been doubted by J. Dingel, MH 27 [1970] 90–96). But these fragments contain only five resolutions at a rate only marginally higher than that of the remainder; so there can be little risk of upward bias resulting from the high proportion of prologue-speech material.

OINEUS

- (a) Nauck frr. 558, 559, 560, 562–567.
- (b) Nauck fr. 561 (wording doubtful). PHibeh 4 (D.L. Page, Select Papyri III [Cambridge and London 1941] no. 28: 32.14 weighted resolvable feet with one resolution of type 6.1f, qualitatively undistinctive).
- (c) 9.
- (d) 107.14 (unweighted 108), 1, 0.93.
- (e) N/A.
- (f) None.

(g) The number of fragments counted is a little too small to encourage inferences from the sample resolution-rate (see pp. 15–16), and the "unreliable" rate-intervals given in Table 3.1 would in any case allow no improvement on the bottom date of 425 known from Σ Ar. Ach 418–9. Inclusion of the doubtful fragments would result in equally uninformative intervals.

OINOMAOS

- (a) Nauck frr. 571–577.
- (b) None.
- (c) 7.
- (d) 120, 0, 0.00.
- (e) N/A.
- (f) None.
- (g) Opinions are divided between those who think that the remnants of the Aristophanic hypothesis to *Phoinissai* imply that *Oinomaos*, *Chrysippos* and *Phoinissai* were produced together (for example, Wilamowitz, *Analecta Euripidea* 156; Zielinski 228 and *Mnemosyne* 52 [1924] 189–205) and those who think it referred merely to plays of Euripides which treated the mythical antecedents of *Phoinissai* (for instance, Schwartz and Murray *ad loc.*; Webster, *Tragedies* 102). This question remains open, for, as Zielinski (228) says, nothing can safely be inferred from the absence of resolutions from seven gnomic fragments of eight, five, four, one, three, one and two lines respectively. In *Phoinissai* (including interpolations, which would be hard to detect among fragments), nearly 70 per cent of the trimeters are without resolutions, and 486 of them are in passages of four or more lines without resolutions (21 passages of four lines, 15 of five, eight of six, 13 of seven, five of eight, two of nine, one of ten, three of 11, one of 14, three of 15, one of 28). Many of these, of course, would make unlikely book-fragments, but this does suggest that it would not be very surprising to get a sample like that of *Oinomaos* from a play contemporary with *Phoinissai*.

PALAMEDES

- (a) Nauck frr. 578–585.
- (b) None.
- (c) 8.
- (d) 132.07 (unweighted 132), 4, 3.03.
- (e) N/A.
- (f) None.
- (g) The date of 415 for Alexandros, Palamedes and Troades is known from Aelian VH 2.8. If this sample is representative (but the number of fragments is low: see pp. 15-16), it is not inconsistent with the date. Two of the resolutions are of types unusual but not unparallelled in Severe Style (2.1cD, 6.2c).

PELEUS

- (a) Nauck frr. 617, 618, 619, 621, 622. Snell fr. 617a.
- (b) PBerol. 17154 (Goerschen's argument for attribution, Archiv 22/3 [1974] 115, is negligible).
- (c) 6.
- (d) 67.90 (unweighted 67), 1, 1.47.

- (e) N/A.
- (f) None.
- (g) Σ Ar. Clouds 1154 indicates a parody of a passage from Peleus (fr. 623): hence a bottom date of 417 at the latest, for the second edition of Clouds. The very small sample of some 14 trimeters in six fragments cannot help to narrow the range.

PELIADES

- (a) Nauck frr. 601-610.
- (b) None.
- (c) 10.
- (d) 115, 1, 0.87. (This omits the uncertain $\tau \dot{a} \theta \epsilon \tilde{\omega} \nu$ in fr. 606.1; type 4.2cL is a little unlikely in a Severe play).
- (e) N/A.
- (f) None.
- (g) *Peliades* is known from the Euripides *Vita* to have been part of his first production in 455. The sample is not very informative, but is not inconsistent with this.

PHAETHON

- (a) J. Diggle, *Euripides: Phaethon* (Cambridge 1970) lines 1-62, 117-226, 245-269, 285-7, 311-327, Frr. inc. sed. 3, 6.
- (b) Frr. inc. sed. 1, 4 (uncertain wordings).
- (c) About 16.
- (d) 511.86 (unweighted 534), 19, 3.71.
- (e) 50%: 2.81-4.78 very plausible (424.3-418.1).
 10%: 2.19-5.79 plausible (426.3-414.9).
- (f) 2.2? (line 327), 2.2bD, 4.1eL(?), 6.1a (adverb).
 (Fr. inc. sed. 4 has not been counted, but γυμνάσια might be either 2.1cD or 8.4a).
- (g) Diggle (47-49) gives a full discussion of the date and earlier arguments about it. He rightly rejects circumstantial arguments and concentrates on the evidence of resolutions. His assessment of this evidence differs in a few details from our own, but his conclusion that it rules out the early date proposed by Wilamowitz and favours a date "within a few years of 420" is strongly confirmed by the rate-intervals given above, especially since the sample of fragments is large and variegated.

Qualitative features of the resolutions deserve a little more emphasis than Diggle allows. The points mentioned in (f) above, especially when viewed cumulatively, tell strongly against Severe style. Several of them tend to suggest comparison with *Elektra* or a free-style play – for example, the instances of types 2.2bD (258, $\lambda\lambda\lambda$ ' $\dot{\epsilon}\sigma$ *i* θ), 2.2aD (if $\delta c \sigma \epsilon \theta [\epsilon v$ is right in 327), 6.1a (166 $\delta \tau \iota$, compare *El* 318 $\dot{\epsilon}\tau \iota$, *HF* 1417 $\dot{\sigma}\tau \iota$). These points tell against the first few years covered by the rate-intervals.

PHILOKTETES

- (a) Nauck frr. 787–790, 792–800. Snell fr. 799a.
- (b) None.
- (c) 14.
- (d) 175, 3, 1.71.

- (e) 50%: 0.80-3.14 very plausible (455-423.2).
 10%: 0.36-4.72 plausible (455-418.2).
- (f) None (note the early occurrences of types 2.1cT and 2.1cD).
- (g) The production-date, 431, is known from the hypothesis to *Medeia*. The sample is quite consistent with this.

PHOINIX

- (a) Nauck frr. 804–810, 812, 813, 815.1, 816, 817.
 Snell fr. 813a.
- (b) Nauck fr. 811 (iambic or trochaic?), 815.2 (corrupt). POxy, 3214.7-8 (Med 76 ascribed to Phoinix).
- (c) 13.
- (d) 222.93 (unweighted 223), 1, 0.45.
- (e) 50%: 0.10-1.20 very plausible (455-429.4). 10%: 0.02-2.18 plausible (455-426.3).
- (f) None.
- (g) Ar. Ach 421 refers to the play, and the bottom date of 425 matches the indications of the sample resolution-rate, which make Severe style by far the most likely. It would be surprising if fr. 811 were a tetrameter.

PHRIXOS A and B

The number of trimeter fragments available from these two plays is from 16 to 18 (depending on the acceptance or rejection of two conjectural ascriptions of papyrus-fragments). In the ancient citations only one of them is explicitly associated with *Phrixos A* and only two with *Phrixos B*. Since the publication of the fragmentary hypotheses to the two plays in *POxy*. 2455, most of the other fragments have been fitted into a reconstruction of *Phrixos B* by H. van Looy, *Zes Verloren Tragedies van Euripides* (Brussels 1964) 132–184 (especially 176–8); compare Webster, *Tragedies* 131–6. But so little is known of the plot of *Phrixos A* that it is not certain that many of the fragments might not fit that play as well, especially if it covered essentially the same story as the later play, in a different setting. The data in the trimeter fragments are therefore cautiously stated as follows:

Fragment(s)	Feet	Resolutions	Ascription
821N	25.00	1	Α
819N	41.39	2 or 3 ¹	В
827N	5.00	0	В
Florence gnomology ²	25.00	1	B (by conjecture: not A)
822N+POxy. 2685	58.68	1 or 2 ³	A or B
823N	10.00	0	A or B
824N	10.00	1	A or B
825, 826N	15.00	0	A or B
828-835N	100.00	0	A or B
Florence papyrus ⁴	62.94	1	A or B or neither

1 καί Θάσος οτ καί Κάδμος in line 9?

2 See di Benedetto, Maia 17 (1965) 388; Austin, Nova Fragmenta Euripidea no. 154.

3 The second depends on the joining of fr. 4.2 with fr. 2.9.

4 Page, Select Papyri III, no. 32; Van Looy 156.

The firmly assigned fragments are too few to be informative in themselves. What can usefully be noticed is that the whole set of 18 fragments contains few (at most nine) resolutions, and that:

(a) if about half the fragments belong to each play, neither sample will have enough fragments to be very reliable;

(b) if a substantial majority (say 12 or more) of the fragments belong to *Phrixos A*, no combination of eligible fragments can make a sample implying an upper 10 per cent rate-interval limit above 5.47 (hence a latest plausible date of 415.8) for this play;

(c) if a substantial majority (12 or more) of the fragments belong to *Phrixos B*, no combination of eligible fragments (even including doubtful resolutions) can make a sample implying an upper 10 per cent rate-interval limit above 7.42 (hence a latest plausible date of 409.7) for this play. For example, if we accept van Looy's assignment to *Phrixos B* of all but frr. 821, 830 and 832, and add the Florence gnomology-fragment (not noticed by him), the sample for *Phrixos B* will be: 15 fragments, 308 resolvable feet, eight (max.) resolutions, sample rate 2.60, 50 per cent interval 1.67–3.81 (427.9–421.1), 10 per cent interval 1.10–5.03 (455–417.3).

Hence if van Looy's ascriptions are somewhere near the truth (and Webster's differ only a little), *Phrixos B* will most plausibly be grouped with *An*, *Hek*, *Hik* and *El*, with earlier dates still plausible but later dates implausible. To which could be added the presumption that *Phrixos A* ($\delta \pi \rho \tilde{\omega} \tau \sigma \varsigma$) was earlier still. Qualitatively, two of the resolutions in the prologue-fragment of *Phrixos B* might tell slightly in favour of a date close to *Elektra* rather than earlier – 819.7 καί Κιλικία (see under type 6.3 in the Supplement to Table 4.3; but this και' is not copulative), and 819.9 καί Θάσος (type 2.2aD, but the reading is disputed). The rest are not distinctive.

PLEISTHENES

- (a) Nauck frr. 625–630, 632.
- (b) None.
- (c) 7.
- (d) 68.61 (unweighted 69), 3, 4.37.
- (e) N/A.
- (f) None.
- (g) The generally-accepted bottom date of 414 looks more reliable for *Pleisthenes* than for *Meleagros*, since *Birds* 1232 strongly resembles fr. 628. But there are too few fragments and too few trimeters in them to make the sample either reliable or (see Table 3.1) informative. So there is no confirmation that *Pleisthenes* was close to 414, as Webster (*Tragedies* 236) maintains.

POLYIDOS

- (a) Nauck frr. 634–645.
- (b) None.
- (c) 12.
- (d) 170.68 (unweighted 171), 13, 7.62.
- (e) 50%: 5.44–10.22 very plausible (416.1–406). 10%: 4.00–12.71 plausible (420.6–406).
- (f) 2.4; and the only known tragic trimeter with four resolutions (fr. 641.3).
- (g) The intervals and the qualitative points, taken together, make a date after 415 extremely likely, and after 412 the most likely. The six other instances of type 2.4 all occur in *Pho, Or, Ba* and *IA*.

PROTESILAOS

- (a) Nauck frr. 647–652, 654, 655, 656.1, 657.
 Snell fr. 646a.
 POxy, 3214.10–14 (includes Nauck fr. 653).
- (b) Nauck fr. 656.2 (wording uncertain).
- (c) 12.
- (d) 90.78 (unweighted 90), 0, 0.00.
- (e) 50%: 0.00-0.80 very plausible (455-430.6).
 10%: 0.00-2.50 plausible (455-425.3).
- (f) None.
- (g) The sample of 91 resolvable feet is small, but the number of fragments (12) makes it reasonably reliable by contrast with the sample from (for example) *Oinomaos* (120 feet but only seven fragments), since unless there is some systematic bias in the selection– the risk that low-resolution passages are over-represented in the sample is smaller. The implications of the intervals given above can more immediately be appreciated if expressed in a more obvious way: the probability of picking 18 resolutionless lines at random from a play such as *Andromache* (in which about 85 per cent of the lines are resolutionless) is about $.85^{18} = .0536$, or odds of about 18 to 1 against. (Most of the *Prot.* fragments are in fact single lines.) Thus the sample can be taken, with some reservation, as suggesting that *Protesilaos* belongs in or very close to the period of Severe style. This is at least consistent with Wilamowitz's surmise (itself obviously not conclusive) that some motifs in *Alkestis* presuppose *Protesilaos* (Kl. Schr. V.i.524; compare Webster, *Tragedies* 86; Dale on *Alk.* 348).

SKYRIOI

- (a) Nauck frr. 682, 683, 684. Snell frr. 681a, 683a.
- (b) Nauck frr. 880, 885 (conjectural ascriptions).
- (c) 5.
- (d) 59.93 (unweighted 59), 0, 0.00.
- (e) N/A.
- (f) None.
- (g) No reliance can be placed on this very small sample, composed of five fragments. Nor are there any reliable non-metrical indications of the date (see Webster, WS 79 [1966] 116 and *Tragedies* 86).

STHENEBOIA

- (a) Prologue, lines 1-25, 28-31, (ed. Rabe, RM 63 [1908] 147; see D.L. Page, Select Papyri III [Cambridge and London 1941] no. 16; includes Nauck frr. 661, 662, 672).
 Nauck frr. 663-671.
 Snell fr. 665a.
- (b) Prologue lines 26, 27 (corrupt).
- (c) 11.
- (d) 253.39 (unweighted 254), 4, 1.58.
- (e) 50%: 0.83-2.69 very plausible (455-424.6).
 10%: 0.43-3.89 plausible (455-420.9).
- (f) None.

(g) Parodies in Ar. Wasps 111 and 1074 give a bottom date of 422. The intervals support this without improving on it. The prologue-speech fragment is 57 per cent of the sample, but it can hardly be doing much to mislead us with only three resolutions in 29 lines. (With this number, compare one resolution in the first 29 lines of *Hkld*, two in *Hip*, five in *Hik*, six in *Alk* and *Med*, seven in *Hek* [5PN], eight in *An* [7PN], seven in *HF*, *Tro* and *Ion*.)

TELEPHOS

- (a) C. Austin, Nova Fragmenta Euripidea in Papyris Reperta (Berlin 1968) frr. 102–109, 111–120, 122–129, 132, 135, 147, 149. (In fr. 106, the whole trimeter is counted: see p. 30).
- (b) Austin frr. 138–146, 148 (conjectural or doubtful ascriptions).
- (c) 35 (with subdivision of fr. 147).
- (d) 435.97 (unweighted 420), 15, 3.44.
- (e) 50%: 2.51-4.57 very plausible (425.2-418.7).
 10%: 1.88-5.65 plausible (427.2-415.3).
- (f) None.
- (g) The date, 438, is known from the hypothesis to Alkestis. The sample rate and intervals seem to suggest a date after 428, but this is very largely due to the concentration of six resolutions in the prologue-speech fragment 102 (see pp. 16–17, 19, 24 n. 16). Telephos has the earliest Euripidean instances of types 2.1aD and 2.1cD.

TEMENIDAI

- (a) Nauck frr. 728–739.
- (b) None.
- (c) 12.
- (d) 153.61 (unweighted 154), 11, 7.16.
- (e) 50%: 4.95–9.85 very plausible (417.6–406). 10%: 3.53–12.45 plausible (422.1–406).
- (f) 2.2cD, 4.1eL, 6.2a.
- (g) The qualitative points tell only against Severe style, and the intervals give plausibility to a date as early as 422. So the sample accommodates but does not greatly strengthen Zielinski's conjecture (accepted by Webster, *Tragedies* 252) that *Temenos* and *Temenidai* were composed with *Archelaos* for the Macedonian court.

TEMENOS

- (a) Nauck frr. 742, 743, 744, 746. Snell fr. 741a.
- (b) Nauck fr. 1083 (Temenos or Kresphontes?).
- (c) 5.
- (d) 33, 0, 0.00.
- (e) N/A.
- (f) None.
- (g) The sample is too small to be of any use. The addition of fr. 1083, with six resolutions in 64 (weighted) feet would not alter this fact, especially since it could have an untypically high prologue-speech rate as found in many early plays (see pp. 16–17). None of the resolutions in fr. 1083 is

qualitatively distinctive. Hence the choice between ascription to *Temenos* and to *Kresphontes* remains open so far as the metrical evidence is concerned, and ascription to *Temenos* will not prove *Temenos* late. (See also on *Temenidai* above.)

THESEUS

- (a) Nauck frr. 381, 382, 387, 388; Snell fr. 386a.
- (b) Nauck frr. 383, 384 (Peirithoos? See Wilamowitz, Analecta Euripidea 171-2. Wording in 383 is partly Aristophanes').
 Nauck fr. 389 (Theseus or Aigeus?).
 Nauck fr. 1001 (conjectural ascription).
 POxy. 2452 (Euripides or Sophocles? One resolution in 136 feet, see p. 9 above).
- (c) 5.
- (d) 105, 0, 0.00.
- (e) N/A.
- (f) None.
- (g) Parodies in Ar. Wasps 303-316, noted by the Scholia, give 422 as a bottom date. In view of the small number of fragments (even if *POxy* 2452 were included), the metrical evidence cannot help to narrow the range.

THYESTES

- (a) Nauck frr. 391–397; Snell fr. 397a.
- (b) PHamb 119 col. 2 (see Austin, Nova Fragmenta Euripidea, no. 151: conjectural ascription). Nauck fr. 861 (conjectural ascription). Nauck fr. 941 (see also Mette fr. 519.
- (c) 8.
- (d) 70.71 (unweighted 72), 1, 1.41.
- (e) N/A.
- (f) None.
- (g) The allusion to Thyestes' rags in Ar. Ach 433 gives a bottom date of 425. There are too few fragments and too few lines in them to allow any useful inferences from their resolution-rate.