

The Proto-Indo-European Instrument Noun Suffix **-tlom* and its Variants

By BIRGIT ANETTE OLSEN

Historisk-filosofiske Meddelelser **55**
Det Kongelige Danske Videnskabernes Selskab
The Royal Danish Academy of Sciences and Letters



Commissioner: Munksgaard · Copenhagen 1988

The Royal Danish Academy of Sciences and Letters

publishes four monograph series, an Annual Report and, occasionally, special publications. The format is governed by the requirements of the illustrations, which should comply with the following measures.

	<i>Authorized Abbreviations</i>
<i>Historisk-filosofiske Meddelelser</i> , 8°	Hist.Fil.Medd.Dan.Vid.Selsk. (printed area 175×104 mm, 2700 units)
<i>Historisk-filosofiske Skrifter</i> , 4° (History, Philosophy, Philology, Archaeology, Art History)	Hist.Filos.Skr.Dan.Vid.Selsk. (printed area 2 columns, each 199×77 mm, 2100 units)
<i>Matematisk-fysiske Meddelelser</i> , 8° (Mathematics, Physics, Chemistry, Astronomy, Geology)	Mat.Fys.Medd.Dan.Vid.Selsk. (printed area 180×126 mm, 3360 units)
<i>Biologiske Skrifter</i> , 4° (Botany, Zoology, Palaeontology, General Biology)	Biol.Skr.Dan.Vid.Selsk. (printed area 2 columns, each 199×77 mm, 2100 units)
<i>Oversigt, Annual Report</i> , 8°	Overs.Dan.Vid.Selsk.

The Academy invites original papers that contribute significantly to research carried on in Denmark. Foreign contributions are accepted from temporary residents in Denmark, participants in a joint project involving Danish researchers, or partakers in discussion with Danish contributors.

Instructions to Authors

Manuscripts from contributors who are not members of the Academy will be refereed by two members of the Academy. Authors of accepted papers receive galley proof and page proof which should be returned promptly to the editor. Minidiscs etc. may be accepted; contact the editor in advance, giving technical specifications.

Alterations causing more than 15% proof charges will be charged to the author(s). 50 free copies are supplied. Order form, quoting a special price for additional copies, accompanies the page proof. Authors are urged to provide addresses for up to 20 journals which may receive review copies.

Manuscripts not returned during the production of the book are not returned after printing. Original photos and art work are returned when requested.

Manuscript

General. – Manuscripts and illustrations must comply with the details given above. The original ms. and illustrations plus one clear copy of both should be sent to the undersigned editor.

NB: A ms. should not contain less than 32 *printed* pages. This applies also to the Mat. Fys. Medd., where contributions to the history of science are welcome.

Language. – English is the preferred language. Danish, German and French mss. are accepted and in special cases other languages. Where necessary, language revision must be carried out before final acceptance.

Title. – Titles should be kept as short as possible and with an emphasis on words useful for indexing and information retrieval.

The Proto-Indo-European Instrument Noun Suffix **-tlom* and its Variants

By BIRGIT ANETTE OLSEN

Historisk-filosofiske Meddelelser **55**
Det Kongelige Danske Videnskabernes Selskab
The Royal Danish Academy of Sciences and Letters



Commissioner: Munksgaard · Copenhagen 1988

Abstract

The paper deals with the Indo-European instrument nouns in **-tlom*, **-trom*, **-d^hlom*, **-d^hrom*, **-t^hlah₂*, **-trah₂*, **-d^hlah₂* and **-d^hrah₂* according to the traditional reconstruction. On the basis of a series of common derivatives it is argued that the *-l*-suffixes were originally unmarked, while the *-r*-variants were restricted to roots containing a liquid, *-r*- or *-l*-. Similarly the suffixes containing an aspirate were only found immediately following a root-final consonantal, unvoiced laryngeal, **h₁* or **h₂*. The original paradigm consisted of a root-accented neuter and a suffix-accented collective (later feminine). Thus the morpho-phonemic variation of the suffix **-tlom* is considered to be fully predictable for some stage of pre-Indo-European. Finally it is claimed – for phonetic as well as morphological reasons – that the aspirated variant of the suffix was **-t^hlom*, not **-d^hlom* etc.

BIRGIT ANETTE OLSEN
Institute of Oriental Philology
University of Copenhagen
80, Njalsgade
DK-2300 Copenhagen S
Denmark

0.0. It is immediately observable that a series of IE nominal suffixes: **-tro-/*-tlo-/*-d^hro-/*-d^hlo-* and **-trah₂/*-tlah₂/*-d^hrah₂/*-d^hlah₂* [1] have a clear semantic affinity [2]. Thus **-trom* and **-tlom* are used apparently indiscriminately in barytone formations (generally clearly derived from verbal roots) to indicate “das Mittel oder Werkzeug zum Vollzug einer Handlung oder den Ort, wo sie vollzogen wird” [3], e.g: Gk. λέκτρον < **leg^h-trom* / Skt. *pâtram*, Lat. *pōculum* < **poh_{3i}-tlom* [4]. Derivatives in **-d^hrom/*-d^hlom* are used in exactly the same functions, e.g. Lat. *cribrum* < **krei(h₁)-d^hrom* / **krih₁-d^hrom*, Lat. *stābulum* < **stə₂-d^hlom*. The neutral formations may also be found with oxytonesis, in which case they usually serve as verbal abstracts, e.g. Skt. *dâttram*. Masculines in **-tros* etc. (e.g. Gk. δαιτροός “Zuteiler” vs. δαιτροόν “Zuteilung”) are rare, and obviously secondary in most cases, whereas quite a number of feminines, generally oxytone, and mainly, but not always, functioning as verbal abstracts, are found with the suffixes **-trah₂/*-tlah₂/*-d^hrah₂* and **-d^hlah₂* (e.g. Goth. *hleipra* < **klei₁-trah₂*, Lat. *subūcula* < *-(h)ou₁-tlah₂*, Gk. κλήθρα < **k₁lah₂-d^hrah₂*, Lat. *sūbula* < **s₁uh₁-d^hlah₂*. In some examples, such as Gk. τέρετρον, OIr. *tarathar* vs. Lat. *terebra* “drill”, neutral and feminine inflection are found side by side in the same lexeme, and similarly the suffix initial

1. The traditional reconstructions **-d^hro-/*-d^hlo-/*-d^hrah₂/*-d^hlah₂* are used throughout the paper for reasons of convenience, but cf. in particular 9.3.
2. Survey of the IE state by e.g. Brugmann Grdr. II,1, §250 and Trubačëv 1963; cf. also for Indo-Iranian Wackernagel-Debrunner 1954 707ff, for Greek Schwyzler, 1953 530ff, Risch 1974 41ff, Chantraine 1933 330ff and 372ff, for Latin Leumann 1977 312ff, for Germanic Krahe-Meid 1966 178ff and Kluge 1886 41ff, for Celtic Pedersen 1909 44ff.
3. Wackernagel-Debrunner 1954, l.c.
4. The structure and the morphophonemic variation of roots ending in a long diphthong (type *CeHi-*) is analyzed by Rasmussen, 1978. His rules have been applied in the treatment of the relevant roots in this paper.

consonant sometimes seems to hesitate between $*-t-$ and $*-d^h-$ (thus $\tau\acute{\epsilon}\rho\epsilon\tau\rho\omicron\nu < *t-$, $terepra < *d^h-$).

0.1. The apophonic circumstances form an equally obscure pattern: full grade and zero grade formations are found indiscriminately with the various suffixes, in some cases even with the same root, thus Goth. *hleipra* < $*\hat{k}lei_1\text{-trah}_2$ / Ml. *clethar* < $*\hat{k}li\text{-trah}_2$. The apophonic and accentual variation indicated above is hardly explicable within a normal thematic or \bar{a} -stem paradigm. Therefore it may reasonably be assumed that we are dealing with an original interrelationship between a root-accented thematic neuter, and a suffix-accented collective formation (e.g. $*\acute{t}er\bar{a}_1\text{-Tro-m}$ / $*tr\bar{o}_1\text{-Tr}\acute{a}h_2$) [5]. The oxytone thematic stems would consequently reflect secondary neuters based on the collectives, and various analogical levellings would have obscured the original ablaut pattern.

0.2. This assumption, however, still leaves us with four basic suffixes $*-tre/o-$, $*-tle/o-$, $*-d^hre/o-$, and $*-d^hle/o-$ covering exactly the same semantic field. It seems natural to assume a common origin, at least of $*-tlo-/ *d^hlo-$ vs. $*-tro-/ *d^hro-$, but though this hypothesis is widely accepted in the current handbooks treating IE word formation [6], no actual solutions have been offered, except some rather vague assumptions that some PIE dissimilatory or assimilatory processes may have taken place so early that the system is no longer immediately analyzable. The existence of suffixes with $*-d^h-$ beside $*-t-$ has been tentatively explained as having originated in roots with a final voiced aspirate (e.g. $*-g^h\text{-tlo-} > *g^d\text{-lo-}$) [7]. If we should try to uncover the PIE state of affairs and examine whether it is possible to formulate a set of rules to regulate the original use of a specific suffix variant in a specific environment, or whether the situation is so obscure that we must confine ourselves to pure guesses, the following points are of relevance:

0.3. First of all the basic examination must be restricted to examples that have a genuine common background dating from the IE proto-language. Secondly it must obviously be made clear which relevant phonetic restrictions are characteristic of the separate IE languages (e.g. secondary dissimilations $l-l > l-r$ in Latin), and finally the secondary analogical levellings must be taken into account (e.g. the Balto-Slavic generalization of the l -suffixes). It may be useful to start with a

short survey of the more important IE language families to indicate to which extent they may be utilized as sources of information concerning this particular problem.

0.3.1. *Indo-Iranian*. As **r* and **l* have merged in Proto-Indo-Iranian, and the unvoiced variant of the dental has been generalized, we have only evidence of Indo-Iranian **-tram*, **-tras*, and **-trā*. The material may thus only be used to ascertain the accent and ablaut grade of a certain lexeme and to clarify whether a given formation can safely be ascribed to the IE proto-language.

0.3.2. *Greek*. In Greek we have evidence of all combinations of *-τ-* / *-θ-* and *-ρ-* / *-λ-*, thus *-τρ-* / *-τλ-* / *-θρ-* / *-θλ-*. However *-τλ-* may in all cases be an internal Gk. dissimilation of *-θλ-*. Thus *-τρῶ-* / *-τρῶ-* is the normal outcome of PIE **-tro-* / *-trah₂*, but may also (analogically) continue **-tlo-* / *-tlah₂*. *-θρ-* / *-θλ-* may represent **-t^hr-* / **-t^hl-* as well as **-d^hr-* / **-d^hl-* theoretically.

0.3.3. *Italic*. The Latin state of affairs is severely obscured by analogical processes and secondary dissimilations, which make it all the more important to separate the genuine inherited lexemes from secondary formations. In words of IE origin we should expect to find **-trom-* / *-trah₂* > *-trum-* / *-tra*, **-tlom-* / *-tlah₂* > *-c(u)lum*, *-c(u)la*, **-d^hrom-* / **-d^hrah₂* > *-brum-* / *-bra* and **-d^hlom-* / **-d^hlah₂* > *-b(u)lum-* / *-b(u)la*. It should be kept in mind that the outcome of **-t^hr-* / **-t^hl-* would probably also be *-br-* / *-b(u)l-* [8]. For internal Italic or Latin morphological and phonological developments, see 6.

5. The principle of thematic neuters in apophonic correlation with collectives first suggested by Klingenschmitt, 1975, fn 20, mentioning **k^wé-k^wl-o-* / **k^wk^wlé-* and **yérd^ho-* / **ú^od^hé-*.
6. Brugmann, Grdr. I 425, LLF 312, GG 533, Risch 1974 41.
7. Thus LLF 312. This theory would imply that Bartholomae's law should be accepted for the IE proto-language.
8. The decisive evidence seems to be Osc. (?) *mamphur* "appellatur loro circumvolutum, mediocris longitudinis lignum rotundum, quod circumagunt fabri in operibus tornandis" (P.F. 126.11), root **ment^h-* (e.g. Skt. *mathnáti*), and Lat. *mandō* "chew" from an apparently homonymous root (cf. e.g. Gk. *μασάομαι* "chew, bite" < **m^ht^h-i-*). An internal development **-t^h-* > Ital. **-b-*, parallel to **-d^h-* > **-t^h-* > **-b-*, seems quite natural. The following examples, however, would demand an explanation: *centō* "garment made out of patches" as opposed to Skt. *kanthā*, Arm.

0.3.4. *Germanic*. For Proto-Germanic we may reconstruct the following suffixes: **-bra-/*-prō-*, **-ðra-/*-ðrō-*, **-þla-/*-þlō-* and **-ðla-/*-ðlō-* [9]. The distribution of *-r-* and *-l-* may be used in our IE reconstructions, whereas the relationship between the unvoiced and the voiced variant of the dental is hardly of any consequence: **-ð-* may be either < **-d^h-* or a Verner variant of **-þ-* (< **-t-* or **-t^h-*); thus it remains impossible to decide whether the **-t-* forms of the suffixes have been generalized, or some of the examples of **-ð-* actually represent **-d^h-*. The accentuation (original or analogical) may be described as barytone in cases of **-þ-* and is otherwise insecure. Owing to the rather extensive material, the non-productivity of the suffixes involved, and the absence of any clear analogical patterns, the Germanic languages are essential to the investigation of the relationship of *-r-* vs. *-l-* suffixes.

0.3.5. *Celtic*. In Celtic we find continuations of **-tro-/*-trah₂* and **-Tlo-/*-Tlah₂*, i.e. the suffixes combining *-r-* with a voiced aspirate have been eliminated. As in Primitive Irish **-thλ-* as well as **-δλ-* would probably yield *-l-* (cf. Thurneysen 1946:78), no strict conclusion can be drawn from OIr. examples with a suffixal **-l-*. However, the most simple solution would be the assumption of an invariable dental **-t-*, which alone appears to be reflected in British. IE **-t^h-* would in all cases give the same result as **-t-*.

0.3.6. *Balto-Slavic*. Owing to the generalization of **-tl-* (> Lith. *-kl-*) in Baltic, and **-dl-* in Slavic [10], the significance of these languages to the present investigation is comparable to that of Indo-Iranian.

0.3.7. *Armenian*. A few examples with the suffixes *-wł*, and *-wr* confirm our knowledge of a development **-tR-* > *-wR* (cf. *hawr* < **pə₂tros*). From **-d^hr-* we should probably expect a metathesized form **-rd-* (cf. *surb* < **kub^hro-*). The regular continuation of **-d^hl-* (and **-t^hl-*) is unknown, so that a suffix *-wł* is no definite proof of a proto-form **-tl-V-*.

0.3.8. *Albanian*. Only a few forms with a suffix *-r* have so far been suggested in this connection.

0.3.9. *Hittite and Tocharian*. We have no incontestable evidence for a survival of any of the suffixes in question in either Hittite or Tocharian [11].

We may now proceed to a closer examination of some original IE derivatives. Since there hardly seems to be any vacillation between suffixes containing *-r- and *-l- within the same lexeme, we shall divide the material into two groups: 1. items with suffixal *-tro-/*-trah₂ and *-d^hro-/*-d^hrah₂, and 2. suffixal *-tlo-/*-tlah₂ and *-d^hlo-/*-d^hlah₂.

1. Suffix *-tro-/*-trah₂ or *-d^hro-/*-d^hrah₂.

1.1. **uer-trom* [12] (or **uer-d^hrom*), IEW 1161 : Skt. *vártram* “protective dam, pond”, Av. *varəθra-* “resistance, shield”, Middle Welsh *gwerthyr* “fortress”.

k^ot^oanak is obviously an original -r/n-stem (cf. also OHG *hadara* < **kotrah₂*) – one may suggest **kónth-ṛ/*kṛtā-n-ós* (subsequent nasal dissimilation in Arm. and Gmc.), i.e. we would only expect the ten.asp. in prevocalic position; *mūtō* “change” is related to e.g. Skt. *méthatī* (AEW II, 682f), Av. *hām.aibī. mōist* “verbindet, paart” – the original root may have been **mei^ht-* (> **mei^ht^h-*, cf. 9.3 and FN 35), whence the (analogical) zero-grade *mīth-* (Skt. *mīthū* etc.). The Lat. formation is probably denominative **moⁱht-ah₂-* which would explain the loss of laryngeal after o-grade; finally *rota* might be explained by the assumption of an original paradigm **rótah₂-s/*ṛt^h-ós* (**rotho-*, Skt. *rātha-* etc.) of the type **pónteh₂-s/*pn^ht^h-ós*. However, we have so far no proof that we should not assume two regular phonetic reflexes of *-t^h- in Italic: *-b- when connected with sonants (*mamphur, mandō*) and *-t- in intervocalic position (*rota*), i.e. the aspiration of *-t^h- would have been lost intervocalically before *-d^h- > *-t^h-. It is not essential to the present discussion which of the two solutions should be preferred.

9. The development of Proto-Germanic *-ðl- is treated by Sievers 1894 335ff.
10. As suggested by J.E. Rasmussen (p.c.) *-tl- may well have undergone an assimilation > *-dl- in Slavic, and we may thus have the same proto-form (i.e. *-tl-) in Baltic and Slavic; *-d^hl- on the other hand would presumably yield Lith. -gl-/ Slav. -dl- as seen in Lith. *ėglė*/OCzech *jedn*, Lat. *ebulus*. As the development of *-t^h- and *-t- is otherwise identical in B-Sl. we should expect *-t^hl- to be a possible pre-stage of Lith. -kl-/ Sl. -dl- as well.
11. Hitt. *šayitra-* “horn” has been analyzed by Oettinger 1979 201 as “Instrument zum Stossen”: Skt. *suvāti* “drängt, treibt an”. However, the formation is not quite clear (o-grade of the root, suffix -itra-). Further we have a synonymous derivative *šayatar* with the more common suffix -tar (p 202). Therefore a thematization based on the weak grade of the -ter-noun might be as good a solution as the hypothesis of one outstanding relic of the suffix *-tro- in Anatolian.
12. This reconstruction applies to IE. A pre-stage would be **werHw-trom* according to Rasmussen, 1978a.

1.2. *sker-tro-/*sk₀-tro-, root: *sker- “cut”, IEW 933ff : OHG *scērdar* “cardo” could reasonably be a parallel of Lat. *culter* “knife”, if the latter is dissimilated from *(s)k₀-tro-, cf. also 4.1.15.

1.3. **urōp-trom* : Gk. ῥόπτρον “club”, OE *ræfter* (m) “balk, rafter”, cf. Kluge, 1886,44.

1.4. **re_u(ə)-trom*/**ru(h)-trom*, IEW 868: Lat. *rūtrum* “spade, shovel”, dim. *rūtellum* < **rūt₀-lom*, OCS *ryl_ě* “spade, hoe”, Latv. *raūklis* “Raufeisen”, cf. also OHG *riostar* “ploughshare” from the stem variant **re_ud-* (ON *reyta* < **ro_ud-e_{je}-*). Originally there seems to have been an anīṭ root **re_u-* “smash, destroy” (hence Skt. ptc. *rutá-* “broken”, Lat. *ruō* “rush”, trans. “break down”), which in Lat. must have been partly contaminated with *ruō* “dig” from the seṭ root **re_uə-*/**ruh-* (Lat. ptc. in the expression *rūta caesa* (cf. WH II,453)); OCS *ryti*, Lith. *rāuti*.

1.5. **klē₁-trah₂*/**klī-trah₂*, IEW 601: Goth. *hleipra* “tent”, Umbr. *kle-tram* “feretrum, lecticam” (cf. Lat. dim. *clitellae* “pack saddle” < **klē₁-tro-lah₂*). The expected zero grade is found in MĪr. *clethar* “support” [13]. The PIE collective could probably be reconstructed as **klī-tráh₂*.

1.6. **klē_u-trom*, IEW 605 : *srótram* “ear”, Av. *sraoθra-* “singing”, OE *hleodor* “tune, tone”, OHG *hliodar* “tone, noise”. Arm. *lur*, meaning both “tidings” and “sound, voice” (the latter semantically very close to the Germanic formations), may represent **klutis* [14] as well as **klu-trom* (*-utr- > *-uwr- > -ur). The suggested double origin of *lur* is supported by the hesitation between i-stem and o-stem inflection (inst. *lriw/lrov*). Thus we may have another example of full grade / zero grade of the same original paradigm.

1.7. *(*h₂*)*al-trom* (or *(*h₂*)*al-d^hrom*), IEW 26f : ON *aldr* (m), OE *ealdor*, OS *aldar*, OHG *altar*, Goth. *fram aldrs* “old”; OIr. *altram* “nourishment” presupposes a verbal stem **altrā-* (cf. KG, 137), but we have *mi-altar* “bad fosterage”, *com-altar* “joint fosterage” < **altro-*, cf. Thurneysen 1946, 452.

1.8. **mal-trom* [15] : OHG *maltar* “Malter – corn measure” seems to indicate a suffixal *-r-. A series of comparable, though not quite trans-

parent, derivatives are found in Latin: *marcus*, *marculus*, *marcellus*, *martellus*, *martulus*, *martiolus*. According to Niedermann (IF 15, 109ff), the basis of the Latin forms is to be reconstructed as **maltlo-m* whence **martlo-* and **maltro-* as the results of liquid dissimilations. **martlo-* would yield **marclo-* > *marculus* (from which *marcus* and *marcellus* are later derivatives; **maltro-lo-* is assumed to be the proto-form of *martellus* (whence *martulus*, *martiolus*). However, instead of assuming a not immediately observable **mal-tlo-m* we might as well start from **maltro-* (= OHG *malter*), interpreting **martlo-* as a case of metathesis, and thus achieving a common proto-form for Latin and Germanic.

1.9. **leg^h-trom*, IEW 659 : Gk. λέκτρον “bed”, OHG *lehtar* “womb, afterbirth”; ON *látr* < **log^h-trom* “lair, den” must have introduced the o-vocalism of the root from another derivative (e.g. *lag* “position” < **log^hom*).

1.10. **téra₁-trom*/**tera₁-d^hrah₂* “drill”, IEW 1071: Gk. τέρετρον, Lat. *terebra* < **tera₁-d^hrah₂*; considering the feminine gender of *terebra* the full grade of the root is probably analogical. OIr. *tarathar* may reflect either **tera₁trom* or *tera₁t^hrom* [16].

1.11. **g^wéra₁-d^hrom* / **g^wrh₁-d^hrom* “throat”, IEW 474 : Gk. Hom. βέρεθρον, Arc. ζέρεθρον, δέρεθρον < **g^wera₁-d^hrom*, Att. βάρραθρον < **g^wrh₁-e-d^hrom* (**-rh₁-* > -αρα- with assimilation of **-h₁-*). In both cases we might instead reconstruct **g^werh₃-e-d^hrom* / **g^wrh₃-e-d^hrom*, and consequently we would have to assume a distant assimilation of the pre-suffixal vowel (for similar formations, cf. e.g. ῥέεθρον). This would indeed ease the traditional derivation from the root **g^wera₃-*

13. Cf. Joseph, 1982 44 for the alternative form *clithar*, for which Pokorny reconstructs **kli-tu-ro-*. Joseph (l.c.) finds it embarrassing that only **klaturo-* or the like would account for the variation of the root vocalism, while at the same time **kla-* is a morphologically improbable root form of an anit root. In my opinion we should accept two parallel formations in Celtic: **kli-trom* representing the old instrument noun and **klituro-* based on the **-tu-*stem (Gk. κλιτύς), either with a **-ro-*suffix, or dissimilated < **kli-tu-tro-*.

14. Cf. Olsen, 1986.

15. Original root form not quite clear: a version of **muelh-* (cf. Rasmussen 1981) or something distinct.

16. **Cera-* > Celt. **CaRa-*, cf. Joseph 1982.

(Gk. ἔβρωον etc.). Nevertheless we have a synonymous formation δέλετρον for which a root final $*-\partial_1-$ is secured by δέλεαρ < $*g^w el\partial_1-ur$. $*g^w er\partial_1-$ could then easily be understood as a contamination of the two original roots $*g^w er\partial_3-$ and $*g^w el\partial_1-$; OHG *querdar* “bait” < $*kwer-*pra*-z$ < $*g^w er(\partial)-tro-$, apparently with an aberrant $*-t$ -suffix. The formation is attested in BSl by e.g. OPr *gurcle*, Lith. *gurklỹs* “Adam’s apple”, RussCS *gr̄olo* “throat”. Presumably Arm. *kokord* “throat” also represents a nomen instrumenti: $*g^w er(\partial)-g^w or(\partial)-Trom$ > $*g^w or(\partial)-g^w or(\partial)-Trom$ > $*g^w o-g^w or-Tom$ or $*g^w o-g^w o-Trom$ > *kokord* or the like [17].

1.12. $*kre(h_1)j-d^hrom$ “sieve”, IEW 946: OIr. *criathar*, Lat. *cribrum*, OE *hrīdder*, OHG *rītera*. OE also has a dissimilated variant *hrīddel*. The Latin and Germanic forms may reflect a zero grade $*krih_1-d^hrom$ as well [18].

1.13. $*b^h er(h_1)-(e)-trom$, also fem. $-trah_2$, IEW 129 : Skt. *bharítam* “carrier, i.e. arm” (accent like *arítam*) seems to have been derived from a set root form $*b^h er\partial-$, but might as well be a secondary formation with a suffix $-itra-$ (like *vahitram*); Gk. φέρτρον < $*b^h er-trom$; Gk. φέρετρον “bier”, either $*b^h er\partial_1-trom$ or with a thematic vowel $*b^h er-e-trom$ (or possibly $*b^h erh_1-e-trom$), fem. φαρέτροᾶ “quiver” probably $*b^h r_e-trah_2$ (a reconstruction $*b^h r_h_1-e-trah_2$ would not match the proposed analysis of βάραθρον, cf. 1.11); The Gk. material appears to support the theory of a barytone neuter and an oxytone collective within the same paradigm; OE *beordor* “birth” < $*b^h er(\partial_1)-trom$ (verbal abstract with the expected suffixal accent) confirms the assumption of $*-tro-$ (not $*-tlo-$). Lat. *feretrum* is a Greek loanword, *ferculum* is formed independently with verbal stem + productive suffix $-culum$.

1.14. $*lou\partial_1-trom$ or $*lou\partial_1-d^hrom$, also zero grade $*luh_1-$, IEW 692: Gk. λóετρον “bath” < $*lou\partial_1-trom$; Gaul. *lautro* “balneo”, OIr. *loathar* “basin”; ON *lauðr*, OE *leapōr* “lather” < $*lou\partial_1-trom/*lou\partial_1-d^hrom$; Lat. *lābrum* “basin” (later, analogically, *lavā-brum*) < $*lou\partial_1-d^hrom$, but also *lātrīna* “drain” (analogically also *lavātrīna*). The zero grade variant is found in Lat. *polūbrum* “wash basin”. The secondary derivative *lavācrum* is formed with the productive suffix $*-tlom$.

1.15. $*(h_2)al\partial_1-trom$, IEW 28f, must be assumed as the basis of Gk.

ἀλετρούω “grind”, ἀλετροίς “female miller”; Arm. *atawri* “mill” < $*(h_2)al\partial_1-tri-o-$ or $*(h_2)lh_1-tri-o-$ [19].

1.16. $*(h_1)er\partial_1-trom$ or $*(h_1)er\partial_1-d^hrom$ “oar, rudder”, IEW 338: Skt. *arītram/āritram*; zero grade in Lith. *irklas*; the Germanic forms, OHG *ruodar* “oar”, OE *rōþor*, ON *róðr* “rowing” < $*rōþru-$, which confirm the assumption of an original $*-r-$, represent a tricky problem: IE $*h_1roh_1-$ (> $*rō-$) would seem to be something as bizarre as an o-grade schwebeablaut form of $*h_1erh_1-$. An evident solution has been pointed out to me by J.E. Rasmussen (personal communication), who suggests a borrowing from Celtic ($*rā-$ < $*h_1r_0h_1-$) before Germanic $*ā > \bar{o}$. The identity of the dental of this derivative is not clear.

1.17. $*b^hle h_1-d^hrom$ / $*b^h_l h_1-d^hrom$, also fem. $*-d^hrah_2$, (IEW 121): OHG *blātara*, OS *blādara*, OE *blædre* “blister” < $*b^hle h_1-d^hrah_2$; ON *blaðra* < $*b^hl\partial_1-d^hrah_2$ with analogical vocalization. $*-d^h-$ is assumed in order to match Lat. *flābrum* “wind” with the regular zero grade.

17. Peters (1980 p31) reconstructs $*g^r_0h_3 + e + d^hrom$ for the entire Gk. material – $*-r_0h_3-e > -o\epsilon-$ apart from Ion.-Att., for which a particular development $*-r_0h_3V- > -\alpha\sigma V-$ is postulated. For the Armenian form the loss of the laryngeal of the root syllable might be explained by the reduplicated formation, the $*-ə-$ of the reduplication syllable would be eliminated according to Muller, 1981, Alb. *zğurdhë* “entrails” has been interpreted by Jokl (1937 139ff) as $*dz-g^r_0da$ “Wegfrass”.
18. For the treatment of long diphthong roots, cf. fn 3. Gk. *κρησέρα* “feines Sieb” (GEW II, 17) has been derived from an assumed $*krē-ti-$. Ml. *crith* “Einteilung” likewise points to $*-ē-$ (i.e. $*eh_1i$) or $*ī-$ (i.e. $*ih_1$), though Lat. *cernō*, Gk. fut. *κρίνω* seem to indicate an anit root. If we assume a long diphthong root $*kreh_1i-$ keeping in mind that the verb must originally have formed a nasal present, we may try to reconstruct the IE verbal paradigm: As the root-final consonant is $*-i-$ the present formation would be problematic (no clear instances of $*-nei-$ presents), so that a remodelling would have taken place, e.g. $*kr_0h_1-nēi-ti$ / $*kr_0h_1-n-iēnti \rightarrow *krēih_1-neti$ (> $*krēineti$) / $*krih_1-nēnti$ (> $*krīnēn-ti$), hence Lat. *cernō*, Welsh *go-grynu*, i.e. nasal infix present → nasal suffix present on the basis of the ablauting root. The nasal present would have been matched with a root aorist 3.sg. $*e-krēh_1i-t > *e-krēt$, cf. Lat. *crētus*. In Gk. the present stem $*krin-$ has been extended to a i -present, which is of course productive. On the other hand B-Sl. $*krejō$ (Latv. *kreju* etc., $*h$ lost before $*i$, cf. Pinault 1982) might indicate that IE knew a i -present of this root as well. For *certus* and *κρτός*, cf. fn 21. The Celtic forms, *criathar* etc. can only represent the (analogically introduced?) anit root form $*krei-$.
19. The possible outcome of Arm. $*-R_0h-$ is discussed by Klingenschmitt, 1970 and Muller 1981.

1.18. **klah₂-d^hrah₂*/**k_lh₂-d^hrah₂* “alder”, IEW 599: Gk. κλήθρα, NHG (dial) *lutter*, *ludere* (originally verbal abstract of the root **klah₂*- “spread out”, e.g. Lith. *klóti*?).

1.19. *(*h*)*arə₃-trom* “plough”, IEW 62: Gk. ἄροτρον, Lat. *arātrum* (*ā* from the verbal stem, or from zero grade?), Arm. *arawr*, ON *arðr*, Mlr. *arathar* (cf. Joseph 1982); with secondary *-*Tl*- : Lith. *árklas*, OCS *ralo*.

1.20. **lu(h)-d^hrom*, IEW 681 : Gk. λύθρον “soiling” (= Ilyr. PN *Ludrum*?), cf. Lat. *lustrum* “puddle” with the productive suffix *-strum*. Alb. *ler* “mud” has been interpreted as **leu₂-d^hrom*. The apparent anit root form is in contrast with Gk. λῦμα “dirt” (cf. fn. 20).

1.21. **leuə-trom* or **leuə-d^hrom*, also zero grade **luh-*, IEW 681: Skt. *lavītram* “sickle”; ON *lúðr* “oak dugout”, OHG *lūdara* “cradle” (fem./zero grade), cf. also AEW III, 107.

2. Suffix *-*tlo-* / *-*tlah₂* or *-*d^hlo-* / *-*d^hlah₂*.

2.1. *(*h*)*ou₂-tlom*/*(*h*)*ou₂-tlah₂*, IEW 346: Av. *aοθra-* “Schuhwerk”, Lith. *aūklė*, Lat. *sub-ūcula* “underwear”.

2.2. **sh₂ai₂-tlom*, IEW 890: Lat. *saeculum* Welsh *hoedl* “lifetime” (cf. KG I, 56). The root is identified by Rasmussen (1978) as belonging to Hitt. *ishai-* “bind”.

2.3. **ġ^heu₂-tlom* / **ġ^hu₂-tlom*, also fem.: Skt. *hótra-* “libation”, Av. *zaοθra-* (n) and *zaοθrā* f; Gk. χύτων “washing water” (mostly pl. χύτλα) and χύτρος, χύτρα “pot” probably represent the unvoiced dental. Arm. *joyl* “poured-out fluid or mass” may be a continuation of **ġ^heu₂-tlo-* as well as the traditionally reconstructed **ġ^heu₂-lo-* [20].

2.4. **uok^w-tlom* (or **uok^w-d^hlom*), IEW 1135f: Skt. *vaktram* “mouth”, OIr. *foccul* “word”, Welsh *gwaethl* “quarrel”. The o-vocalism of the root (at least in Celtic) is possibly taken over from the root noun **uōk^ws*.

2.5. **b^heǵ-tlo-* (or **b^heǵ-d^hlo-*), IEW 118: OHG *bīhal* “axe” < **bīþla-* / ON *bíldr* “arrowhead” < Gm. **bī-ðlá-*, cf. Czech *bidlo* “rod”.

2.6. **g^heǵ^{d^h}-tlom*, IEW 426: OIr. *gíall*, Welsh *gwystl* “hostage”, Bret. *goestl* “caution”, Gall. PN *Congeistlus*; OE *gīsl*, ON *gísl*, OHG *gīsal* “hostage”. It is not certain whether the Gmc. examples are inherited or Celtic loanwords.

2.7. **sed-lah₂* (and **sed-lo-*) “seat”, IEW 886: Lat. *sella*, Gaul. *sed-lon*, Goth *sitls*, OE *setl*, OHG *sezzal*, Gk. (Hes.) ἔλλα: καθέδρα; probably also Arm. *etl* “place” (though we would expect **hetl*). Semantically this is obviously a nomen instrumenti, so the natural solution would be the assumption of a pre-PIE **sed-tl-*, where the phonetically regular development **-d+t- > *-t^st-* has been avoided in order to keep the root consonant intact. A recomposition has taken place in Skt. *sattrám*, Av. *hastra-* “gathering”, OS *sethal* “sitting”.

2.8. **ment^h-lah₂* / **m_ṅṭ^h-lah₂*, IEW 732: OHG *mindil* “Gebiss am Zaum”, OE *mīðl*, ON *mél* < **ment^hlom*; Mod.Ir. *méadal* “stomach, guts” < **ment^hlah₂* – or with the historically correct zero grade **m_ṅṭ^hlah₂*. Root **ment^h-* (e.g. Hes. μάθυιαι γναθοι). Formation like **sed-lah₂*.

2.9. **seǵ^he-tlom*, fem. **seǵ^he-tlah₂* (or **-d^hlom/*-d^hlah₂*) “plough handles”, IEW 888: Gk. ἐξέτλη which may and may not have dissimilation **χ-θ > χ-τ*; W. *haeddel*, MBret. *haezl*. Root **seǵ^h-* “hold”. The details of the Celtic forms remain unclear (why root vowel *-a-*?).

2.10. **meǵ^h-e-tlom*, IEW 1119: Skt. *vahítram* “vehicle, ship” with secondary suffix *-itra-* (cf. AEW III, 179), Lat. *vehiculum*, Gk. (Hes.) ὄχετλα ὀχήματα, which has probably taken over its root vocalism from the verb ὀχέω / ὀχέομαι. In this example three language families agree on the insertion of a secondary vowel between root and suffix. This process may well have started already in the proto-language, particu-

20. χύτλον / χύτλη could, of course, be dissimilated forms < **χύθλον / χύθλη*, but we may as well consider these forms as relics, historically identical with the analogical χύτρος/ χύτρα.

larly in roots with a final stop, and with no sonants to be vocalized. If we accept the proposed theory that these derivatives originally had ablauting paradigms, such roots would be inconvenient for the formation of zero grades, (cf. OIr. *scél* < **sk^we-tlom*), from which the process may, little by little, have spread to some full grade formations as well.

2.11. **seh_{1i}-tlom* “sieve”, IEW 889: Welsh *hidl*, MBret *sizl*, ON *sáld*. Gmc. **sēpla-* is the basis of Carel. *siekla*, Finn. *seula* (like Goth. *neþla* > Finn. *niekla/neula* “needle”, cf. Thomsen 1869, 68).

2.12. **neh_{1i}-tlom*, also fem. **-tla_{h2}*, IEW 973: Got. *neþla*, ON *nál*, OHG *nadala*, OE *nādl* “needle”; Gk. *νήτρον* “spinning wheel”. The comparison of Gmc. **-þl-* and Gk. *-τρο-* would indicate IE **-tl-*, cf. also ON *snēlda* “Handspindel” (**snēðlion-*, cf. Noreen, § 166, A 3).

2.13. **seh_{1i}-tlom* (or **seh_{1i}-d^hlom*), also fem. OIr. *síl*, Welsh *híl* “seed, descendants”, could be < **seh_{1i}-tlom* and thus comparable to the synonymous Lith *sėklà*. Traditionally the Celtic words are connected with Lith. *pa-sėlȳs* “sowing, seed”.

2.14. **ġnh₁-d^hlah₂* or **ġenə₁-d^hlah₂*, also neut, IEW 373f: Gk. *γενέθλη* “kin, descentance” (Il.) and later *γένεθλον*. Arm. *cnawł* “procreator, father”. Though we cannot definitely exclude **ġenə₁-d^hlah₂* as a proto-form of *cnawł*, it is preferable to accept the traditional **ġenə-tlah₂*. Thus the development of **-d^hl-* would be parallel to that of **-d^hr-*.

2.15. **b^heμə₁-d^hlom*, also zero grade/fem. **b^huh₁-d^hlah₂*, IEW 147: Skt. *bhavitram* “world” (< **b^heμə₁-*), Lith. *buklā* “habitation”, Czech *bydlo*; Gk. *φύτλη* “nature” (dissimilated < **φύθλᾱ*) has a bewildering short root vowel (like *φύσις*; *φυτόν*, OIr. *both*, Lith. *būtas*). In Germanic we find the same vocalism in OE *bold*, *botl* “house” < Gmc. **bu-ðla-* [21].

2.16. **stah₂-d^hlom* and **stah₂-tlom*, also zero grade **stə₂₋*, IEW 1004ff: Skt. *sthātrām* “standing place”, Lat. *stabulum* < **stə₂-d^hlom*, aspirate in Italic confirmed by Umbr. *staflarem* “stabularem”, but also *obstāculum*; Welsh *cystadl* “of equal value”, *distadl* “worthless” < **stə₂-tlo-* or **-d^hlo-*; ON *støðull*, OE *stapol* < Gmc. **sta-þlan*, full

grade in OE *stōdl*; cf. also Lith. fem. *stāklė* “pole” with the expected zero grade of the root.

2.17. **pah₂-d^hlom* (or **pah₂ĭ-d^hlom*), IEW 787 and 839. According to Rasmussen (1978) **pah₂ĭ-* may be the common origin of the two traditional roots **pā-* (i.e. **pah₂-*) “feed” and **pōĭ-* “protect”. Lat. *pābulum* “feed” < **pah₂ĭ-d^hlom* then would equal Skt. *pātram* “container” [22].

2.18. **ġnoh₃-tlom* or **ġnoh₃-d^hlom*, IEW 377: Skt. *jñātram* “intellectual faculty”, OHG *beknuodilen* “inform” < **knōpla-*; Lith. *žėnklas* seems to indicate **ġenə₃-*, i.e. stem internal schwebeablaut, which it is tempting to interpret as a secondary full grade made on the basis of the parallel (and synonymous) *žėnklas* (cf. Fraenkel II, 1300). OPr *ebsentliuns* “indicated” would have a similar explanation [23].

2.19. **poh₃ĭ-tlom*, IEW 840: Lat. *pōculum* “drinking vessel, cup”, if identical with Skt. *pātram* “receptable, vessel” in one of the functions of the latter (cf. AEW II, 252).

2.20. **ġih-tlom* (or possibly **ġih-d^hlom*), IEW 355: OHG *kīld* “wedge” < **kĭpla-* / OHG *kīl* < **kīd-lá-* with the original accentuation

21. Reconstruction by J.E. Rasmusen (p.c.). The reason why **b^heμ₂-* is probably to be rejected is the Gk. zero grade *φῦ-* (**b^huh₂-* would yield Proto-Greek **p^hūā-* according to Normier 1982). The problem of the numerous instances of short *-u/-i-* in clear set roots has been convincingly solved by Nikolaev 1982 in his treatment of the Greek evidence: the “anit” forms are analogically introduced whenever we frequently/regularly have a zero grade in a particular morphological category, e.g. the *-to*-participle (Gk. φντός, OIr. *both*, Lith. *būtas*), the *-ti*-abstract (Gk. φύσις), and the *-tr/-tl-* instrument noun (φύτλη); Gk. λύθρον and κριτός, Lat. *certus* may be added to this list. The analogical pattern must have been roots with a vocalism *-a/-ā-*, and for the Greek material also *-e/-ē-* and *-o/-ō-*. NB: λύθρον seems to prove that the laryngeal had time to assimilate the following dental before /ū/ was replaced by /u/.
22. Lat. *pābulum* apparently disagrees with the Germanic evidence: ON *fóðr*, OE *fōðor*, OHG *fuotar*. While *pābulum* cannot possibly represent anything other than root + suffix, Gmc. **fōþra-* may be based on the *-t*-extension known from Gk. πατέομαι “eat and drink”, Goth. *fōdjan* “feed”. OE *fōstor*, ON *fóstr* with the productive suffix **-stra-* are no essential evidence; theoretically they may represent **pah₂s-ro-* (cf. Lat. *pāscor*, Hitt. *pahs-* (Gmc. **-s-r-* > *-str-*)).
23. The suffix of Lat. *nōbilis* being a productive adjective formant does not tell us anything about the IE proto-form.

of the zero grade; Arm. *ciwł* “stalk”, *ən-ciwł* “sprout” could be perfectly identical.

2.21. **sĭuh-d^hlah₂*, IEW 916, also fem., Lat. *sūbula*, OHG *siula*; cf. also Czech *sidlo*.

2.22. **teḱslah₂* “axe” (IEW 1058) has been convincingly interpreted by Joseph 1982 as an instrument noun, i.e. **teḱp-tlah₂*: ON *þexla*, Lat. *tēla*, RussCS *tesla*; OIr. *tál* (possibly **t_eḱpláh₂* > Celt. **taklo-* > *tál* according to J.E. Rasmussen, p.c.) [24].

3. Conclusion of 1 and 2.

If we try to summarize the material given in the two groups, at least one thing seems reasonably clear: Whenever, in a derivative dating from the IE common language, we find a suffix containing *-r- (*-tro-/*-trah₂/*-d^hro-/*-d^hrah₂), the basic root includes a liquid, either *-r- (ex. 1.1-4, 10-13, 16, and 19), or *-l- (ex. 1.5-9, 14-15, 17-18, and 20-21). If, on the other hand, the root has any other shape, the suffix is always of the type *-tlo-/*-tlah₂/*-d^hlo-/*-d^hlah₂.

3.1. There seems to be only one restriction to this general rule: roots ending in *-s- only accept the suffix *-tro-/*-trah₂, no matter how the root is structured:

3.1.1. **ḱās-trom*/*-trah₂ “cutting tool” (IEW 586): Lat. *castrāre* “cut off”, Osc. gen.sg. *castrous*, Ubr. *castruo*, *kastruvuf*, cf. Skt. *śastrám* “knife”. Root **ḱas-* (Skt. *śásti* “slaughters, cuts down”, cf. AEW III, 319).

3.1.2. **ḱés-trom* / **-trah₂* “garment” (IEW 1172): Skt. *vastram*, Av. *vastra-* (n), Dor.Gk. *ἑστρα*, and Hes. *γέστρα·στολή*, MHG *wester* “baptizing garment”, cf. Gk. *ἑννυμι* etc.

3.1.3. *(*h*₁)*oiš-tro-* / *-trah₂* (IEW 299ff); Gk. *οἷστρος* “rage”, Lith. *aistrà* “vehement passion” (verbal abstract – the Lith. selection of *-tr-* is particularly interesting). Root *(*h*₁)*eiš-*, cf. e.g. Plaut. *eira* (> *īra*).

3.1.4. The tendency of accepting *-str- while ignoring *-stl- is continued into Germanic (productive suffixes -stra- / -strō-) and Lat., where we find examples such as *haustrum*, which are all the more remarkable as *-tlo- / *-tlah₂ is elsewhere the exceedingly dominant suffix. An apparent exception is seen in Umbr. *persklu*, *pesklu* “supplication”, Osc. *pestlum*, *peeslum* “temple”, probably also Lat. *postulāre*. I would suggest an original **perk̂-s-tro- / *pr̂k̂-s-tro-* dissimilated to **perk̂-s-tlo- / *pr̂k̂-s-tlo-*, whence **pestlo- / *postlo-*.

3.2. Even though the question of the original distribution of the suffixal liquids may thus have found a solution, there still remains the problem concerning the dentals. If the selection of either *-t- or *-T^h- (cf. 9.3) may still be uncovered from the existant material, it would be natural if the character of the root final consonant were the determining factor. As tentatively suggested to me by J.E. Rasmussen (p.c.), the unvoiced laryngeals (*h₁ and *h₂ as distinct from the voiced *h₃) might be connected with the aspirated variant of the suffix traditionally reconstructed as **-d^hlo- / *-d^hro-*. It may be useful to group the examples above into five categories according to their root structure, in order to investigate if it is at all possible to obtain a coherent system.

3.2.1. *Roots ending in a sonant, or non aspirated stop* (ex. 1.1-8 and 2.1-7): For some of the examples (**u̯erTrom*, **kleu̯-Trom*, **h₂alTrom*, **uok^wTlom*, **b^heḷTlom*, **g^heḷd^hTlo-*) it is not possible to uncover the identity of the dental because of the ambiguous character of Germanic / Celtic / Indo-Iranian in this respect; for others (**skertrum*, **u̯rop-trom*, **reu̯trom / *rutrom*, **maltrom*, **(h)ou̯tlom*, **sh₂aḷtlom*) we must reconstruct *-t-; none of the items require the assumption of **-d^h-*.

3.2.2. *Roots ending in an aspirated stop* (ex. 1.9 and 2.8-10): **seḡ^he-tlom* and **ueḡ^hetlom* cannot be considered decisive, as root and suffix are not directly connected; in **ment^hlah₂* the original suffix has been replaced by **-lah₂*; **leg^htrom* apparently indicates IE *-t-.

24. **putlós* “boy, child”, Skt. *putrá-*, Av. *puθra-*, Osc. *puclō-* etc., which has been mentioned as an example of a suffix **-tlo-*, neither has the meaning of an instrument noun nor is a verbal abstract; Lat. *pullus* is generally derived from **puslos* (cf. *pusillus*); Arm. *ul* “(young) goat, kid” may as well be derived from this **pu-tlo-* as (traditionally) compared to Gk. *πῶλος*, Goth. *fula* etc. (thus e.g. Solta 1960, 202).

3.2.3. *Roots ending in *h₁* (1.10-17 and 2.11-15) : For these roots the pattern is somewhat more complicated. **h₁er₁Trom*, **seh₁īTlom* “sieve” and **seh₁īTlom* “seed” are ambiguous and should thus be left out of the discussion. Of the remaining examples there appears to be a considerable hesitation between **-t-* and **-d^h-*, even within the same paradigm. This fact could lead us to two conclusions: *either* the original state of affairs (e.g. **-h₁ + t- > *-h₁ + T^h-* in all positions) has been thoroughly disrupted by analogy, most probably then from roots of the first category, *or* both versions of the dental are phonologically correct according to rules still to be defined. If the latter solution is to be preferred, one might suggest, as a phonetically natural explanation, that **-T^h-* was originally restricted to formations in which **-h₁-* had the quality of a consonant, whereas **-t-* belonged to positions after a vocalic **-ə₁-*. This assumption finds some support in the actual material:

3.2.3.1. Gk. τέρετρον < **téř₁-trom*, but Lat. *terebra* < **-d^hrah₂*, which must be analogical for **t^hh₁-d^hrah₂* (fem./zero grade).

3.2.3.2. Gk. δέρεθρον etc. would be analogical for **δέρετρον* etc. (cf. the variant δέλετρον < **g^wel₁-*). The aspirate correctly connected with the zero grade of βάραθρον.

3.2.3.3. Lat. *cribrum*, if from the set₁ root form, points to a zero grade **krih₁-d^hrom*.

3.2.3.4. Lat. *lātrīna*, Gk. λόετρον < **loμ₁-tr-* / Lat. *-lūbrum* < **luh₁-d^hrom*. Lat. *lābrum* would then be an analogical levelling.

3.2.3.5. Gk. γενέθλη as expected combines **-d^h-* with feminine gender and probably zero grade.

3.2.3.6. Lat. *flābrum* < **b^hh₁-d^hr-* : consonantal laryngeal / aspirate.

3.2.3.7. **h₂al₁-tr-* (Gk. ἄλετρο-): **-t-* after the vocalic laryngeal.

3.2.3.8. **neh₁ī-tlom*, judging from Gk. νήτρον, reflects **-tl-*. Naturally this one example is very scarce evidence, but one might suggest that the root final **-ī-* of roots with a long diphthong was preserved long enough to prevent the assimilation of **-h₁-* and **-t-*.

3.2.3.9. **b^huh₁-d^hlah₂*: consonantal laryngeal / aspirate.

3.2.3.10. Gk. φέρετρον, φαρέτρον cannot be used as evidence, as we may not be dealing with a laryngeal at all in these examples.

3.2.4. *Roots ending in *h₂* (1.18 and 2.16-17) : All of the examples suggest IE *-d^h-; **klah₂-d^hrah₂* / **k_lh₂-d^hrah₂* is unproblematic, representing post-consonantal *-d^h-. Lat. *stabulum* < **stā₂-d^hlom* appears to have replaced **stābulum* (cf. Skt. *sthātram*); *ob-stāculum*, which is a recent formation (Apul.), is a compound of verbal root *stā-* + productive suffix *-culum*. Lat. *pābulum* is open for discussion: either it is based on a root form **pah₂-*, not **pah₂k-*, or, what is more likely, the suggested analysis of **neh₁k-tlom* above is not correct – Gk. -τρον would then have replaced the rarer suffix -θλ-.

3.2.5. *Roots ending in *h₃* (1.19, 2.18-19). **ġnoh₃-Tlo-* being ambiguous, only *(*h₂*)*arā₃trom* (postvocalic *-t-) and **poh₃-tlom* (postconsonantal *-t-) remain. Considering the voiced articulation of **h₃* the evidence of *-t- in both cases is hardly surprising.

3.2.6. *Roots ending in an unidentified laryngeal* (1.20-21, 2.20-21): Concerning **leuā-Trom* and **ġih-Tlo-* the dental cannot be identified either; **luh-d^hrom* has a postconsonantal *-d^h- which would probably exclude *-h₃-.

3.3. Having thus taken a view over a number of inherited derivatives we shall now proceed to the individual IE language families to investigate to what extent the additional material is understandable in relation to our theories below.

4. Germanic.

Most of the material can be found in Krahe-Meid III 178ff, Kluge 1886 44ff.

4.1. Suffix **-tro-* / **-trah₂* / **-d^hro-* / **-d^hrah₂*. Apart from the above mentioned OHG *scērdar* (1,2), OE *ræfter* (1,3), OHG *riostar* (1,4), Goth. *hleipra* (1,5), OE *hleodor* (1,6), ON *aldr* (1,7), OHG *maltar*

(1,8), ON *látr* (1,9), OHG *kverdar* (1,11), OE *beordor* (1,13), ON *lauðr* (1,14), OHG *ruodar* (1,16), NHG *lutter* (1,18), ON *lúðr* (1,21) we find the following: (the reconstruction *-t- in a suffix may represent either Gmc. *-þ- < *-t- (or *-tʰ-) or Gmc. *-ð- < *-t- (or *-tʰ-) or *-dʰ- or a generalized *-t- whatever the accent):

4.1.1. **gʰal-trom* or **gʰol-trom*, IEW 428: ON *galdr* “song, enchantment”, OE *gealdor*, OHG *galtar*. The root of ON *gjalla*, Goth. *gōljan*. Cf. also Russ. *galitʹsja* “mock”.

4.1.2. **mŕ-trom*, IEW 735: Goth. *maúrþr*, OE *mordor*.

4.1.3. **gʰrō-trom*, IEW 440, 454: ON *gróðr* “growth”; the root of ON *gróa* “grow”. Further connection not quite clear.

4.1.4. **klak-trom*, IEW 600: OHG *hlahtar* “laughter”, OE *hleahtor*; cf. Goth. *hlahjan*, and the nasal-infixed ON *hlakka* “scream” = Lat. *clangō*.

4.1.5. **lok-trom*, IEW 673: OE *leahtor* “vice, crime, vituperation”; also with suffix *-stra-*: OHG, OS *lastar* “fault”, cf. OIr. *locht* “fault”.

4.1.6. **smer-trom*, IEW 970f: Goth. *smairþr* “fat”, cf. Gk. *σμήρις* “emery”, *μύρον* “vegetable oil”, Lat. *medullae* “marrow” < **merus-la-* (cf. WH II, 58) [25].

4.1.7. **plo(ʷ)-trom*, IEW 836: OHG *flōdar* “stream”, cf. Skt. *plāvate*, Gk. *πλέω* etc.

4.1.8. **reǰb-trom*, IEW 858: OE *riftr* “sickle”, connected with the verb *ripan* / *riōpan* “reap”. A root variant **reǰp-* is found in ON *rifa* “tear”, Gk. *ἐρείπω* “overthrow”, Lat. *rīpa*.

4.1.9. **gʰel-triah₂*, IEW 489, cf. also Kluge 1886,46: ON *gildra* “trap” from the verb *gilja* “lure”.

4.1.10. **glēbʰ-trah₂*, IEW 359: OHG *klāftra* “fathom”, cf. Lith. *glėbiu* “embrace”, *glėbys* “fathom, embrace”.

4.1.11. **g^held-trom*, IEW 436, could be the origin of Goth. *gilstr* “tax”, OHG *gelstar* “sacrifice, tax”. However, **g^helt-* + the productive suffix, Gmc. *-stra-* is another possibility (cf. Feist 1939, 215). The verbal root seems to reflect IE **g^helt-* (Goth. *fragildan*, *usgildan* < **g^helt-* / ON *giälla* < **g^hélt-*).

4.1.12. **prek^h-tr-ie/o-* of OE *frihtrian* “wahrsagen” would be a denominative of **prek^h-tro-* “asking instrument, oracle”, derived from the root **prek^h-* “ask” (IEW 821f, cf. Skt. *pr̥cchāti*, Lat. *poscō*, OHG *forscon* etc.).

4.1.13. **k_uelp-trah₂*, IEW 630: Goth. d.pl. *hilftrjom* “coffin”. The root is **k_uelp-* “vault”, cf. ON *hvalf* “vault” < **k_uolpom*, OE *heofon hwealf* < **k_uolpah₂*, Gk. *κόλπος* “bosom, bay”.

4.1.14. **b^hlōd-trom*: OHG *bluostar* “sacrifice”, cf. Goth. *blōtan* “sacrifice”. No secure non-Germanic connections (cf. Feist 1939, 101, for the possible, but now generally rejected, comparison with Lat. *flāmen*).

4.1.15. **sk_l-trah₂*, IEW 925: OHG *scultirra*, OE *sculdor*, originally “shoulder blade having the shape of a digging tool”, root **skel-* (Gk. *σκάλλω* “dig”). Lat. *culter* “knife” could, theoretically, be derived from **skel-tro-* as well as **sker-tro* (cf. WH I, 304), though the latter solution seems semantically more evident.

4.1.16. **k^herd-tro-* (cf. Feist 1939, 235): possibly the proto-form of **k^her-tro-* > Gmc. **xerpra-* (avoiding the regular, but etymologically opaque form **xerstra-*); Goth. d.pl. *hairpram* “entrails, heart”, OHG *herdar* “entrails”, OE (metathesized) *hreþer* “breast, stomach, heart”, cf. also Lith. *kartóklys* “Blättermagen”.

4.1.17. **g_uor-tro-* / **g_uo-tro-* would be a reasonable etymological background of OE *cordor*, OHG *quartar*, *chortar* “herd”, should possibly be connected with Gk. *ἀγείρω* “gather” [26].

25. Full grade **sm_{er}-* / zero grade **sm_{ur}-* (Gk. *σμήρις*, *μήρον*) indicate a pre-IE root structure **sm_{er}-*; for initial sonant clusters, cf. Rasmussen 1981 and Olsen 1984.

26. OHG *quartar* as well as the Gk. zero grade forms, *ἀγύρις* etc. point to an initial group **g_u-*, cf. Rasmussen 1981.

4.1.18. **leip-tr-iah₂*-, IEW 653: ON *leiptr* (o-grade) “lightning”, cf. Lith. *liepsnà* “flame”.

4.1.19. The Germanic suffixes *-stra-*, *-trijō(n)-*, *-aldra-*, *-uldra-*, *-al-drō-*, and *-uldrō-* ought not to be used as evidence in this investigation as they are obviously productive.

4.2. Derivatives with IE suffixes **-tlo-* / **-tlah₂* / **-d^hlo-* / **-d^hlah₂*.

OHG *bīhal* (2.5), OE *gīsl* (2.6), Goth. *sītls* (2.7), ON *sáld* (2.11), Goth. *neþla* (2.12), OE *bold* (2.15), ON *stǫðull* (2.16), OHG *beknuodilen* (2.18), OHG *kīld* (2.20), OHG *siula* (2.21), ON *þexla* (2.22) besides the following:

4.2.1. **spjē-tlo-* or the like (a clear reconstruction of this, obviously onomatopoeitic, root is of course problematic), IEW 999: OE *spádl*, metathesized *spáld*, MLG *spēdel* “saliva”, Gk. πτύαλον, πτύελον might be interpreted as dissimilated from *πτύατλον / *πτύετλον.

4.2.2. **dej-tlo-*, IEW 184: if OHG *zīdal-* “honey” (e.g. *zīdal-weida* “Waldbezirk zur Bienenzucht”; OHG *zīdalari*, NHG *Zeidler* “Bienenzüchter”) is correctly interpreted as “brightness, clearness, clear honey”, cf. Skt. *dīdeti* “shines” (see also Kluge 1963, 880).

4.2.3. **ski-tlo-*, IEW 921: MHG *schēdel* “temple”, Ml. Dutch *schedel* “cover, eyelid”, cf. e.g. OIr. *scíath* “shield”.

4.2.4. Goth. *hvoftuli* (suffix **-tliah₂*) “fame”, derived from *hōpan* “boast”, no certain etymology.

4.2.5. **μond^h-lo-*, IEW 1148: ON *vǫndull* “bunch of hay” should probably be seen in the same light as **sed-lah₂*- (cf. 2.7), i.e. an original **-tl-* derivative of a root ending in a dental (**μend^h-* “turn, wind”, Goth. *windan* etc.). The *-l-* of the suffix seems to disagree with Gk. ἄθρας “cart”, κάλναθλον “wicker carriage”. The simplest solution would be the assumption of a *-ro-* suffix comparable to that of Skt. *vandhúrah* “wicker basket tied upon the wagon” (cf. AEW III, 143), which is derived from an original u-stem (cf. Goth. *wandus*, ON *vǫndr*).

4.2.6. **mont^h-lo-*, IEW 732: ON *mōndull* “Drehholz an der Handmühle”, NHG *Mandel* “Rollholz”. Considering the clear meaning of an instrument noun this example must represent an original **mont^h-tlo-*. Root **ment^h-*, cf. Skt. *mānthati* “whirls, stirs” etc. (AEW II, 599).

4.2.7. **b^hoid-tlo-* > **b^hoīt-tlo-* > Gmc. **baisla-* (cf. Kluge 1886, 46): ON *beisl* “bridle”. Root **b^heid-*, IEW 116, cf. e.g. Skt. *bhinádmī*, Lat. *findō*, Goth. *beitan*. From this type of examples we get the productive suffix Gm. *-(i)sla-*.

4.2.8. **h₂uə₁-tlo-*, IEW 83f, Kluge 1963, 844: OHG *wadal* (m) “Büschelartiges zum Hin- und Herbewegen, Fächer, Haarbüschel”, as an adj. “floating; beggar”. Also full grade in e.g. OE *wædla* “poor, beggar”. The root involved is no doubt **h₂ueh₁-* “blow”, but it is difficult to say to what extent the stem variant **h₂ueh₁-t-* (e.g. Skt. *vātulaḥ*, Gk. ἀήσυλος) is involved. We might assume an instrument noun **h₂uə₁-tlo-* and an adjective **h₂ueh₁-t-lo-*. Lith. *vėtra* “storm”, OCS *větrъ* “air, wind” are most naturally considered to be **ro-*derivatives of **h₂ueh₁-t-* (cf. Lith. *vėtyti* “throw, swing”), as a suffix **-trah₂* is otherwise unknown in Balto-Slavic.

4.3. Summarizing the Germanic material it is evident that the pattern seen in derivatives with cognates from more than one IE language family is clearly confirmed: Of the examples mentioned in 4.1, ex. 2-3, 6, 8, 12 and 16-17 are derived from roots containing *-r-*, 1, 4-5, 7, 9-11, 13-15 and 18 from roots containing *-l-*, none from roots of any other structure; taking the examples of 4.2 none of the basic roots include a liquid.

One apparent exception to this general rule must be mentioned: ON *undr*, OS *wundar*, OHG *wuntar* “wonder”, derived from the root **uen-*. As a **-tro-*derivative is not found elsewhere and the meaning does not make the hypothesis of an instrument noun evident, I would suggest a *-ro-*stem **uŋ-ro-* > Gmc. **wunra-*. There seems to be no parallels to show whether a sequence **-n-r-* could provoke an epenthetic consonant *-d-* in Germanic, but such a hypothesis cannot be considered improbable, considering the evidence for *-mr-* > *-mbr-* (e.g. Goth. *timbrjan*).

For ON *fóðr*, *fóstr* cf. fn. 22.

Derivatives with the suffix *-alda-* (<*-otlo-), i.e. a connecting vowel + *-tlo-, have been subject to a dissimilatory process, *r-r > r-l, which has been avoided in the primary derivatives: thus OE *færelđ* < *fara-*ðla-* for expected *fara*ðra-*, ON *þreskoldr*, OE *þrescold* for expected *þreskord-.

5. Celtic.

The material has mainly been taken from KG II, 45f, and Joseph, 1982. As in the paragraph on Germanic, *-t- will be used as the symbol for IE *-t- or *-T^h- (i.e. *-t^h- or *-d^h-), which are not distinguished in the Celtic suffixes involved.

IE suffix *-tro- / *-trah₂ / *-d^hro- / *-d^hrah₂.

5.1. MIr. *clethar* (1,5), OIr. *altram* (1,7), OIr. *tarathar* (1,10), OIr. *criathar* (1,12), OIr. *lóathar* (1,14), MIr. *arathar* (1,19), and the following:

5.1.1. *b^hreĭh-trah₂, IEW 166: OIr. *briathar* “word”, Welsh *brwydr* “dispute, conflict, battle”, cf. Skt. *bhriṇánti* “they hurt”.

5.1.2. OIr. *ríathar* “torrent”, OW *reatir*, MW *rhaeadr* “waterfall”; as remarked by Joseph 1982 (p 43), the vocalism of the Welsh forms do not correspond to *brwydr*, *cruitr*, though no consequence is drawn from this evidence (suggested reconstruction: *reiH-tro-). Pedersen (KG II,45; I,66) reconstructs *riia-tro- (i.e. *riĭā-; W *ĭā- > -ae(a)-, cf. *clae*r older *clae*r ~ Gk. χλιαρός), which would be a zero grade with analogical vocalization from the full grade *reĭh-. A much simpler solution, as suggested to me by J.E. Rasmussen (p.c.), would be the assumption of an Irish loanword into Britannic.

5.1.3. *uelə-tros, IEW 1111f: W *gwaladr* “leader”, OBr. *-valatr*. The root vocalism -e- is assumed by Joseph 1982 (p 42) because of Lith. *veldėti* “reign”. Following Pedersen (KG II, 42), we could assume an original verbal abstract, “sovereignty” as the basis of the masculine

derivative (type δαιτρών→δαιτρός). However, it cannot be excluded that we simply have to do with a thematization of an extinct nomen agentis **uelə-tor* “ruler”. If this is the case this example is of no relevance.

5.1.4. For W *paladr* “balk, spear” we have no satisfactory etymology [27].

5.1.5. **plah₂-trom* or **pl_h₂-trom*, IEW 806, KG 45: OIr. *láthar* “place, position”, W *llawdr* “trousers”. Same root with suffix *-*ro*- in OIr. *lár*, W *llawr* “pavement” = ON *flórr*.

5.1.6. **h₃rey-trom*, IEW 331. MIr. *rúathar*, W *rhuthr* “storm, assault” (geminated dental?), cf. Gk. ὄρνυμι, Skt. ṛṇóti etc.

5.1.7. **ple-tro-*, IEW 681: According to Pedersen (KG II,45), the origin of OIr. *lethar*, W *lledr*, Bret. *lezh* “leather” (borrowed into Germanic) are etymological cognates of e.g. Lat. *pellis*, Gk. πέλας “skin”. The formation with a thematic vowel would be similar to that of **sk^we-tlo-* > *scél*.

5.1.8. **les-tro-*, IEW 680: W *llestr* “vessel”, OCorn. *lester*, Bret. *lestr* “ship”, instrument noun of **les-* “gather”, Goth. *lisan* etc.

5.1.9. OIr. *ríastraim* “distort, twist”, W *rhwystro* “hinder, obstruct” (KG II,45), root **reig-* “bind”, cf. *ad-riug* “alligo” < **reig-trah₂-*, must be of a denominative origin, but it cannot be decided if we have to do with an original verbal abstract or a nomen agentis in *-*ter-*. The same

27. Since we have no evidence that **p^h*- like **p-* would simply disappear in Celtic, I should like to suggest a – semantically obvious – comparison with Skt. *phálakam* “board, wooden bench” etc., vb. *phálati* “bursts, splinters”, Gk. σφαλασσειν τέμνειν, i.e. a root *(*s*)*p^helə₂-*, instrument noun **p^helə₂-tro-* > Welsh *paladr*. A parallel of the suggested greater resistance of **p^h*- than **p-* would be the well known development in Armenian, **p-* > *h-/Ø-*, **p^h*- > *p^c*-. Obviously **p^h*- cannot have been identical with the **p^h*- which is expected as an intermediate stage between **p-* and **h-*; we must probably imagine a pronunciation [px] or the like – at any rate something more resistant than just **p-* + aspiration. This could be explained by the origin of **p^h* (or in any case some instances of **p^h*) as **p* + *h₂*, thus confirming the conception of **h₂* as a velar spirant.

is the case of OIr. *saltraim* “step” (root *sal- “jump”), and W *mathru* “Niedertreten” (Lith. *minù* “step”).

5.2. IE suffix *-tlo- / *-tlah₂ / *-d^hlo- / *-d^hlah₂.

W *hoedl* (2.2), OIr. *foccul* (2.4), OIr. *gíall* (2.6), Gaul. *sedlon* (2.7), W *haeddel* (2.9), W *hidl* (2.11), OIr. *síl* (2.13), OIr. *tál* (2.22), and the following:

5.2.1. *(h₂)anə₁-tlah₂, IEW 38: OIr. *ánál*, W *anadl*, MBret. *alazn* (metathesized) “breath”, root of Skt. *ániti*, Gk. *ἄνεμος* etc.

5.2.2 *kan-tlom /-tlah₂, IEW 525f: MÍr. *cétal* (n), W *cathl* (f), Bret. *kentel* (f) “song”, cf. Lat. *cano* “sing”.

5.2.3. *sk^we-tlom, root *sek^w-, IEW 898: OIr. *scél* “tale”, for the formation cf. *uēg^hetlom (2.10) and *pletrom (5.1.7).

5.2.4 *d^hə₁-tlom (root *d^heh₁- “put”, IEW 237): OIr. *dál*, OW *datl*, OBr. *dadl* “gathering”.

5.2.5. MBr. *malazn* “sheaf” is traditionally reconstructed as *mana-tlo- (i.e. *menə-tlo- or *manə-tlo-) with a metathesis similar to that of *alazn* and compared to Lat. *manus* (e.g. WH II, 35), cf. particularly for the semantics *mani-pulus* “bunch”.

5.2.6. W *banadl*, MBr. *balazn* “broom” apparently < Celt. *bana-tlo-, has no evident etymology, but one is tempted to compare OE *bōnian* “polish”, OS *bōnēn* “scrub, polish”. The original meaning would be “scrubbing or sweeping instrument” and the proto-form approximately *b^hə₂n-ə-tlo-, in which *-ətlo- instead of *-tlo- might have been taken over from other similar formations to avoid an opaque consonant cluster. [28]

5.2.7. Joseph (p40), following Klingenschmitt (p.c.), postulates *^hH-eĝ-tlo- as the proto-form of Gaul. *Aneġtlo-* “protection”, OIr. *anacul*, verbal noun of *aingid* “protects, spares” (cf. Thurneysen 1946, 461).

Again, the expected distribution of the suffixes *-tro- / *-trah₂ and

*-tlo- / *-tla_h₂ is confirmed: From group 1 items 1-2 and 6 have a radical -r-, 3-5 and 7-8 a radical -l-, while 9 cannot be used as decisive evidence; from group 2 none of the roots contains a liquid.

5.3. The material provided by Pedersen (l.c.) seems to present us with two exceptions:

OIr. *ethar* “ferry, boat” is reconstructed as **pi-tro-* and connected with Skt. *pātram*. The root form **pi-* could, if necessary, be defended, but the semantics are far from evident. One would prefer a thematization of the original -r/n-stem of **h₁ei-* “go” seen in Lat. *iter*, i.e. **h₁i-tro-* (thus IEW 295). OIr. *sai^htar* “trouble” < **sai^hturom*, following Pokorny, IEW 877. A derivation directly from **sh₂ai-tro-* cannot be excluded for phonological reasons, but would contradict the rest of the material.

6. Latin.

The material from Italic, and particularly Latin, is outstanding in one respect: As a matter of principle it should be possible clearly to distinguish the eight suffixes in question. We have already seen a number of inherited examples of **-trom*/**-trah₂* > *-trum*/*-tra*, **-tlom*/**-tla_h₂* > *-culum*/*-cula*, **-d^hrom*/**-d^hrah₂* > *-brum*/*-bra* and **-d^hlom*/**-d^hlah₂* > *-bulum*/*-bula*. These examples confirm the proposed theory concerning the distribution of -r- and -l- of the suffix: -r- after a root including a liquid, -l- elsewhere. Especially *arātrum*, *cribrum* and *terebra* must be emphasized as clear archaisms, as they are not subject to the increasing tendency of liquid dissimilations (cf. the well known distribution of *-ālis*/*-āris*, e.g. *cūriālis*/*sōlāris*) [29].

A number of derivatives with no extra-Italic parallels follow the same pattern.

6.1. Suffix **-trom* / **-trah₂* > Lat. *-trum* / *-tra*.

28. Ultimately **b^hah₂n-* / **b^hah₂n-* (cf. also Gk. φαίνω “shine”, Arm. *banam* “open, reveal”) is probably an extension of **b^hah₂-*, Skt. *bhāti* etc.

29. Numerous examples of liquid dissimilation, particularly in Latin and the Romance languages, can be found in Grammont 1895.

Culter (1.2), *rutrum* (1.4), Umbr. *kletram* (1.5.), *lātrīna* (1.14) and *arātrum* (1.19), besides the following:

- 6.1.1. **m^hlg̃-trom* /-trah₂ or o-grade **molg̃-* (IEW 723, WH II, 121): *mulctra* and *mulctrum* “milk vessel”, borrowed into OHG *mulhtra*. Vb. *mulgeō*, Gk. ἀμέλω etc.
- 6.1.2. *mulcetra* (WH II, 120) “heliotropum”, derived from *mulceō* “touch softly” (“wegen der giftlindernden Wirkung der Pflanze”). Thematic vowel as in *vehiculum* [30]. The root form *mulc-* has no certain external parallels.
- 6.1.3. **b^hlg̃-e-trom* (IEW 124): *fulgetrum* “lightening”, from the root **b^hleg-*, cf. Gk. φλέγω etc.. Formation of the type *mulcetra*.
- 6.1.4. *verētrum* “männliches oder weibliches Schamglied” (WH II, 759), connected with *vereor* “venerate, fear”, cf. from the same root, but without the -ē-extension, Skt. *vārtram*, W *gwerthyr*.
- 6.1.5. **lā-tro-* must be postulated as the basis of *lātrāre* “bark”, cf. Skt. *rāyati*, Lith. *lōti*. The unvoiced character of the dental would indicate that the clearly onomatopoeic root does not end in a laryngeal.
- 6.1.6. *scalprum* “chisel” if < **scalprum*, i.e. **skalp-trom*, cf. *scalpō* “scratch” (Skt. *kālpate* etc., IEW 926).
- 6.1.7. *fulcrum* “support” if < **fulctrum*, i.e. **b^hlg̃-trom* (IEW 123), vb. *fulgiō* “support” (originally by means of balks, cf. ON *bialki* etc).
- 6.1.8. Possibly *plaustrum* “sort of wagon” if correctly interpreted as **plaud-trom* “Werkzeug zum Knarren” (WH II 320), cf. *plaudō* “clatter”. No obvious external connections.
- 6.1.9. *rāstrum* “drag-hoe” < **rād-trom*, cf. *rādō* “scrape“ and
- 6.1.10. *rōstrum* orig. “gnawing instrument”, cf. *rōdō*, originally belong to the same root, ablaut -ā-/ō- (i.e. **-eh₂-* / **-oh₂-* or possibly **ṛh₃-* / **reh₃-*). From this type of roots (ending in a dental) we may have the origin of the suffix *-strum* /-stra.

6.2. Suffix **-tlom* / **-tla_h₂* > **-culum* / **-cula*

Subūcula (2.1), *saeculum* (2.2), *vehiculum* (2.10) and *pōculum* (2.19). Apart from these inherited formations the suffix *-culum* / *-cula* is highly productive.

In the formation of mostly instrument nouns on the basis of numerous verbal stems, e.g. *piāculum* (Umbr. *pihaklu*) from *piāre*, *gubernāculum* from *gubernāre*, *perīculum* from *-perīre*, *curriculum* from *currere*; *ferculum* must be added to this list and apparently does not represent an old formation.

The suffix *-culum* is used productively in the formation of nouns in the meaning of place names, e.g. *hibernāculum*, *receptāculum*, *umbrāculum*, Osc. *sakaraklūm*.

From roots ending in a guttural the suffix is regularly added without any connecting vowel: e.g. *vinculum*, *sarculum*, *torculum*, *baculum* (~ Gk. βάρκρον).

If we have an *-l-* in the basic root *-clum* is dissimilated to *-crum*: e.g. *ambulācrum*, *lavācrum*, *simulācrum*. In such roots it is consequently easy to distinguish between inherited derivatives (*-tr-*, e.g. *lātrīna*) and younger formations (*-cr-*, e.g. *lavācrum*).

6.3. **-d^hrom* / **-d^hrah₂* > *-brum* / *-bra*.

Terebra (1.10), *cribrum* (1.12), *-lūbrum* / *lābrum* (1.14) and *flābrum* (1.17).

30. *Mulciber*, epithet of Vulcanus (P.F. "Mulciber volcanos molliendo scilicet ferro dicitus") remains obscure. If the original meaning is really "mollifier", **mulced^hros* (WH II, 120) is of course likely, but this would not explain the normal full grade of the suffix (gen. *-berī*, dat. *-berō*). Generally the surprising inflection is understood as influenced by compounds in *-fer* (cf. *Lucifer* etc.), whence also the late restitution *Mulcifer*. Probably the semantic underlying *Mulcifer* should be taken seriously: An ancient compound in **-b^h-* > *-b-* instead of the general (analogical) *-f-*. The suggested process has an exact parallel in Arm. *lusawor* as against the younger, analogical *lusaber* (= *lucifer*).

6.3.1. *crēber* (IEW 577) “dense, particularly concerning growth” is connected with the verb *crēscō* “grow” (cf. e.g. Lith. *šerti*), i.e. **kreh*₁-*-d^hro-*. Semantically we obviously have to start from a verbal abstract. This example clearly supports the proposed theory of aspiration caused by a consonantal **h*₁.

6.3.2. *dolābra* “hoe” (IEW 194f), cf. the verb *dolāre* “rough down, trim” (Skt. *dalāyati* “chop”, ptc. *dalitāḥ*). The root being obviously *set*, i.e. **delh-*, *dolābra* is probably a substitution of **dolābra* (under the influence of the verb, exactly like *arātrum* – or the expected zero grade **dlā-* may have been replaced by *dolā-* under the influence of full grade forms). If Gk. *δηλέομαι* “harm” is correctly connected with this root (Dehnstufe, cf. GEW I 378), this may point to **h*₁, which would explain the aspirate of **del*₁-*d^hrah*₂ connected with the feminine gender (< collective).

6.3.3. *calābra curia* (IEW 549) “a Curia of the Capitol, so called from the proclamation (*calāre*) of the calendar dates in this place by the priests” (Lewis-Short, 266). Lat. *calō*, Gk. *καλέω* etc. seem to reflect **kalh*₁-, so the situation is quite similar to that of *dolābra*: aspiration by **h*₁ / feminine gender / *-ā-* from the verb (or **klā-* → *kalā-*).

6.3.4. None of the remaining examples that have been brought into the discussion clearly reflects a suffix **-d^hro- / *-d^hrah*₂. **lūcubrum* assumed as the pre-stage of *lūcubrāre* reflects **-sr-* like *tenebrae* < **teməs-rah*₂ (WH I, 824); the same may be the case of *illecebrae*, *pellecebrae* (to *illiciō*, *pelliciō*, cf. *laciō* and *laccessō* “trap”), the *-s-* extension possibly derived from the stem of *laccessō*. Likewise *palpebrae* “eyelids” (cf. the verb *palpitō*). *Ventilābrum* is formed on the pattern of *flābrum*. *Volutābrum* (Virg.) “wallowing place for swine, hog pole” is clearly a secondary formation (cf. *volutō*, derived from *volvō*); the suffix may have been added in analogy with *polūbrum*, which was secondarily connected with *polluō* “drench” (hence the writing *pollūbrum*); however, this remains a pure guess. Finally we have the group *latebrae* “hiding place”, *scatebrae* “spring” and *salebrae* “bumpy place of the road”, of which the two latter are generally assumed to have been made on the pattern of *latebrae*, which may in turn quite well reflect an extension of an original *s-*stem (cf. Gk. *λάθος* (n)).

6.4. Suffix $*-d^h\text{lom}$ / $*-d^h\text{lah}_2$ > Lat. $-bulum$ / $-bula$.

Stabulum (2.16), *pābulum* (2.17), *sūbula* (2.21), *tēla* (2.22) and:

6.4.1. *fābula* > $*b^h\text{ah}_2\text{-d}^h\text{lah}_2$ (IEW 105, cf. Dor. φᾱμί etc.), with $*-d^h\text{-}$ according to the rules suggested above.

6.4.2. *fībula* “buckle” (IEW 244), cf. *fīvō* “fasten”, later *figō*. It is not known whether we have to do with a root final $*-g^w\text{-}$ or $*-g^wh\text{-}$. Lith. *dýgti* points either to an original long vowel or a lengthened $*-i\text{-}$ according to Winter’s law (cf. Winter 1978), which would indicate an IE media $*g^w$. The first solution is supported by the inf. *figier* found in the SCBacch., as this text would preserve an original diphthong $*ei$ (cf. Ernout-Meillet, 234). Thus the Baltic evidence cannot solve the problem of $*-g^w\text{-}$ or $*-g^wh\text{-}$. If we assume original $*-g^wh\text{-}$, the aspiration might explain the selection of $*-d^h\text{lah}_2$ instead of $*-tlah_2$, but though this solution may seem attractive, considering the effects of $*h_1$ and $*h_2$, it must be admitted that it is in contradiction to the only other relevant example, Gk. λέκτρον, which would then have to be analogical.

6.4.3. *trībulum* “Dreschbrett” (IEW 1071) cannot be derived from exactly the same root form as *terebra* (zero grade $*tr^h_1\text{-}$ > Lat. $*trā\text{-}$). Apparently $-bulum$ does not have to represent the suffix $*-d^h\text{lom}$; in order to attain a coherent explanation of the Latin material we should rather presuppose the stem $*trīb\text{-}$, cf. Gk. τριῖβω “grind” etc.

6.4.4. The remaining examples are all instrument nouns or indications of place, productively derived from verbal stems, e.g. *exorābulum*, *vocābulum*, *nuci-frangibulum*.

6.5. As a conclusion of this view of the Latin material, we must notice that the suffixes containing $-Tr\text{-}$ as well as the basic formations containing $-Tl\text{-}$ quite faithfully reflect the IE state of affairs. However, especially $*-tlom$ / $*-tlah_2$, but also $*-d^h\text{lom}$ / $*-d^h\text{lah}_2$ are used productively in a vast number of derivatives. This process must already have started in the period of Proto-Italic, cf. the quite numerous examples of $-clo\text{-}$ / $-cla\text{-}$ ($-klo\text{-}$ / $-kla\text{-}$) from Oscan (e.g. *sakaraklúm*), and particularly Umbrian (e.g. *ehvelklu* “decretum”), the last example at the same time proving that the dissimilation $-l-l\text{-}$ > $-l-r\text{-}$ is not common Italic. It is

interesting to notice that none of the Osc.-Umbr. examples of *-tro-/-tra-* (except the cognates of Lat. *castrāre*, for which cf. 3.1.1.) occur in roots not containing a liquid, e.g. Umbr. *kletram*, *krematra*, *cringatro*.

7. Greek.

The Greek material, in opposition to Italic and Balto-Slavic, shows a clear preference for the suffixes *-τρο-/-τρᾶ-*, which in particular replace **-τλο-/*-τλᾶ-*, at any rate in more recent formations.

7.1. Suffix **-tro-/*-trah₂-* > Gk. *-τρο-/-τρᾶ-(-τρη-)*.

ῥόπτρον (1.3), λέκτρον (1.9), τέρετρον (1.10), φέρτρον, φέρετρον, and φαρέτρᾶ (1.13), λότετρον (1.14), ἄλετρις and ἄλετρεύω (1.15), ἄροτρον (1.19).

A few of the Homeric examples have a chance of being old:

7.1.1. δέρτρον “Netzhaut, Darmfell” (IEW 1140) < **der-trom* the root of δέρω “skin”, ptc. δαρτός. The anit̥ version of the root is also found in Skt., e.g. aor. *ádar*, ptc. *dar̥tá-* (set formation in *dar̥nāti /dir̥nā-*).

7.1.2. θρέπτρα, connected with τρέφω “nourish” (IEW 257) < **d^hreb^h-*. This example would not be of any consequence concerning the problem of aspirate + T, as it may easily have been dissimilated < **-θρ-*.

7.1.3. **u_oh₁-Trah₂* > ῥήτρη “agreement”, root **u_{er}h₁-* (IEW 1162), cf. εἶρω < **u_{er}h₁-iō-* (**h₁i* > *i*, cf. Pinault 1982).

7.1.4. δέλτρον “bait” (IEW 365) < **g^wel₁-trom* as mentioned 1.11.

7.1.5. ἔλυτρον < **u_{el}-trom* “case” (IEW 1140), cf. Skt. *varútram* [31].

On the other hand these examples are certainly not incontestable additional evidence to prove the suggested theory. Homeric examples such as ποδα-νίπτρον (root **neig^w-*), σῆπτρον, κέντρον, δαιτρόν (cf. Skt.

dātrám), μέτρον and a multitude of later derivatives show that -τρο-/-τρῶ- has had a tremendous expansion at the expense of -τλο-/-τλᾶ-.

7.2. **-tlo-* / **-tlah₂-* > Gk. -τλο-/-τλᾶ- (-τλη-).

χύτλον / χύτλη 2.3. (-χύτλον Homeric, χυτρο- later), ἐχέτλη (2.9), ὄχετλα (2.10). By a strange coincidence these examples all have a radical aspirate, so they are generally regarded as products of a dissimilation **-θλ-* > -τλ-. Obviously it would be simpler to regard them as relic forms: Lat. *vehiculum* supports the assumption of a suffixal **-t-* in ὄχετλα, and in the two other examples there is no particular reason to postulate an aspirate; νῆτρον as the only one of the attested old derivatives has replaced **-tl-* with -τρο- (cf. 7.1.).

7.2.1. ἄντλος (ep./poet., orig. Ionian) “Schiffsbodenwasser, Kielwasser” (GEW I, 114) is generally reconstructed as *ἄμθλος (i.e. **sm^h-d^hlo-*) and compared to Lat. *sentina* “Schiffsbodenwasser” and further Lith. *semiù* “scoop”. Again, it is quite arbitrary to assume a suffix **-d^hlo-* with later aspirate dissimilation, but of course it cannot strictly be disproved.

7.2.2. σχέτλιος (cf. ἔχω) may also have preserved the original suffix.

7.3. Suffix **-d^hro-* / **-d^hrah₂-* > Gk. -θρο-/-θρῶ- (-θρη-) – or -τρο-/-τρῶ- (-τρη-) as the result of dissimilations.

βάραθρον etc. (1.11), κλήθρα (1.18), λύθρον (1.20).

7.3.1. πέλεθρον (and πλέθρον after syncope) “a linear measure of 1000 feet, race-course” (cf. Frisk II, 555) is connected with πέλομαι “turn” < **k^welh-*, i.e. **k^wel₁-d^hrom* [32]. The aspirate of the suffix confirms the conception of a root final laryngeal.

7.3.2. ὄλεθρος “harm” (IEW 306), also derived from a set-root (vb. ὄλλυμι, aor. ὄλέσαι, type σόρυνμι, στορέσαι), though we have no further cognates.

31. Lat. *involūcrum* has -cr- < **-tl-* and must have been created independently (possibly replacing an original **involūtrum*).

32. For the assumption of the root final laryngeal, see Bendtsen 1985.

7.3.3. κρεμάθρᾱ “Hängematte, Korb, Hängestrick” (IEW 573, GEW II 13f), to κρεμάννυμι “hang”, aor. κρεμάσαι (II.). This root as well seems to end in a laryngeal, **krem₂-*, which would explain the aspiration. No further cognates.

7.3.4. τέρθρον “end, point” (IEW 1074) is probably derived from **terh₂-* (cf. Hitt. *tarhzi* “defeat, overcome”). The aspiration must have originated in the zero grade. We should actually expect **τερα-*, but apparent anīṭ-forms such as e.g. τέρμα may have influenced the formation [33].

7.3.5. ἄρθρον “joint (of the body)” (GEW I, 138): cf. ἄρ- “join” < **h₂ar-*, but also such derivatives as Skt. *īrmāḥ*. As in the case of τέρθρον there seems to have been some confusion between the seṭ root form (causing the aspiration) and the anīṭ root of the verb.

7.3.6. ῥέεθρον, Att. ῥεῖθρον “stream” (IEW 1003, cf. ῥέω) < **sreue-d^hro-*. In this case **-d^h-* is not immediately explainable, but at any rate we find a similar dental in ῥυθμός. According to Schwyzer (GG 492) the derivatives in -θμο- instead of -μο- are particularly used in an intransitive/passive meaning (ῥυθμός, τεθμός to τίθημι, σταθμός to ἵστημι). ῥέεθρον thus might be a substitution of **ῥέετρον* under the influence of ῥυθμός, where the root could be seen as ending in -θ. A similar explanation could be used for Hom. ἐπί-βαθρον “ferriage”, later βάθρον “basis, foot” (Skt. *gātram*), root **g^wah₂-*, where the aspiration is quite according to the rules, but an *-l-* suffix should be expected. However, the synonymous βαθμός as well as βαθμός and the semantically close βαθύς indicate a root form ending in -θ. Thus, on the model of βαθ + μο- one may have built βαθ + ρο-. At any rate -θρο- is clearly productive so there may not be any need to think of any overly sophisticated solutions.

7.3.7. The remaining -θρο-/-θρᾱ- derivatives are clearly of no relevance in this connection: κμέλεθρον “balk”, and μέλαθρον “rafter” are technical terms with no certain etymology (possibly loanwords); the formation of πολίεθρον, synonymous with πόλις, is quite obscure.

Furthermore the suffix is used productively as added to verbal stems, normally lengthening the stem formative vowel, e.g. σάρωθρον

(σαρώ), κήληθρον (κηλέω), μίσηθρον (μισέω). It is noteworthy that the corresponding productive *-tro*-derivatives never have this lengthening. Could we have have a late, analogically extended, reminder of the original aspirating quality of the laryngeal (model: κλήθρα and words of equal structure)?

7.4. Suffix **-d^hlo-* / **-d^hlah₂-* > Gk. *-θλο-* / *-θλᾱ-* or *-θλη-* (or dissimilated *-τλο-* / *-τλᾱ-* or *-τλη-*). These suffixes are all quite rare.

γενέθλη (2.14) and φύτλη < *φύθλᾱ (2.15).

7.4.1. ἄεθλον / ἄθλον, Arc. ἄφεθλα “Kampfpfeis”. The most obvious derivation is from **h₂meh₁-* “want, crave for”, (cf. Skt. *ávati*, ptc. *ūtá-*), thus **h₂ma₁-d^hl-* (or possibly even **h₂uh₁-d^hl-*), with the aspiration taken over from the full grade of the root.

7.4.2. θέμεθλα, n.pl. “foundation” (GEW I 660). The basic root is **d^heh₁-*, but θέμεθλα is founded on derivatives such as θεμέλια (II.) and θεμελιώω. *-θλα* may well have been preserved from an original derivative **d^heh₁-d^hl-* (cf. from the zero grade OIr. *dál*). The synonymous ἔδεθλον (no etymology) has the same suffix.

7.4.3. Some derivatives have the sequence *-σθλο-* / *-σθλᾱ* (*-σθλη*): thus θύσθλᾱ “heilige Geräte zur Backhosfeier” (cf. θύω, GEW 697f), ἰμάσθλη “whip” (cf. ἰμάς “id.”), ἰμάω “pull with a string”, ἔσθλος “noble” (no certain etymology); ὕθλος “leeres Geschwätz” is quite unclear; φύγεθλον “swollen glands” is generally derived from **φλύγεθλον* (cf. φλύω “overflow”). If this etymology is correct, it is possible that the expected **φλύγεθρον*, after a metathesis to **φρούγεθλον* was dissimilated to φύγεθλον. Anyway, this rather obscure formation should not be taken seriously.

7.5. It may thus be concluded that none of the derivatives with an *-l*-suffix are found in roots containing a liquid. On the other hand the *-τq-* and *-θq-* suffixes have been greatly strengthened, partly through the productive formation of new instrument nouns etc., and partly, as it would appear, through the admission of foreign elements.

33. For a further analysis, cf. Rasmussen 1978a.

8. Armenian.

8.1. Suffix **-tro-*: *lur* (1.6), *kokord* (1.11) and *arawr* (1.19). Suffix **-tr-io-*: *atawri* (1.15). Suffix **-tlo-* (or **-d^hlo-*): *ciwt* (2.20), possibly *joyl* (2.3). Suffix **-tlah₂* (or **-d^hlah₂*): *cnawt* (2.14); *etl* (2.7) has a problematic I-declension (gen. *etel*, cf. *astl / astel*), so that it cannot be directly derived from **sed-lo-* (thus Solta 1960, 148), cf. also the synonymous *-io-*-derivative *teti*.

8.2. Besides the above mentioned one may consider the following examples:

8.2.1. *šiwł* “sprout”, which I equate with Skt. *śvātrá-* “gedeihlich” < **k_uē-tl-*.

8.2.2. *erkiwł* “fear“ (vb. *erknč^cim*, cf. Gk. *δεῖδω*) may be derived from **d_{uei}-tl-* / **d_{ui}-tl-*.

8.3. It is remarkable that in all cases the distribution of **-tr-* / **-tl-* is in agreement with the theory advanced. This point must be of some importance, as these suffixes are clearly on their way out of the language and are only found in a few relic forms which have consequently no great chance of being analogical.

9. The relationship **t/T^h*.

Summarizing the results of the investigation we may conclude that the final stage of the IE proto-language possessed eight separate suffixes with the meaning of instrument nouns/verbal abstracts: **-tro-*, **-trah₂*, **-tlo-*, **-tlah₂*, **-d^hro-*, **-d^hrah₂*, **-d^hlo-* and **-d^hlah₂*. Looking further back from this period, however, we are confronted with a far simpler system:

9.1. Neuters and feminines have developed from one ablauting paradigm – type *CéC-TRom* / *CC-TRáh₂*.

9.2. The relationship of *-Tre/o-* and *-Tle/o-* is originally one of com-

plementary distribution: *-Tre/o-* after roots containing a liquid and after **-s-*, *-Tle/o-* elsewhere, i.e. **-Tle/o-* is the unmarked variant and will thus have been the original form of Pre-IE. A development **-Tl- > -Tr-* after *-l-* (such as **louə₁-trom* in Gk., Lat., Celt., Gmc.) is of course phonetically quite natural, cf. numerous examples from Latin and the Romance languages [34]. The automatic application of this rule in Latin (e.g. when adding the productive **-tlom* to a root including *-l-*, e.g. **simulāclum > -crum*), is an exact repetition of the same process. **-Tl- > -Tr-* after a radical *-r-*, i.e. a distant assimilation, is quite a rare phenomenon, but examples such as **(h₂)arə₃-trom* (Gk., Lat., Arm., Germ., Celt.) and **terə₁-trom* (Gk., Lat., Celt.) are so well preserved in so many IE dialects that incontestably they must be old. The fact that the necessary assimilatory process is so uncommon makes it all the more unlikely that it could have taken place separately in at least five branches of IE. The occurrence of *-r-* after *-s-* could possibly be interpreted as a case of voicing dissimilation, *-r-* having greater sonority than *-l-* after the two unvoiced consonants *-s-t-*.

9.2.1. In Balto-Slavic the unmarked allomorph of the suffix **-Tle/o-* totally replaced the occurrences of **-Tr-* (except **-str-*), but the somewhat unusual cluster was eased in different ways: In Baltic **-Tl-* was replaced by *-kl-*, in Slavic by *-dl-*. As for Latin, **-tl-* also became highly productive and passed through the same phonetic evolution as Baltic. Greek managed differently: the inconvenient *-tl-* suffixes were here mostly replaced by the phonetically simpler *-tr-*.

9.3. The IE variation **-t-/T^h-* likewise can be interpreted in terms of complementary distribution: the unmarked variant **-t-* was aspirated after a consonantal unvoiced laryngeal, (**h₁*, **h₂*, possibly also after aspirated stops), thus yielding the aspirate **-T^h-*.

It now remains to be decided whether the aspirated variant of the suffix is actually **-d^hr-* / **-d^hl-* as is traditionally assumed. We have already seen that there is no evidence concerning this problem in Indo-Iranian

34. The dissimilatory process avoiding *l-l* is obviously not restricted to these suffixes. It is highly interesting that of the 49 roots with a *-lo-* suffix given by Brugmann (Grdr. II.1. 347) not one has a radical *-l-*. Such roots only accept **-ro-* (e.g. **lub^h-ro-*, **l₀g^{wh}-ro-*, **pleh₁-ro-*).

(0.3.1) and Balto-Slavic (0.3.6); the Armenian examples may all represent $*-t-$ (0.3.7 and 8.1.3); Germanic and Celtic have no clear evidence of $*-d^h-$; in Greek (0.3.2) $*-t^h-$ as well as $*-d^h-$ would yield $-\theta-$; and finally the Latin examples of $-br-$ and $-b(u)l-$ (0.3.3) may equally well represent $*-d^h-$ and $*-t^h-$. Hence we are led to the conclusion that a reconstruction $*-t^hr/l-$ is theoretically as well founded as $*-d^hr/l-$.

Since the aspirated variant of the suffix seems to be the result of an assimilation $*-h_{1/2} + t > *-T^h-$ (3.2), it appears to be phonetically simpler to assume the existence of an unvoiced aspirate in the suffixes concerned. This solution has the further advantage of explaining more easily that the languages in which $*-t-$ and $*-t^h-$ merge (Celtic, Balto-Slavic and Germanic) have only one form of the dental.

According to the proposed solution, then, an unvoiced aspirate may not only be the result of an assimilation of tenuis + laryngeal (e.g. Av. $pa\theta\bar{o}$), but also the other way round, i.e. $*-h_{1/2} + t > *-t^h-$.

9.4. If the theory of a possible metathesis $*-h_1-/-h_2- + -t > *-t^h-$ is correct, one should expect to find supplementary evidence apart from the instrument suffix, and actually some material may be brought into the discussion, mainly from Indo-Iranian:

9.4.1. Av. $d\bar{a}\theta a-$ “wise, righteous” is derived from $*d^heh_1-$ “place, put”, i.e. $*d^heh_1-to- > *d^h\bar{e}-t^ho-$. As suggested by J.E. Rasmussen (p.c.), the assumption of a $v\ddot{r}ddhi$ formation would be quite natural in this case: ptc. $*d^h\bar{e}_1-to-$ “the firmly placed things, the rules” / $*d^heh_1-to-$ “the one who is in accordance with the world order, who keeps the rules” [35]. Ptc. with analogical $-ta-$ suffix and secondary full grade in Av., OP $d\bar{a}ta-$, regular zero grade in Skt. $hit\bar{a}-$, Gk. $\theta\epsilon\iota\acute{o}\varsigma$.

9.4.2. Gk. $\pi\lambda\eta\theta\acute{\upsilon}\varsigma$ and $\pi\lambda\eta\theta\bar{o}\varsigma$ (neut., s-st.) “multitude, plenty” apparently represent the phonetically regular $*-tu-$ and $*-tos-$ derivatives (cf. Skt. $p\bar{a}thas$ etc., 9.4.8.) of the root $*pel\bar{a}_1-/*p\bar{l}h_1-$, i.e. $*p\bar{l}h_1-tu-$ and $*pleh_1-tos$ (or possibly $*p\bar{l}h_1-tos$). This interpretation of $\pi\lambda\eta\theta\acute{\upsilon}\varsigma$ may further be supported by Lat. $pl\bar{e}b\bar{e}s < *pl\bar{e}b\bar{u}-V- < *pleh_1-t\bar{u}-V-$. Gk. $\pi\lambda\eta\theta\bar{o}$ and $\pi\lambda\eta\theta\acute{\upsilon}\omega$ “am full” are obviously of denominative origin. For the analogical preservation of the suffixes $*-to-/*-ti-$ cf. e.g. Skt. $pr\bar{a}-t\bar{a}-$, Lat. $-pl\bar{e}tus$, Skt. $pr\bar{a}-t\bar{i}-$.

9.4.3. Skt. *gūthah*, *-gūtham* “excrement”, Av. *gūθəm* “dirt, dung” (and probably also Arm. *ku* / *kuoy* “dung”; the outcome of intervocalic **-th-* in Armenian is not clear) < **g^wuh₁-to-* cf. Skt. *guvāti* “cacat” < **g^wuh₁-e-ti*. The e-colouring quality of the laryngeal is attested by e.g. Lith. *gėda* “shame, disgrace” and OHG *quāt* “dung”, both with a **-d^h-* extension probably derived from the verbal root **d^heh₁-*.

9.4.4. Skt. *vārūtham* “protection, shield, army” etc. < **eruh₁-to-* from original **ruh₁-to-*, analogically influenced by the full grade **erh₁u-* > **eru-*, cf. the verb *ūrṇóti*. The assumption of a final **-h₁-* is supported by Gk. ἑϋσθαί “protect”, ἑϋμα “protection” etc. (cf. *Járūtha-*, 9.4.10. and FN).

9.4.5. Av. *zəθa-*, n. “procreation” apparently contradicts the theory of *consonantal *h₁ + t > *t^h*, as the immediate proto-form would seem to be **gen₁-tom*. However, for the root **gen₁-* “beget” etc. we have sufficient evidence for an original normal zero grade participle **ghh₁-tó-* (Skt. *jātá-*, Av. *zāta-*, Lat. *nātus*, Gk. -γενητος, Goth. *-kunds*) as well as a full grade (probably *vřddhi*) formation **gen₁-to-* (besides *zəθa-* e.g. Lat. *genitus*, OIr. *aicned* “nature”, Lith. *žėntas* “son-in-law”, OS *kind* (n) “child”).

9.4.6. RV *gāthā* (and *gāthá-*, m.) “song, verse”, Av. *gāθā* “religious song” < **gah₂ḱ-tah₂* (vb. Skt. *gāyati*). The pct. *gītá-* < **gh₂i-tó-* and the *-ti*-derivative *gītí-* represent the analogically preserved suffixes *-ta-/-ti-*. The vocalism of ORuss. *gaju*, *gajati* “crow”, probably < **gah₂ḱ-e-ti* indicates that the laryngeal of the root is either **h₂* or **h₃* – preferably **h₂* because of the Ir. aspiration [36].

9.4.7. AV, TB *nāthám* “help” < **nah₂-tóm* (also *nāthah*, m. “protec-

35. This interpretation is in full accordance with the examples found in the Gathas, e.g. Y.46.15 *hīiat dāθəng vīcaiiθā adāθqscā* “dass ihr Gerechte und Ungerechte voneinander scheiden sollt” (Humbach 1959, II, 133).

36. Skt. *gāthá-*, *nāthá-*, *yāthá-*, Av. *dāθa-* all represent irregular full grades of the roots, which is, however, quite common in this type of root structure, cf. Skt. *jñātá-*, *prātá-*. In some cases the assumption of a *vřddhi* formation may be defended, esp. Skt. *nātha-* and Av. *dāθa-* (cf. 9.1.1).

tor”), vb. *nāthate* “seeks help, implores”, if connected with Gk. ὀνίνη-
 μ “am of use, help”, ὄνεαο “use, help” < **h₃nah₂-ur_o*.

9.4.8. RV *pāthas-* “domicile, refuge” is probably derived from **pah₂ǵ-*
 “protect, preserve, keep” (AEW II, 211), i.e. **pah₂ǵ-tos*, an s-stem
 constructed like Skt. *śrotas-* “stream”, Gk. κλειτός “slope”. From the
 same root we have RV *go-pīthá-*, m. “protection” < **-ph₂ǵi-tó-*, *go-*
pīth(i)yam. The analogical *-ta-/-ti-* derivatives are seen in ptc. *pāta-*
 (lex.) and *nṛ-pīti-* “protection of men”.

9.4.9. RV *dirgha-yāthá-*, m. “long course” < **-ǵah₂-tó-*, cf. Skt. *yāti*,
 Lith. *jóti*. Analogical ptc. *yātá-*.

9.4.10. RV *Járūthah*, m. “name of a demon conquered by Agni” may
 be derived from the root **ǵerǵ₂-* “weaken, make old and fragile” (e.g.
 Skt. *jarati*, Gk. γέρας), cf. the epithets *ajāra-*, *ajuryá-*, *jaradviṣ-*, all
 used of Agni (AEW I, 422). *Járūtha-* appears to be derived from the u-
 stem adjective **ǵerh₂u-* / **ǵrh₂u-* > **ǵeru-* / **ǵruh₂-* (cf. Gk. γρᾶῦς
 “old woman”), and must represent a contamination of a full grade
 **jaru-* and a zero grade **jrú-* (+ *th*) comparable to the formation of
várūtha- (cf. 9.4.4.). In *Járūtha-* we may observe the original connec-
 tion between *-u-* and *-u-to-* stems, while *várūtha-* illustrates the rela-
 tionship to present stems of the type **-néu-* / **-nu-* (Skt. *ūrṇóti*) [37].

9.4.11. Dor./Aeol. λάθω “keep ignorant”, Att. λήθη, Dor. λάθος (s-
 st.) “oblivion” are most easily connected with Lat. *lateō* “be conce-
 cealed”, if we assume a root variant **lah₂t-* / **lh₂t-* (or analogically
 revocalized **lǵ₂t-*), i.e. thematit present **lah₂t-e/o-* (> λάθω), stative
 **lǵ₂t-eh₁-* (> *lateō*), fem. *-ah₂-* stem **lh₂t-ah₂* (> λήθη) and neutral s-
 stem probably **lah₂t-os* (> λάθος). The Gk. aorist ἔλαθε must repre-
 sent a contamination of **ἐλάθε* < **e-lh₂t-e-t* and **ἐλατε* < **e-lǵ₂t-e-t*.

9.4.12. Gk. βεῖθός “heavy”, βεῖθος n., s-st. “weight” with the de-
 nominative verb βεῖθω “am heavy” are structurally clearly reminiscent
 of πλεθός / πλεθός / πλεθω. One might suggest a reconstruction
 **g^wrih₂-tu-*, **g^wrih₂-tos*, **g^wrih₂-te/o-* (< orig. **g^wrh₂i-*). The i-exten-
 sion of the root **g^werǵ₂-* “heavy” has a parallel in Skt. *grīṣmá-* “mid-
 summer” [38]. Another extension *-u-* is seen in **g^wruh₂-to-* (< **g^wrh₂u-*
-to-) > Lat. *brūtus*, Latv. *grūts*. The example of βεῖθός etc. seems to

indicate that the treatment of roots in **-eRhi-* / **-Rih-* (< **-eRhi-* / **-Rhi-*) is parallel to that of roots in **-eRhu-* / **-Ruh-* (< **-eRhu-* / **-Rhu-*), cf. Rasmussen 1978b [39].

9.4.13. OP *gāθu* “throne” < **g^wah₂-tu-* represents the phonetically correct development as opposed to Skt. *gātúh* “going, way, course” = Av. *gātuš* “place”. One should particularly notice the semantically opaque character of the OP derivative. An interpretation of *gāθu-* as analogical from the oblique cases **gāθv-* is not possible, as this would be in disaccordance with Sievers’ law, as observed by Rasmussen (cf. Mayrhofer, 1979, 162).

9.4.14. RV *tīrthám* “passage, watering-, bathing-place, ford” < **t_lh-* *-tó-*, cf. Lith. *tiltas* “bridge” (cf. Fraenkel II, 1094). Ind. proto-form **tūrtha-* in Prakrit *tūha-* “river bank”.

9.4.15. RV *nīthám*, *nīthā* “means, way” < **nih-tóm* / **nih-tah₂*, root **neǵ-* (Skt. *náyati*, Av. *naieiti* “brings, leads”). Analogical preservation of the suffix *-ta-* in the ptc. Skt. *nītá-*, MP *nī-*; *-ti-* in Skt. *nītī-*.

9.4.16. RV *yūthám* “herd, crowd” < **yuh-tóm*, vb. *yāuti* “binds, unites, harnesses, fastens” (cf. Lith. *jauti* < **jēuǵ-*). The fem. *yūti-* is analogical.

9.4.17. Skt. *vīthī*, *vīthih* “road, way, row” < **yih-ti-*, cf. *véti* “has in view, approaches, strives for, tracks”, Lith. *výti* “pursue”; analogical ptc. *vītá-* and *-ti-*-derivative *vītī-* f. “pleasure” etc.

37. For the root **d^heb^h-* “harm, hurt” we have evidence of **-neǵ-* present (Skt. *dabhnóti*) as well as *-u-*stem adjective (Hit. *tepu-*) and *-u-to-*ptc. (Skt. *á-dbhuta-*). The same formational type as *várūtha-* and *Járūtha-* is found in *Balbūthá-* PN (RV 8,46,32). As B. is explicitly characterized as a Dāsa, i.e. a non-Aryan, the name may possibly be interpreted as “stutterer” (AEW II, 422) and connected with Lat. *balbūtiō*. Thus a reconstruction **-uh-to-* > *-ūtha-* is not excluded in this case either.

38. Originally “die Zeit des heftigen starken Sommers”, a compound of *grī-* + *samā-*, cf. Wackernagel 1934, 198. **-smo-* > *-sma-* is possibly the regular form of **sm_ho-* in the final member of a compound.

39. If the proposed analysis is correct, it is noteworthy that the metathesis **-h₂-t-* > **-th-* with subsequent compensatory lengthening must have taken place earlier than the internal Greek development **-ih₂-* > **-iā-*.

9.4.18. Skt. *niśūtha-* < **ni-kih-to-* “night”, i.e. “time of rest, lying down”, if the generally accepted derivation from the *seṭ*-variant of **keṭ-* is correct. Other apparent *seṭ*-forms are RV *śīlam* “habit, character, nature, disposition”, RV *duḥ-śīma-* “bad to lie on”, AV *śīvan-* “deposited” [40].

It will be noticed that ex. 1-5 have a root final *-*h*₁-, ex. 6-13 *-*h*₂-, and in ex. 14-18 the exact character of the laryngeal is not clear.

9.5. If we take a view of the examples discussed above, it is obvious that the proposed sound law has been severely restricted by analogical processes: the past participle suffix *-*to-* as well as the derivatives in *-*ti-* and *-*tu-* have generally been kept out of the mechanical phonetic development, especially when they are clearly semantically analyzable in relation to the basic verbal roots. Thus we find examples such as Skt. *vītá-*, *vītí-*, *nītá-*, *nītí-*, *gātú-* etc.

However, in lexically isolated relic forms, where the semantic link between root and derivative has been severed, the phonetically regular evolution has been allowed a free course, thus e.g. Av. *gāθu-* “throne” – not “going”, the synchronically quite opaque name Skt. *Járūtha-* etc.

Concerning the Indo-Iranian suffix *-tha-* (< *-*h*_{1/2}-*to-*) [41] as opposed to the analogical *-ta-*, it is remarkable that, while the *-ta-* derivatives always have the simple participial value, the *-tha-* forms are more specialized, as they are always used with a substantival value, thus Skt. *gāthá-* “song”, *tīrtham* “ford”, *gūtha-* “excrement”, *nītham* “means”, *yūtham* “herd”, *nātha-* “help”, *yātha-* “course”, *várūtha-* “protection, shield”, *niśūtha-* “night”, or as names, thus *Járūtha-*, possibly *Balbūtha-*.

Thus, starting from roots with a final *-*h*_{1/2}- we may in some cases observe a semantic opposition between concrete substantive or action noun in *-tha-* (e.g. *nīthá-*) and past participle in *-tá-* (e.g. *nītá-*). This opposition, however, has apparently been analogically extended to other roots, where the *-tha-* variant would not arise phonetically. This may be seen in examples such as RV *bhṛthá-* “Darbringung”, Av. *bərəθa-* “possession” as opposed to the plain participle Skt. *bhṛtá-*, Av. *bərəta-* “carried”. Likewise Skt. *ukthá-* “sentence, praise”, Av. *uxða-*

“word” / ptc. Skt. *uktá-* “said”; Skt. *rikthá-* “inheritance” / ptc. *riktá-* “left”, Av. *hiθa-* “ally” / ptc. *hita-* “bound”. It is remarkable that the suffix *-tha-* in anī roots, just like in seṭ roots, is never used to derive simple past participles.

10. Conclusion.

10. Summing up the results of the investigation of the instrument noun suffix we may thus see the predecessor of the well known IE system with 8 distinct suffixes as a Pre-IE system, where the morphophonemic variation of the unmarked suffix **-tle/o-* was clearly predictable: **-tlo-* was the unmarked variant of the suffix; in roots containing a liquid we have the origin of an alternative suffix **-tro-*, and in roots ending in **-h_{1/2-}* we find the explanation of the suffixes **-t^hlo-* / **-t^hro-*, which are thus found to contain IE **t^h* and not **d^h*.

40. It is difficult to decide whether the assumption of a seṭ root **keiǵ-* is practicable for IE as a whole. In Skt. **keiǵ-C-* would regularly be realized as *śe-C-* (cf. Narten 1964, 255). The crucial point is whether the development **-eiǵ-C- > *-eǵ-C-*, which would make *κεῖται* a possible seṭ form, is of IE origin or only IIr.

41. For a more thorough investigation of the Indo-Iranian material cf. Frisk, 1936.

11. Table of the morphophonemic variation of Pre-IE *-tlo-:

X = any initial consonantism

T = any initial consonantism not containing r/l

L = any initial consonantism containing r/l

C = any stop (except aspirates ?)

U̇ = m, n, i, u

R = r, l

Root structure	Neuter	e.g.	Collective	e.g.
TeC	TéC-tlom	gwaethl	TC-tláh ₂	
TeU̇	TéU̇-tlom	-ūcula	TU-tláh ₂	
TeR	TéR-trom	scērdar	TR _̇ -tráh ₂	culter
Teh _{1/2}	Téh _{1/2} -t ^h lom		Tə _{1/2} -tláh ₂	dadl
Teh ₃	Téh ₃ -tlom	knuodilen	Tə ₃ -tláh ₂	
LeC	LéC-trom	ræfter	L _̇ C-tráh ₂	
LeU̇	LéU̇-trom	hliodar	LU-tráh ₂	clethar
Leh _{1/2}	Léh _{1/2} -t ^h rom	crēber	L _̇ h _{1/2} -t ^h ráh ₂	flābrum
Leh ₃	Léh ₃ -trom		L _̇ h ₃ -tráh ₂	
TeU̇h _{1/2}	TéU̇ə _{1/2} -tlom	anadl	TU _̇ h _{1/2} -t ^h lah ₂	sūbula
TeU̇h ₃	TéU̇ə ₃ -tlom		TU _̇ h ₃ -tláh ₂	
TeRh _{1/2}	TéRə _{1/2} -trom	τέρετρον	TR _̇ h _{1/2} -t ^h ráh ₂	terebra
TeRh ₃	TéRə ₃ -trom	ἄροτρον	TR _̇ h ₃ -tráh ₂	
LeU̇h _{1/2}	LéU̇ə _{1/2} -trom	λόετρον	LU _̇ h _{1/2} -t ^h ráh ₂	-lūbrum
LeU̇h ₃	LéU̇ə ₃ -trom		LU _̇ h ₃ -tráh ₂	
Teh _{1/2} ī	Téh _{1/2} -t ^h lom	pābulum	Tə _{1/2} -t ^h láh ₂	
Teh ₃ ī	Téh ₃ -tlom	pōculum	Tə ₃ -tláh ₂	
Leh _{1/2} ī	Léh _{1/2} -t ^h rom	nēpla	?	
Leh ₃ ī	Léh ₃ -trom		?	
Xes	Xéstrom	westar	Xs-tráh ₂	castra

References

- Bendtsen, Søren. 1986. On the Development of IE * r̥h-/*l̥h- in Labiovelar Environments in Sanskrit. APILKU 5, 71-80.
- Brugmann, Karl & Bertold Delbrück. 1930. Grundriss der vergleichenden Grammatik der indogermanischen Sprachen. 2. Bearbeitung, unveränderter Neudruck (1. impression 1897-1916). Berlin-Leipzig.
- Chantraine, Pierre. 1933. La formation des noms en grec ancien. Paris.
- Ernout, Alfred & Antoine Meillet. 1959. Dictionnaire étymologique de la langue latine. Histoire des mots. 4^{me} éd. Paris.
- Feist, Sigmund. 1939. Vergleichendes Wörterbuch der gotischen Sprache. 3. Auflage. Leiden.
- Fraenkel, Ernst. 1955-65. Litauisches etymologisches Wörterbuch I-II. Heidelberg.
- Frisk, Hjalmar. 1936. Suffixales -th- im Indogermanischen. Göteborg.
- Frisk, Hjalmar. 1960-72. Griechisches etymologisches Wörterbuch I-III. Heidelberg. (= GEW)
- Grammont, Maurice. 1895. La dissimilation consonantique dans les langues indo-européennes et dans les langues romanes. Dijon.
- Humbach, Helmut. 1959. Die Gathas des Zarathustra. I-II. Heidelberg.
- Jokl, Norbert. 1937. Ein Beitrag zur Lehre von der alb. Vertretung der idg. Labiovelare. Mélanges linguistiques offerts à M. Holger Pedersen (Aarhus-København 1937), 127-161.
- Joseph, Lionel S. 1982. The treatment of *CR̥H- and the origin of CaRa- in Celtic. Ériu 33, 31-57.
- Klingenschmitt, Gert. 1970. Griechisch ἰλάσκεισθαι. MSS 28, 75-88.
- Klingenschmitt, Gert. 1975. Tocharisch und Urindogermanisch. In: Flexion und Wortbildung, Akten der V. Fachtagung der Idg. Gesellschaft (Hrsg. Helmut Rix. Wiesbaden), 148-63.
- Kluge, Friedrich. 1886. Nominale Stammbildungslehre der altgermanischen Dialekte. Halle.
- Kluge, Friedrich. 1963. Etymologisches Wörterbuch der deutschen Sprache. 19. Auflage. Berlin.
- Krahe, Hans & Wolfgang Meid. 1966-67. Germanische Sprachwissenschaft. III, Wortbildungslehre. Berlin.
- Leumann, Manu. 1977. Lateinische Laut- und Formenlehre (M. Leumann, J. B. Hofmann & A. Szantyr, Lateinische Grammatik, Bd. I). 2. Auflage. München. (= LLF).
- Lewis, C.T. & C. Short. 1879. A Latin Dictionary. Oxford.
- Mayrhofer, Manfred. 1956-78. Kurzgefasstes etymologisches Wörterbuch des Altindischen I-IV. Heidelberg. (= AEW)
- Mayrhofer, Manfred. 1979. Ausgewählte kleine Schriften. (Medismen in der 1967 gefundenen Xerxes-Inschrift? pp 159-62). Wiesbaden.
- Muller, Gerard. 1981. Behandlingen af vokaliserede laryngaler i ikke-initial stavelse på oldarmensk. Unpublished MA thesis, Copenhagen.
- Narten, Johanna. 1964. Die sigmatischen Aoriste im Vedischen. Wiesbaden.
- Niedermann, Max. 1903-04. Etymologische Forschungen. III. Lat. marcus, marculus,

- marcellus, martulus, martiolus, martellus "Hammer", ksl. mlatъ, rus. молотъ, poln. młot usw. "dass", lat. malleus "Hammer, Schlägel". IF 14, 109ff.
- Nikolaev, S. L. 1982. K istoričeskoj morfologii drevnegrečeskogo glagola. In: Baltoslavjanskije issledovanija 1982, 68-103.
- Noreen, Adolf. 1923. Altisländische und altnorwegische Grammatik (Laut- und Flexionslehre) unter Berücksichtigung des Urnordischen. 4. vollständig umgearbeitete Auflage. Halle.
- Normier, Rudolf. 1977. Idg. Konsonantismus, germ. "Lautverschiebung" und Verner'sches Gesetz. KZ 91, 171-218.
- Oettinger, Norbert. 1979. Šaitra- "Horn", eine hethitische *-tro-Bildung. In: Hethitisch und Indogermanisch (Hrsg. E. Neu & W. Meid. Innsbruck), 197-203.
- Olsen, Birgit Anette. 1984. A Study of Indo-European Root Structure – Initial Sonant Clusters. APILKU 3, 139-46.
- Olsen, Birgit Anette. 1986. Three Notes on Armenian Phonology. APILKU 5, 139-60 (I. On the development of final *-is and *-us, p. 139-49).
- Pedersen, Holger. 1909-13. Vergleichende Grammatik der keltischen Sprachen I-II. Göttingen. (= KG).
- Peters, Martin. 1980. Untersuchungen zur Vertretung der indogermanischen Laryngale im Griechischen. Wien.
- Pinault, Georges-Jean. 1982. A Neglected Phonetic Law: The reduction of the Indo-European laryngeals in internal syllables before yod. Papers from the 5. International Congress in Historical Linguistics (= Current Issues in Linguistic Theory 21. Amsterdam), 265-72.
- Pokorny, Julius. 1959. Indogermanisches etymologisches Wörterbuch. Bern. (= IEW)
- Rasmussen, Jens Elmegård. 1978 (ms.). Das Problem der idg. Langdiphthonge. Unpublished.
- Rasmussen, Jens Elmegård. 1978a (ms.). Der indogermanische Ablauttypus ERU ~ RŪ. Unpublished.
- Rasmussen, Jens Elmegård. 1981. Blandede morfologiske problemer i indoeuropæiske enkeltprog. APILKU 2, pp. "JER 1-30". (Item 5. Gr. μύλη "mølle", pp. 15-17).
- Risch, Ernst. 1974. Wortbildung der homerischen Sprache. Zweite, völlig überarbeitete Auflage. Berlin – New York.
- Schwyzler, Eduard. 1953. Griechische Grammatik I. 3. unveränderte Auflage. München. (1. Auflage 1939).
- Sievers, Eduard. 1894. Germanisch II aus ðl. IF 4, 335-40.
- Solta, Georg Rhenatus. 1960. Die Stellung des Armenischen im Kreise der indogermanischen Sprachen. Wien.
- Thomsen, Vilhelm. 1869. Den gotiske sprogklassens indflydelse på den finske. En sproghistorisk undersøgelse. København.
- Thurneysen, Rudolf. 1946. A Grammar of Old Irish. Dublin.
- Trubačev, O. N. 1963. Formirovanie drevnejšej remeslennoj terminologii v slavjanskom i nekotorych drugich indoeuropejskich dialektach. Ètimologija 1963 (Moskva), 14ff.
- Wackernagel, Jacob. 1934. Indoiranica. 13. ai. gr̥ismá-. KZ 61, 197f.
- Wackernagel, Jacob & Adalbert Debrunner. 1954. Altindische Grammatik. Band II, 2: Nominalsuffixe. Göttingen.
- Walde, Alois & Johann Baptist Hofmann. 1965. Lateinisches etymologisches Wörterbuch. 4. Auflage. Heidelberg. (= WH).

Winter, Werner. 1978. The distribution of short and long vowels in stems of the type Lith. *ěsti* : *vèsti* : *mèsti* and OChS *jasti* : *vesti* : *mesti* in Baltic and Slavic languages. In: *Recent Development in Historical Phonology. Trends in Linguistics, Studies and Monographs 4* (The Hague), 431-46.

Abstract, Summary. – An abstract in English is compulsory. It should count 10-15 lines, outline main features, stress novel information and conclusions, and end with the author's name, title, and institutional and/or private postal address. – Papers in Danish may be provided with a summary in another language by agreement between author and editor.

Typescript. – Page 1 should contain title, author's name and the name of the Academy. Page 2: Abstract, author's name and address. Page 3: Table of contents if necessary. Captions should be delivered on separate sheets. Footnotes should be avoided if at all possible; if indispensable, they, too, should be typed on separate sheets. Consult a *recent* issue of the series for general layout.

Typewrite with double space throughout and leave a 4 cm margin *right*. Indicate desired position of illustrations and tables with pencil in margin *and repeat it in the galley proof*.

Use three or fewer grades of heading unless more are indispensable. Avoid long headings. Indicate clearly the hierarchy of headings.

Figures. – Please submit two copies of each graph, map, photograph, etc., all marked with the author's name. Whenever possible all figures will be placed within the text; the nature of the illustrations will govern the editor's choice of paper quality.

All figures, also line drawings, must be submitted as glossy, photographic prints suitable for direct reproduction. Prints fitting the indicated printed area are preferred, but the final size is the responsibility of the editor. The scale should be indicated in the caption or, preferably, on the illustration itself.

Fold-out figures and tables should be avoided. Use distinct (but not dominant) capital letters for the items in composite figures. For transfer lettering use simple, semi-bold typefaces. The size of the smallest letters should not be less than 1.5 mm. Intricate tables are often more easily reproduced from line-drawings or from technically perfect original computer or type processor output.

References. – In general, the editor expects all references to be formally consistent and in accordance with accepted practice within the particular field of research. Bibliographical references should preferably be given as, e.g., Shergold 1975, 16, the latter figure indicating the page number unless misunderstandable.

Correspondance

Manuscripts should be sent to the Editor, Det Kongelige Danske Videnskabernes Selskab, H.C. Andersens Boulevard 35, DK-1553, Copenhagen V, Denmark (tlf. +45.1.11 32 40). Questions concerning subscription to the series should be directed to the publishers.

Publisher

Munksgaard Export and Subscription Service
Nørre Søgade 35, DK-1370 Copenhagen K, Denmark

Editor: Erik Dal

© 1988. Det Kongelige Danske Videnskabernes Selskab. All rights reserved. No part of this publication may be reproduced in any form without the written permission of the copyright owner.

Det Kongelige Danske Videnskabernes Selskab

Historisk-filosofiske Skrifter

Hist. Filos. Skr. Dan. Vid. Selsk.

Priser excl. moms / Prices abroad in Danish Crowns.

Vol.

- 11.** STEENSBERG AXEL: Hal og gård i Hejninge. En arkæologisk undersøgelse af to sjællandske landsbytomter. 1986 200.-
- 12.** LUND JOHN: Sūkās VIII. The Habitation Quarters (Publications of the Carlsberg Expedition to Phoenicia 10). 1986 400.-

Historisk-filosofiske Meddelelser

Hist. Filos. Medd. Dan. Vid. Selsk.

Vol.

- 48:3.** HENDRIKSEN, HANS: Himachali Studies. III. Grammar. 1986 200.-
- 51:1.** FENGER, OLE, og LADEWIG PETERSEN, ERLING: Adel forpligter. Studier over den danske adels gældsstiftelse i 16. og 17. århundrede. With an English Summary: Noblesse oblige. A Study of the Incurring of Debt of the Danish Nobility 1570-1660. 1983 200.-
- 2.** HUNGER, HERBERT: Byzanz, eine Gesellschaft mit zwei Gesichtern. 1984 50.-
- 52:1.** Part I-II. MATTHIESSEN, POUL CHRISTIAN: The Limitation of Family Size in Denmark. (Princeton European Fertility Project). 1985 180.-
- 2.** KØLLN, HERMAN: Der Bericht über den Dänenkönig in den St.-Wenzels-Biographien des 13. und 14. Jahrhunderts. 1986 100.-
- 3.** MCKINNON, ALASTAIR: Dating Kierkegaard's Battles with Fate. 1986 50.-
- 53.** ANDERSEN, LENE: Studies in Oracular Verses: Concordance to Delphic Responses in Hexameter. 1987 300.-
- 54.** PETERSEN, ARNE FRIEMUTH: Why Children and Young Animals Play. A New Theory of Play and its Role in Problem Solving. 1988 120.-
- 55.** OLSEN, BIRGIT ANETTE: The Proto-Indo-European Instrument Noun Suffix *-tlom and its Variants. 1988. 100.-
- 56.** HANSEN, MOGENS HERMAN: Three Studies in Athenian Demography. 1988 60.-