REVISING THE SOUND VALUE OF MEROITIC *D*:
A PHONOLOGICAL APPROACH

Kirsty Rowan (London)

The Meroitic sign ⊞ and its cursive equivalent ⅄ have been the subject of a number of investigations into its origins[1] but particularly into attributing a sound value.[2] In trying to deduce a correlative sound value to this sign, Griffith used comparative forms from Greek and Egyptian, although these forms gave contradictory indications. This led to an unstable proposal that the Meroitic sign ⊞ ⅄ represents a retroflex consonant, although this proposal and subsequent affirmations of its retroflex nature did not consider empirical and typological phonological evidence for this association.

This paper revisits the comparative forms used in proposing the retroflex nature of the sign ⊞ ⅄ and uses a phonological approach in proposing a revision of its sound value.

The origin of the sign used as an initial approximation for its sound value

The Meroitic script comprises 23 signs that are phonographic and a further sign that indicates a word boundary. All of these signs have a hieroglyphic form and a cursive equivalent borrowed extensively from Ancient Egyptian and Demotic. The correlation of the signs borrowed by the Meroites for their script from the Egyptian script was an important part of Griffith's investigation into his proposal for the Meroitic signs' sound values.

Griffith was primarily concerned with the origin of the hieroglyphic form of ⊞ as he only alluded to the view that its cursive equivalent ⅄ was possibly a stylised form of the hieroglyph.[3] Griffith discusses how the sign ⊞ is used in Egyptian 𓆣 as a 'very common amulet, but a rare hieroglyph' and that it 'only represents its own name [*wz′.t*] … and has no Demotic form.'[4] This led Griffith to assign the original transliteration of this sign as *z*

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[1] F. Ll Griffith (1909) Meroitic Inscriptions. *Areika.* David Randall-MacIver & Leonard Woolley. Eckley B. Coxe Junior Expedition to Nubia. Vol. I: Oxford. 43-54. F Ll. Griffith (1911) *Karanòg: The Meroitic Inscriptions of Shablûl and Karanòg.* Eckley B. Coxe Junior Expeditions to Nubia: Vol. VI. University of Pennsylvania Egyptian Department of the University Museum: Philadelphia. F. Ll. Griffith (1916) Meroitic Studies II. *Journal of Egyptian Archaeology* 3. 111-24. K. H. Priese (1973) Zur Enststehung der meroitischen Schrift. *Meroitica* 1. (Coll.1973). 1. Internationale Tagung für meroitistischen Forschungen in Berlin 1971: Berlin. 273-306, and Claude Rilly (2007) *La langue du royaume de Méroé.* Collection de l'École Pratique des Hautes Études. Champion: Paris.

[2] Griffith (1911, 1916). F. Ll Griffith (1917) Meroitic Studies IV. *Journal of Egyptian Archaeology* 4. London. 159-73. E. Zyhlarz (1930) Das Meroïtische Sprachproblem. *Anthropos* 25. 409-63. M. F. L. Macadam (1966) Queen Nawidemak. *Allen Memorial Art Museum Bulletin* 23/2. 42-71. Fritz Hintze (1973) Some Problems of Meroitic Philology. *Meroitica* 1. (Coll. 1973). 1. Internationale Tagung für meroitistische Forschungen in Berlin 1971. Akademie-Verlag. Berlin: 321-30. Yuri Zawadowski (1972) Some considerations on Meroitic phonology. *Meroitic Newsletter* 10. 15-31. A. M. Abdalla (1992) A system proposed for the transliteration of Meroitic into Arabic. *Beiträge zur Sudanforschung* 5. 5-29, and Claude Rilly (2007).

[3] Griffith (1909) p. 50.

[4] Griffith (1911) p. 15.

and in a later work he more specifically outlines his reasons for this and his initial proposal for its sound value:[5]

> The only consonantal sign in the Meroitic alphabet for which no equation could be found to prove its value was 𓈖 𝞴. The others, however, having been sufficiently settled, it seemed by their elimination that d must be the equivalent of Eg. ⬭ or 𓊽, and there were some arguments besides making it a dental … The value z was therefore assigned to it, a sound which is also a prominent element in the Eg. word *wz′.t,* the name of the sacred eye 𓂀 ... The transliteration z is of course only an approximation for a sound more like the Coptic **ϫ, ϭ**, i.e. ǧ (dj), č (tch).

Equivalent forms used as a second attempt to propose the sound value

The discovery of a Meroitic form found with its equivalent transcribed into Egyptian Demotic and Greek by the scholar Archibald H. Sayce compelled Griffith to discuss the sound value of 𓈖 𝞴 once again:[6]

(1)   Meroitic   ⲩⲃϛ𝞴ϛʒ   *mezewi*   'Meroe'
       Eg. Demotic   *mrw.t*
       Greek   Μερόη

The Demotic and Greek equivalents transcribe Meroitic 𓈖 𝞴 z with 'r'. This comparative data was problematic for Griffith as he had already identified another Meroitic sign – ∘⬜ ⲱ as having the sound value /r/ (thus transliterated as *r*). Further, he could find no instances of Meroitic variant forms where the signs 𝞴 and ⲱ were used interchangeably, thereby indicating that these signs did not share a close sound correspondence.

    Only much later would Griffith revise his thoughts on the sound value of 𓈖 𝞴.[7] In this publication, Griffith remarks that Meroitic 𓈖 𝞴 in certain equivalent forms from Egyptian, Greek and Latin is transcribed with 'r'. This leads him to conclude that 'there were two Meroitic signs ⲱ and 𝞴 representing distinct sounds, but both represented by [Egyptian, Greek and Latin] *r*.'[8] He goes on to speculate the reason for this and proposes that the sound of Meroitic 𓈖 𝞴 was 'foreign to Egyptian, but to the Egyptian ear at least resembled an *r*.'[9] In analysing Greek equivalent forms, Griffith believed that where Greek transcribes Meroitic 𓈖 𝞴 with 'ρ' /r/ it was due to them learning those Meroitic words from Egyptians who heard it as 'r'.[10] However, Griffith would put forward further Greek equivalences of Meroitic words which transcribed Meroitic 𓈖 𝞴 not with 'ρ' /r/ but with 'νδ' /nd/:

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[5] Griffith (1916) p. 117.
[6] Griffith (1917) pp. 169-70.
[7] Griffith (1929) pp. 69-74.
[8] Ibid. p. 70.
[9] Ibid. p. 71.
[10] Ibid. p. 71. As in the form given in (1).

(2) Meroitic   ϛϟ ⲗ ϟ
     Greek   Κανδάκη

Griffith's conclusion is that '[⧈]ⲗ is nearly *d, (n)d*, but not identical with it,' he then affirms that 'we must now find some symbol to represent the rather evasive sound of ⧈, ⲗ in transcription. A combination of *d* and *r*, thus ^{r}d would be appropriate to the evidence.'[11] Subsequently, Griffith revised his transliteration of this sign from *z* to ^{r}d to indicate this sign's problematic sound value, although later Meroiticists would not adopt Griffith's new transliteration.

The appearance of the retroflex sound value proposal

It could be assumed that Griffith initiated the retroflex sound value proposal for this sign through a brief comment in his 1929 paper where he remarks that 'the cerebral *r* of India is said to be found in some African languages.'[12] However, it would be another scholar working on Meroitic, who would definitively propose that the sign ⧈ ⲗ represented a retroflex.[13] Zyhlarz drew a correlation between Meroitic and retroflex consonants found in the phonological inventories of languages that were in areal proximity to the Meroites, such as Beja (Cushitic).

The retroflex proposal was revived when it was taken up by Macadam who writes more specifically on the phonetic realisation of this Meroitic sign '[⧈ ⲗ] appears to be a consonant partaking of the sounds of both R and D, probably a retroflex letter [sic] in which the tip of the tongue is turned behind the teeth-ridge and flaps forward over it.'[14] Previously, Macadam had proposed that ⧈ ⲗ should be transliterated as *d* rather than the traditional *z* in light of Griffith's later work on the sign.[15]

The majority of Meroitic scholars agreed with Macadam's phonetic description of the sound value for this sign and his revision for its transliteration.[16] Hintze, who revised Griffith's transliteration of further Meroitic signs, follows Macadam when he states that '*d* is not [d], it is most probably something like [ɖ].'[17] The retroflex value for this sign is also followed by Rilly.[18] Further, Rilly puts forward an explanation based upon a mixed acoustic and auditory phonetic description for the Egyptian and Greek rendering of Meroitic ⧈ ⲗ with their /r/.Whereby he proposes that retroflex consonants are not found in Egyptian and Greek and thus being unaccustomed to this sound in their languages they interpret the Meroitic retroflex as a variety of /r/

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[11] Ibid. p. 71.

[12] Ibid. p. 72. The term *cerebral* was used interchangeably during the 19th century with the term *cacuminal* to denote a consonant articulated with the tip of the tongue turned back towards the hard palate. This is what is now commonly referred to as a retroflex.

[13] Zyhlarz (1930).

[14] Macadam (1966) p. 52.

[15] M. F. L. Macadam (1949) *The Temples of Kawa – The Inscriptions.* Oxford University Excavations in Nubia: London.

[16] Alternative proposals have been put forth by Abdalla (1992) who believes the sign represents a sound between the range of /t/ and the Semitic emphatic coronal /ḍ/, and Zawadowski (1972) who suggests a palatalised coronal /dʲ/.

[17] Hintze (1973) p. 328. He uses the International Phonetic Alphabet sign that denotes the voiced coronal retroflex stop.

[18] Rilly (2007).

Evidence from phonological typology against the retroflex proposal

An alternative proposal is advanced here against the generally accepted view which is that Meroitic 𐦝 𐦈 *d* is a retroflex coronal consonant i.e. /ɖ/. This paper puts forward the proposal that Meroitic 𐦝 𐦈 *d* is more likely to be /d/. The reason for this proposal comes primarily from looking at the typological behaviour of retroflex consonants: (i) it is highly marked for a language to have retroflex consonants with no 'plain' counterparts. In a study on the phonology of retroflex consonants, Hamann outlines this, 'typically only large segment inventories have a retroflex class i.e. at least another coronal segment (apical or laminal) is present, as for instance in Sanskrit, Hindi, Norwegian, Swedish and numerous Australian languages.'[19]

Hamann quotes Maddieson's (1984) database of 317 languages, which mentions only one exception to this and that is the Dravidian language Kota, which has a retroflex consonant as its only coronal consonant. Even if we look areally closer to Meroitic, the Cushitic language Beja has retroflex /ɖ/ [ɖ] and /ʈ/ [ʈ] which phonologically contrast with plain /d/ [d] and /t/ [t].[20] Therefore, it is expected that Meroitic would have had a phonologically contrastive plain /d/ [d], if it did contain a retroflex /ɖ/ [ɖ], and as such would have represented this opposition with another specific independent sign.[21]

Moreover, (ii) retroflex consonants are known to commonly pattern with back vowels, and further, retroflex consonants very rarely occur in a front vowel context (de-retroflexion).[22] However, it is seen that Meroitic 𐦝 𐦈 *d* (and *t*, *s*, *n*, *l*, and *r* which Rilly also proposes to be articulated as retroflexes)[23] does occur in the context of the front vowel 𐦢 *i* /i/. And finally (iii), Hamann discusses how it is diachronically attested in some languages that contain retroflex consonants that retroflex consonants arise through merging with a rhotic consonant i.e. /r/.[24] She cites Bhat's example of the Nilo-Saharan language Lugbara, which has retroflexion of the voiced coronal stop /d/ → [ɖ].[25] This is partly triggered by a following /r/. It is evidenced that retroflexion in Meroitic cannot arise through this rhotic context of adjacency with 𐦫 *r* /r/, as forms where the sequences of coronal consonant + /r/ (and the reverse) are unattested.[26] Subsequently, the empirical and typological evidence is against the representation of Meroitic 𐦝 𐦈 *d* realised as a retroflex consonant.

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[19] Silke Hamann (2003) *The Phonetics and Phonology of Retroflexes.* LOT Dissertations Series 75. LOT Publications. Netherlands Graduate School of Linguistics. p. 3.

[20] R. A. Hudson (1974) A Structural Sketch of Beja. *African Language Studies* 15. 111-42. p. 112.

[21] Further, see also N. S. Trubetzkoy (1969) *Principles of Phonology.* (Tr. of Grundzüge der Phonologie, Christiane A. M. Baltaxe). University of California Press: Berkeley, who states, when discussing distinctive oppositions among retroflexes and plain consonants, that 'Many languages that have the phonological opposition between retroflex and plain apicals, or between alveolar and interdental apicals, also have a palatal series. Considering the ambiguous character of the palatals, it is not impossible that the three series (retroflex, plain, and palatal, or alveolar, interdental and palatal respectively) may be interpreted as three different degrees of rising or lowering the tip of the tongue.' pp. 128-9.

[22] Hamaan (2003) pp. 90-102.

[23] Rilly (2007).

[24] Hamaan (2003) pp. 83-9.

[25] Ibid. p. 86.

[26] Principally, this point refers to the syllable basis of Meroitic where every consonant is followed by a vowel (his is apart from the three word-final consonants represented by the signs *te*, *se* and *ne*; for more on this see Rowan (2006)). The Meroitic script does not indicate the vowel /a/ and so every consonant sign is followed by the /a/ vowel unless a specific vocalic sign follows.

Nevertheless, the representation of Meroitic 𐦲 𐦤 *d* as /r/ in correspondent forms from other languages still remains to be solved. Thus this paper puts forward a phonological proposal towards explaining this where a deeper look at the placement of 𐦲 𐦤 *d* in Meroitic words is needed.

Equivalent forms

The following data evidences Meroitic forms which are found transcribed into Egyptian, Egyptian Demotic, Coptic, Greek and Latin. These equivalent forms show varying transcriptions of Meroitic 𐦲 𐦤 (transliterated as *d*).

(3)   Meroitic   𐦧𐦤 𐦲𐦙𐦧 𐦲𐦫 𐦐/𐦥   *tenekitnide*   anthroponym
      Eg. Demotic   *ꜣtngyṯnryꜣ*

(4)   Meroitic   𐦲𐦙𐦧𐦧𐦤 𐦲𐦵//𐦙𐦧   *tqoridemni*   anthroponym
      Eg. Demotic   *tqrrmn*

(5)   Meroitic   𐦫𐦧𐦧𐦤 𐦧𐦰𐦧𐦫   *apedemk*   theonym
      Egyptian   *iprmk*

(6)   Meroitic   𐦲/𐦙𐦧𐦤𐦧𐦙   *medewi*   toponym
      Eg. Demotic   *mrw.t*
      Greek   Μεϱόη
      Coptic   ⲡⲉϱⲟⲩⲉ[27]

(7)   Meroitic   𐦧𐦙𐦧𐦤𐦧𐦰   *pedeme*   toponym
      Egyptian   *prm.t*
      Greek   Πρῖμις, Πρῆμις
      Latin (Bion) *pind[em]is*[28]
      Latin (Juba) *pidema*

(8)   Meroitic   𐦧𐦫𐦤𐦫 (𐦧𐦫𐦵𐦫)[29] *kdke* (*ktke*)   title
      Egyptian   *kntiky*
      Greek   κανδάκη
      Ethiopic   *ḫan(ə)dākē*

A recap of the functioning of the Meroitic script is needed in order to elucidate the following analysis. Every consonant sign includes an inherent /a/ vowel, where there is to be a change on the quality of the vowel, a distinct separate vowel sign is written.

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[27] Karola Zibelius (1972) *Ägyptische Siedlungen nach Texten des Alten Reiches.* Wiesbaden. p. 76.
[28] See sources in T. Eide, T. Hägg, R. H. Pierce, & L. Török (eds.) (1996) *Fontes Historiae Nubiorum:* Vol. 2. *From the mid-fifth to the first century BC. Textual Sources for the History of the Middle Nile Region between the 8th Century BC and the Sixth Century AD.* Department of Classics. University of Bergen. Pp. 549-57., and T. Eide, T. Hägg, R. H. Pierce, & L. Török (eds.) (1998) *Fontes Historiae Nubiorum:* Vol. 3. *From the first to the sixth century AD. Textual   Sources for the History of the Middle Nile Region between the 8th Century BC   and the Sixth Century AD.* Department of Classics. University of Bergen. pp. 804-9.
[29] The variant Meroitic spelling is also given here.

Therefore, the script is essentially syllabic and it is common practise in Meroitic studies not to transliterate the inherent /a/ vowel.

The proposal put forward here refers specifically to the positioning of the 𓁿 𝒶 *d* sign in that where this sign is found in an intervocalic placement i.e. between two vowels (V_V), it is articulated as a flap [ɾ] and it is this flap which is interpreted acoustically in other languages approximate to a [r]. This point is picked up in more detail following the clearer correspondence of the forms:

(9)	Meroitic V**d**V	→	Egyptian/Demotic/Greek/Coptic - /r/	
a.	*tenekitni**d**e*	→	Eg. Demotic	ꜣtngyt̲nryꜣ
b.	*tqori**d**emni*	→	Eg. Demotic	tqr**r**mn
c.	*ape**d**emk*	→	Egyptian	ip**r**mk
d.	*me**d**ewi*	→	Eg. Demotic	m**r**w.t
		→	Coptic	пеρоγє
		→	Greek	Μεροη
e.	*pe**d**eme*	→	Egyptian	p**r**m.t
		→	Greek	Πρῖμις, Πρῆμις

The prosodic environment of V_V (intervocalic) is well known to condition the change of a coronal stop /t/ or /d/ to a flap [ɾ], whereby this is a typologically common process of lenition.[30] In considering data from Ibibio, Bantu and English that illustrate not only the flapping of a coronal stop but also other lenition examples, Harris asserts that 'The wide distribution of this phenomenon across different languages suggests that it is phonetically natural.'[31]

The production of intervocalic voiced coronal stops 'are very similar to flaps' as de Jong specifies.[32] It is proposed therefore that the Egyptian and Greek transcribed forms of <r>/ρ /r/ for Meroitic 𓁿 𝒶 *d* /d/ can be explained as approximations for a voiced coronal stop /d/ → [ɾ], which lenites (weakens) to a flap when positioned intervocalically. Proposals on the approximate sound value for Egyptian and Greek /r/ back up this claim: For Egyptian, Allen postulates that Egyptian <r> /r/ was articulated 'Probably as a "flapped" r ... To English speakers, this often sounds like d,'[33] and Loprieno also positions

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[30] John Harris (2003) Grammar-internal and Grammar-external Assimilation. *Proceedings of the 15th International Congress on Phonetic Sciences.* Barcelona, 3-9 August 2003. Vol. 1. Causal Productions. pp. 281-84. John Harris and Jonathan Kaye (1990) A Tale of Two Cities: London glottalling and New York City tapping, *The Linguistic Review* 7. pp. 251-74. Michael Kenstowicz (1994) *Phonology in Generative Grammar.* Blackwell. K. de Jong (1998) Stress Related Variation in the Articulation of Coda Alveolar Stops: Flapping Revisited. *Journal of Phonetics* 26. pp. 283-310. Lisa M. Lavoie (2001) *Consonant Strength; Phonological Patterns and Phonetic Manifestations.* (Outstanding dissertations in Linguistics). Garland Press. Robert Kirchner (2004) Consonant Lenition. *Phonetically Based Phonology.* Bruce Hayes, Robert Kirchner & Donca Steridade (eds.). Cambridge University Press: Cambridge.
[31] Harris (2003) p. 283.
[32] de Jong (1998) p. 296.
[33] James P. Allen (2000) *Middle Egyptian: An Introduction to the Language and Culture of Hieroglyphs.* Cambridge University Press: Cambridge. p. 16.

Egyptian *<r>* as the flap [ɾ].[34] With Greek ρ /r/, Allen describes it as being 'a trilled alveolar sound,'[35] and Sturtevant states that the ancient descriptions of Greek ρ leave no doubt that it was a 'trilled tongue-tip *r*.'[36] However, the Latin equivalents are faithful to the representation of /d/ for Meroitic ꦴ 𝈀 *d*.

 Further evidence for this proposal of Meroitic ꦴ 𝈀 *d* /d/ being realised as a flap intervocalically i.e. ꦴ 𝈀 *d* /d/ → [ɾ]/V_V, can be shown in that when Meroitic ꦴ 𝈀 *d* /d/ is not in an intervocalic placement, and thus not subject to leniting to a flap, its phonetic realisation is [d]. The following equivalent forms elucidate this point:

(10) Meroitic ϛ ϡ 𝈀 ϡ (ϛ ϡ ϟ ϡ)[37] *kdke (ktke)*   title
    Egyptian *kntiky*
    Greek   κανδάκη
    Ethiopic *ḫan(ə)dākē*

There is an orthographic practice in Meroitic whereby a nasal segment in coda position followed by a consonant is unwritten.[38] Therefore the Meroitic form ϛ ϡ 𝈀 ϡ *kdke* is phonemically /ka**nd**ake/, where evidence for this nasal segment in adduced from equivalent forms. What we see in the Greek and Egyptian equivalences in (10) is that Meroitic ꦴ 𝈀 *d* /d/ is not, in this instance, transcribed with Egyptian or Greek /r/ but with the coronal stop /t/ ~ /d/.[39] This is due to the Meroitic ꦴ 𝈀 *d* /d/ not being conditioned by an intervocalic placement and consequently does not surface as the flap [ɾ]. In this position, Meroitic ꦴ 𝈀 *d* /d/ surfaces as [d], and therefore is transcribed with /t/ ~ /d/ in the Egyptian and Greek forms.

 In fact, Meroitic is not the only language where the phoneme /d/ (ꦴ 𝈀 *d*) is transcribed into Egyptian as *<r>* /r/, as evidence is found where Semitic /d/ was occasionally transcribed in Egyptian with *<r>* /r/; e.g. Late Egyptian ʕršn "lentils" from Semitic ʕdš.[40] Fundamentally, it has never been proposed that Semitic /d/ is a retroflex [ɖ] because it is transcribed occasionally in Egyptian with *<r>*. Whether these transcriptions are due to intervocalic flapping of Semitic /d/ is open to investigation. Indicatively, this says more about the Egyptian representation of *<r>* than it does about the Meroitic *d* /d/ in that this discussion lends more evidence to Loprieno's proposal for the phonetic realisation of Egyptian *<r>* as the flap [ɾ].[41]

 Lastly, there are no forms found in Meroitic where there is variation between the signs 𝈀 *d* /d/ [d] → [ɾ] and ꭒ *r* /r/ [r], which shows that these two phonemes /d/ and /r/ were distinct in Meroitic.

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[34] Antonio Loprieno (1995) *Ancient Egyptian: A Linguistic Introduction.* Cambridge University Press. p.33.
[35] Sidney W. Allen (1968) *Vox Graeca. A Guide to the Pronunciation of Classical Greek.* Cambridge University Press: Cambridge. pp. 20-21.
[36] Edgar H. Sturtevant (1940) *The Pronunciation of Greek and Latin.* (2nd Ed.) Linguistic Society of America. Yale University. p. 60.
[37] The variant Meroitic spelling is also given here.
[38] Griffith (1911) p. 22, also cf. Rilly (2007).
[39] This is firm evidence that there is an unwritten nasal segment in coda position in Meroitic as it prohibits the flapping of Meroitic *d* /d/, as seen in the Greek, Egyptian, and now the Ethiopic form.
[40] Carsten Peust (1999b) *Egyptian Phonology: An Introduction to the Phonology of a Dead Language.* Monographien zur Ägyptischen Sprache 2. Peust & Gutschmidt Verlag: Göttingen. p. 88.
[41] Loprieno (1995) p. 33.

This paper has put forward a consideration for revising the traditional hypothesis that Meroitic 𓃟 𐦐 *d* is a retroflex coronal consonant */ḍ/, as has been traditionally accepted amongst Meroitic scholars. This traditional hypothesis was followed in an attempt to explain Egyptian and Greek equivalences which transcribe this Meroitic sound with their rhotic /r/. The Egyptian and Greek transcriptions are now accounted for as being the interpretation of a flapped (lenited) coronal stop in an intervocalic position: /d/ → [ɾ]/V_V. In conclusion, it is therefore proposed that Meroitic 𓃟 𐦐 *d* is a voiced coronal stop - /d/ which is realised as [d], but when positioned intervocalically its phonetic realisation is a flap [ɾ], and that it is this flapped coronal stop that is transcribed (through being interpreted) as a rhotic /r/ in Greek and Egyptian as this is their sound with the closest approximation to a flap.