Helmut Satzinger
What happened to the voiced consonants of Egyptian ?

Coptic has five voiced consonants, viz. the sonorants, ⲃ [β], ⲣ [r], ⲗ [l], ⲙ [m], and ⲛ [n].

Otherwise, Coptic has no voiced consonants: neither stops, nor fricatives (W. H. WORRELL, *Coptic Sounds*. University of Michigan Studies Humanistic Series XXVI (Ann Arbor, 1934), 17-23 et passim).

Delta Coptic (Bohairic):

Stops and fricatives are found at four points of articulation: labial, alveolar, prepalatal, and velar. The stops are of two modes of articulation: 1) voiceless, aspirated, fortis; 2) voiceless, unaspirated, lenis.

Labials:	ⲫ [pʰ]	ⲡ [b̥]	ⲯ [ɸ]
Alveolars:	ⲑ [tʰ]	ⲧ [d̥]	ⲥ [s]
Prepalatals:	ϭ [cʰ]	ⲭ [ɟ̥]	ϣ [ʃ]
Velars:	ⲭ [kʰ]	ⲕ [g̥]	ϧ [x]
	—	—	ϩ [h]

Valley Coptic (dialects[1] *K, F, V, M, N, L, S, P, I, A*, etc.):

Stops and fricatives are found at five points of articulation: labial, alveolar, prepalatal, palatal, and velar. The stops are of but one mode of articulation: voiceless, unaspirated, lenis.

Labial:	ⲡ [b̥]	ⲯ [ɸ]
Alveolars:	ⲧ [d̥]	ⲥ [s]
Prepalatal	ⲭ [ɟ̥]	ϣ [ʃ]
Palatal	ϭ [g̥ʲ]	*P* ⳓ, *I* ϩ [ç]
Velar	ⲕ [g̥]	*A* ϩ [x]
	(double vowel) [ʔ]	ϩ [h]

The assumed voiced stops of Egyptian are emphatic, rather than voiced.

Is the lack of voiced stops and fricatives a feature only of Coptic, or is it already found in older stages of the language? The transcription of Egyptian creates the impression that it possessed voiced plosives and affricates, viz. *b*, *d*, *ḏ*, and *g*:

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[1] Cf. A. S. ATIYA (ed.), *The Coptic Encyclopedia* (New York 1991), vol. viii, 87-97.

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Labials:	*p*	*b*	*f*
Alveolars:	*t*	*d*	*s*, *z*
Prepalatals:	*ṯ*	*ḏ*	*š*
Velars/Uvulars(?):	*k*, *ḳ*	*g*	*ḫ*, *ẖ*
Laryngeals:	*ʾ*		*ḥ*, *ʿ*

Upon critical inspection, however, each and every one of these alleged voiced stops displays remarkable flaws. As for the voiced labial, *b*, it is obviously fricative, [β], already in the Middle Kingdom, if not earlier, and joins the group of the sonorants (like *r* and *l*). As for the other voiced stops, *d*, *ḏ* and *g*, there are indications that they are emphatic, rather than voiced

("emphatic" probably means glottalised, viz. [t'], [c'], and [k'], respectively, cf. infra): „[hieroglyph], das in den Umschreibungen des neuen Reichs sowohl ט als ד wiedergibt, tritt im Koptischen

als ⲧ auf. Da dies aus [hieroglyph] entstandene ⲧ (ebenso wie das ⲕ aus [hieroglyph] …) vor den betonten Vokalen des Bohairischen nicht aspiriert wird, so wird es ein emphatischer Laut, also ט sein.

Auch die aramäischen Umschreibungen der Perserzeit geben [hieroglyph] mit ט wieder. Unsere Umschreibung mit *d* ist also gewiß unrichtig" (A. ERMAN, *Ägyptische Grammatik* (1911), 3rd edition, §122; also cf. A. ERMAN, ‚Die Umschreibung des Ägyptischen', *Zeitschrift für Ägyptische Sprache und Alterthumskunde* 34 (1896) , 51–62, notably 53).

The most important evidence about Egyptian phonetics comes from Semitic.[2] If we say Semitic we usually mean Canaanite, that is the West Semitic idioms spoken in Palestine and in coastal Syria in the 2nd millennium B.C. — by inference, already in the 3rd millennium —, and represented in the 1st millennium by Hebrew, Phoenician, Ammonite, Moabite and Edomite (E. LIPIŃSKI, *Semitic Languages. Outline of a Comparative Grammar*. Second edition (Leuven — Paris — Sterling, Virginia, 2000), 59-64). In the 1st millennium B.C., however, evidence is found in the new-comer language Aramaic, rather than in Canaanite. Semitic phonetics are a clear field, as compared with Egyptian: as Semitic is represented by a number of languages, some of which exist till present, realistic phonological reconstruction is

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[2] H. SATZINGER, ‘Egyptian in the Afroasiatic Frame: Recent Egyptological Issues with an Impact on Comparative Studies', in: A. BAUSI - M. TOSCO (eds.), *Afroasiatica Neapolitana. Contributi presentati all'8° Incontro di Linguistica Afroasiatica (Camito-Semitica*, Studi Africanistici. Serie Etiopica 6 (Napoli, 1997), 27-48 (PDF copy retrievable from http://homepage.univie.ac.at/helmut.satzinger/Wurzelverzeichnis/1991_00.html).

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feasible, and the nature of the phonemes can be established in a rather great degree of certainty. Afroasiatic comparison adds to the pertinent evidence.

Our evidence consists of (1) renderings of Canaanite personal names and toponyms in the so-called execration texts[3] of the Old and Middle Kingdoms, in Middle Kingdom type group-writing;[4] (2) renderings of Semitic (mainly Canaanite) loan-words[5] and personal names[6] and of Asiatic toponyms[7] during the XVIIIth dynasty and later, in New Kingdom type group-writing;[8] (3) renderings of Egyptian personal names in Aramaic texts of the Jewish community of Aswān, in the Late Period.[9]

Proto-Semitic stops and fricatives are found to be of seven points of articulation, and there are up to three modes of articulation, namely unvoiced, voiced, and (in the case of dentals and alveolars) emphatic:

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[3] On the execration texts, see G. POSENER, ‚Ächtungstexte', in: *Lexikon der Ägyptologie* I, 67–69; W. HELCK, *Die Beziehungen Ägyptens zu Vorderasien im 3. und 2. Jahrtausend v. Chr.*, 2. Auflage, Ägyptologische Abhandlungen 5 (Wiesbaden, 1971), 44–67).

[4] J. E. HOCH, *Semitic Words in Egyptian Texts of the New Kingdom and Third Intermediate Period* (Princeton, N. J., 1994), 486--504); review by J. F. QUACK, *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 46 (1996) 507-514; HELCK, *Beziehungen*, 84–86; O. RÖSSLER, 'Das ältere ägyptische Umschreibungssytem für Fremdnamen und seine sprachwissenschaftlichen Lehren', in J. LUKAS (ed.), *Neue Afrikanistische Studien*, Hamburger Beiträge zur Afrika-Kunde 5 [Festschrift August Klingenheben] (Hamburg, 1966), 218-229.

[5] HOCH, *Semitic Words*; HELCK, *Beziehungen*, 505–536.

[6] Y. MUCHIKI, *Egyptian Proper Names and Loanwords in North-West Semitic*, Society of Biblical Literature Dissertation Series 173 (Atlanta, Ga., 1999); review by J. F. QUACK, *Review of Biblical Literature* 24 (2000) http://www.bookreviews.org/pdf/408_983.pdf; Th. SCHNEIDER, *Asiatische Personennamen in ägyptischen Quellen des Neuen Reiches*, Orbis Biblicus et Orientalis 114 (Freiburg, Schweiz — Göttingen, 1992); HELCK, *Beziehungen*, 353–367.

[7] HELCK, *Beziehungen*, 256–319.

[8] For Egyptian group-writing or syllabic orthography, see HOCH, *Semitic Words*; J. ZEIDLER, 'A New Approach to the Late Egyptian "Syllabic Orthography"', in: Atti del VI Congresso Internazionale di Egittologia. Volume I (Torino, 1993), 579-590; W. SCHENKEL, 'Syllabische Schreibung', *Lexikon der Ägyptologie* VI, 114–122; HELCK, *Beziehungen*, 536–575).

[9] W. KORNFELD, *Onomastica Aramaica aus Ägypten*, Sitzungsberichte. Österreichische Akademie der Wissenschaften. Philosophisch-historische Klasse, 333 (Wien, 1978); G. VITTMANN, 'Zu den ägyptischen Entsprechungen aramäisch überlieferter Personennamen', *Orientalia* 58 (1989), 213-229.

	Proto-Sem.	ESA	Arab.	Ug.	Ge'ez	Heb.	Aram.	Akk.[10]
labial	p, b	f, b	f, b	p, b	f, b	p, b	p, b	p, b
dental	ṯ, ḏ, ṱ	ṯ, ḏ, ṱ	ṯ, ḏ, ṱ = ẓ	ṯ, ḏ, ṱ[11]	—	—	—	—
alveolar	t, d, ṭ	t, d, ṭ	t, d, ṭ	t, d, ṭ	t, d, ṭ	t, d, ṭ	t, d, ṭ	t, d, ṭ
lateral[12]	ś, ṣ̂	ś, ṣ̂	ṣ̂ = ḍ/ḑ	ṣ̂	ś, ṣ̂[13]	ś	—	—(?)
velar	k, g, ḫ, ġ	k, g, ḫ, ġ	k, g, ḫ, ġ	k, g, ḫ, ġ	k, g, ḫ	k, g	k, g	k, g, ḫ
uvular	q = ḳ	q = ḳ	q = ḳ	q = ḳ	q = ḳ	q = ḳ	q = ḳ	q = ḳ
laryngeal	ḥ, ʿ	ḥ, '	ḥ, ʿ	ḥ, ʿ	ḥ, ʿ	ḥ, ʿ	ḥ, ʿ	—

What is meant by emphatic?[14] Emphasis is the traditional term for a secondary, concomitant articulation (co-articulation) in the pharyngeal area. In living Afroasiatic languages, two different basic modes of articulation can be found, namely (a) pharyngealisation/velarisation (e.g., Arabic, Berber), (b) glottalisation (e.g., Ethio-Semitic).

Pharyngealisation, or velarisation, comprises a constriction of the pharyngeal realm, concomitant with the respective articulation, as in Arabic ṭ, ṣ, ḍ, and ẓ (properly ḍ, originally ṱ), also ṛ and ḷ. This secondary articulation causes vowels to become mid-centralised, the closer to the emphatic consonant they are positioned, although the whole word is affected. Pharyngealised consonants also assimilate consonants in contact (cf., e.g., assimilations like *tt*

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[10] For Akkadian, cf. G. JUCQUOIS, *Phonétique comparée des dialectes moyen-babyloniens du nord et de l'ouest* (Louvain, 1966), 264-266); for the problem of the original articulation cf. E. E. KNUDSEN, 'Cases of free variants in the Akkadian *q* phoneme', Journal of Cuneiform Studies 15 (1961), 84-90 (after P. ZEMÁNEK, *The Origins of Pharyngealization in Semitic* (Praha, 1996), 3 with n. 5).

[11] In the Ugaritological literature, this phoneme is represented as *ẓ* - cf. e.g. S. SEGERT, *A Basic Grammar of the Ugaritic Language* (Berkeley — Los Angeles, 1984) (after ZEMÁNEK, *Pharyngealization*, 3 with n. 7).

[12] R. C. STEINER, *The Case for Fricative-Laterals in Proto-Semitic* (New Haven, Connecticut, 1977).

[13] For the characteristics of this phoneme, cf. M. RODINSON, 'Les nouvelles inscriptions d'Axoum et le lieu de déportation des Bedjas', *Rayḍan. Journal of Ancient Yemeni Antiquities and Epigraphy* 4 (1981), 97-116 (after ZEMÁNEK, *Pharyngealization*, 3 with n. 9).

[14] See the magisterial treatment of this topic in ZEMÁNEK, *Pharyngealization*; a PDF copy of which can be downloaded from http://enlil.ff.cuni.cz/staff/ZemanekPharyngealization.pdf.

> *ṯṯ, dt* > *ḏṭ* in the VIII verbal stem of Arabic; P. ZEMÁNEK, *The Origins of Pharyngealization in Semitic* (Praha, 1996), 11). "The pharyngealization can further effect on the consonants in the non-contact position ..., and sometimes it is the whole word that is considered 'emphatised' " (ib.). As can be seen from the examples mentioned, this type of secondary articulation may be coupled with voicing; in other words: pharyngalised/velarised consonants may be unvoiced or voiced.

Glottalisation, on the other hand, yields ejectives; it comprises the articulation of a glottal stop as a secondary articulation, nearly simultanous with the primary articulation: Amharic ṭ is [t']. It is physically impossible to tighten the vocals cords while opening the air stream in this way. E j e c t i v e s , or glottalised consonants, c a n n o t   b e   v o i c e d (ZEMÁNEK, *Pharyngealization*, 13). (If, however, the glottis is opened immediately before the main articulation voicing is normal: cf. implosives like ɓ, ɗ, ɠ; vd. ZEMÁNEK, *Pharyngealization*, 7.) Unlike pharyngealisation/velarisation, glottalisation has no major influence on the quality of vowels. On the other hand, glottalisation changes the character of spirants: the opening of the glottis makes ṣ and š become affricates, [ts'] and [c'], respectively. Taking all evidence together, we will rather assume that the emphatic consonants of Canaanite and Akkadian were ejectives (as are the Ethiopian emphatics), rather than pharyngealised/velarised (as they are in Arabic and Berber).

The Semitic evidence for Egyptian phonetics is twofold: on the one side, we encounter renderings of Semitic names and lexemes in Egyptian context, on the other, transcriptions of Egyptian names and lexemes in the scripts of Semitic speaking civilizations, in the context of the respective Semitic language; in particular, the scripts are the Middle Babylonian cuneiform, and the Aramaic/Hebrew alphabet.

In the **Aramaic texts** from Egypt, of the 1st millennium B.C., Egn. *t* in personal names[15] is rendered by Aramaic t, but Egn. *d* by Aramaic ṭ in four of five cases, as against Aramaic t, though never by Aramaic d (GOD-*jr-dj-sw*/*sj* = …-ερδαις: 6x ṭ; *P/T*ꜣ-*dj*-GOD = Πετε-/Τετε-: 5x t, 19x ṭ, 2x mixed evidence; Auslaut: 1x t (-*rd*), 2x ṭ (-*ḫrd*, -*md*(*w*)); further, 1x ṭ (**P*ꜣ-*ḳd-nṯr*).

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[15] G. VITTMANN, 'Zu den ägyptischen Entsprechungen aramäisch überlieferter Personennamen', *Orientalia* 58 (1989), 213–229.

Egn. *k* corresponds 13 times to k, once to q. Egn. *g* is rendered twice by Aram. q (hqr = *hgr* = Ακορις, pqrqpth̬ = **p*₃(-*n*)-*grg-pth̬*), once by Aramaic k (pkyp = *Pa-gb*). Egn. *k̬* is rendered once by q, once by k.

In the Egn. texts of the **New Kingdom**, Egn. *t* renders the *t in loans from Semitic, and quite rarely *ṭ; Egn. *k* renders *k, and quite rarely *q or *g. For rendering *ṭ, both *t* and *d* are used; for *d, mostly *d*, but also *t*. *g can be rendered by *k̬*, *g,* or *k*; *q mostly by *k̬*, but also by *g*, and rarely by k.

In the Egn. texts of the **Old and Middle Kingdoms**,[16] Egn. *t* renders Can. t and d, whereas *d* is used for d and ṭ. Egn. *k* renders k and g (*ma-k-t-ra-ya* = *magdālaya), *k̬* renders q; the case of *g* is not conclusive.

Can. t is rendered by *t*; Can. d is rendered by *r*, *d* or *t*; Can. ṭ is rendered by *d*. Can. k is rendered by *k*; Can. g is rendered by *k*, Can q by *k̬*.

Egn.	Sem.[17]		
	1st mill. B.C.	NK	MK / OK
t	> t	< t (d, ṭ)	< d; t
d	> ṭ (t)	< d; ṭ; t	< d; ṭ
ḏ	> ṣ (t)	< ṣ; z; š (~ ض); ḏ	< z; š (~ ض); ṭ (~ ظ)
k	> k (q—*auslaut*)	< k; g; q	< k; g
g	> q (g)	< g; q; ġ; k	< ġ
k̬	> q (k)	< q; g; ġ; k	< q

">" = Egn. transcribed in Semitic script — "<" = Semitic transcribed in Egn. script

The phonetics of Egn. *t* and Semitic *t* were virtually identical in the 3rd through 1st millennia, and most probably also before, cf. the Afroasiatic etymological evidence — strongest testimony is given by grammatical morphemes like the feminine ending *t*, the stative endings *tj* and *twnj*. A number of striking lexical items can be adduced, like *tm* "to cease; to perish, to

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[16] HOCH, *Semitic Words*, 486–504); HELCK, *Beziehungen*, 84–86; O. RÖSSLER, 'Das ältere ägyptische Umschreibungssytem für Fremdnamen und seine sprachwissenschaftlichen Lehren', in J. LUKAS (ed.), *Neue Afrikanistische Studien*, Hamburger Beiträge zur Afrika-Kunde 5 [Festschrift August Klingenheben] (Hamburg, 1966), 218-229.

[17] HOCH, *Semitic Words*, 435–437.

annihilate", with similar meanings and forms in Arabic and Hebrew (F. CALICE†, *Grundlagen der ägyptisch-semitischen Wortvergleichung*, Wiener Zeitschrift für die Kunde des Morgenlandes, Beiheft 1 (Wien, 1936), no. 348).

Likewise, the phonetics of Egn. *k* and Semitic *k* were identical in all these periods, although Egn. *k* was also used to render Semitic *g*.[18] Again the etymological evidence shows that this likeness is inherited — cf. grammatical elements like the suffix pronoun of the 2nd person m. sg., the stative ending of the 1st person sg., and several lexical items.

On the other hand, the assumedly voiced sounds *d*, *ḏ* and *g* show conspicuous resemblance with Semitic emphatic consonants, rather than with their Semitic voiced counterparts. In the Old and Middle Kingdoms, Canaanite *d* and *g* could even be rendered by Egn. *r* and *k*, respectively. Did Egyptian not possess voiced stops?

Two opinions about the phonetics of ⟨⟩ ***d*.**

The standard opinion takes the transcription of this grapheme at face value: it is assumed to be a voiced stop, [d]. But cf. above. Yet, there is an old/new tradition, linked with the names Steindorff-Rössler-Schenkel, that regards it as "emphatic", meaning probably: glottalised [t'].

According to Rössler, the original *d* had become ⟨⟩ ꜥ in Proto-Egyptian, as did also *z* (recte *dz*), *ð*, and *ẑ*. Here are some arguments for *d* > ⟨⟩ ꜥ:

In the lexicon of the OK, Egn. ꜥ is incompatible with dentals/alveolars, in particular with ⟨⟩ *d* and ⟨⟩ *z*. There are no roots with *ꜥd(...), *ꜥCd, *dꜥ(...), *dCꜥ, *Cꜥd, *Cdꜥ; *ꜥz(...), *ꜥCz, *zꜥ(...), *zCꜥ, *Cꜥz, *Czꜥ. This proves that ꜥ it **was** – originally – **a dental/alveolar** itself.

It is compatible with laryngeals (⟨⟩ ḥ, ⟨⟩ h, ⟨⟩ ḫ, ⟨⟩ š [< ḫ]) and with all velars/palatals except *k* / *ṯ*, hence ⟨⟩ *g*, ⟨⟩ *ḳ*, ⟨⟩ *ḏ* [< *ḳ*]. This proves that Egn. ꜥ **was** – originally – **not a laryngeal** itself.

Roots that show that ꜥ is compatible with ḫ: ꜥḫꞽ "to burn; to evaporate"; ꜥḫ "brazier"; ꜥḫꞽ "to raise up; to rise up"; ꜥḫm "to quench; to extinguish"; ꜥḫm "to fly"; ꜥbḫn "frog"; ꜥnḫ "sandal

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[18] However, late in the 1st millennium Egn. *k* was palatalised in most words, becoming ϭ [kʲ] in Valley Coptic; in Delta Coptic it became { [cʰ] before the stress-bearing vowel, otherwise j [c].

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strap"; ꜥnḫ "to live; to be alive"; ꜥnḫ "garland; bouquet"; ꜥnḫ "door leaf"; ꜥtḫ "to sieve; to press"; ꜥtḫ "brewer"; nꜥḫ "bundle" (unit of measure); ḫꜥi "to appear (in glory); to be shining"; ḫꜥr "to rage"; sḫꜥr "to enrage"; ḫꜣꜥ "to throw; to put; to lerave", ḫfꜥ "to grasp"; ḫfꜥ "fist; grasp".

Roots that show that ꜥ is compatible with ḥ: ꜥḥ "palace"; ꜥḥꜣ "to fight"; ḥꜥ "to stand"; ḥꜥi "to rejoice; to be happy"; ḥꜥw "fleet; cargo boat"; ḥꜥb "to play"; ḥꜥpj "the Nile; flood"; ꜥbḥ "to fill (a jug) to the brim", etc.; ꜥnḥb.t "pied kingfisher"; jꜥḥ "moon"; bꜥḥ "flood; inundation"; sꜥḥ "rank; dignity"; ḳꜥḥ "to bend down"; ḥꜣꜥ.y "turmoil"; ḥwꜥ "to be short"; ḥnꜥ "with"; wḥꜥ "to loosen; to explain"; ḏḥꜥ "leather; (leather) lacings"; ḥꜥ.w "flesh; limbs; body; self", etc.

More arguments for *d > ⟨⟩ ꜥ:

Both ꜥ and d are incompatibel with dentals, they are compatible with ḏ, ḳ, and g (voiced and/or emphatic), but incompatible with ṯ, and k (unvoiced) — which means that they are **dentals** (one voiced, one emphatic ?).

Both t and z, incompatibel with dentals, are compatible with ṯ and k (unvoiced), though incompatible with ḏ, ḳ, and g (voiced and/or emphatic) — which means that they are **unvoiced** dentals.

But there are also arguments against assuming a shift *d > ⟨⟩ ꜥ:

There exist striking etymologies where Egn. ⟨⟩ ꜥ corresponds to Sem. *ꜥ, as also with Egn. ⟨⟩ d corresponding to Sem. *d, *z and *ð.[19]

*d > ⟨⟩ d: dḳw "powder; flour" Wb 5, 494.15-495.5 ("belegt seit *Med.* — vgl. hebr. דַּק") — Akk. *daqqu*, Heb. *daq*, Arab. *diqq* "fine, thin, well-ground", *etc.*

*z > ⟨⟩ d: wdn "to be heavy; to weigh upon (someone)" Wb 1, 390.1-15 ("belegt seit *A.R.*")— Arab. *wazana* "to weigh", *wazuna* "to become heavy".

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[19] J. Osing, 'Zum Lautwert von ⟨⟩ und ⟨⟩', *Lingua Aegyptia* 9 (2001), 165–178

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*ð > ⟨sign⟩ *d*: *jdn "ear", to be concluded from the sound value of the sign of the cow ear (Wb 1, 154; L. STÖRK, "Ohr", *Lexikon der Ägyptologie* IV, 559–560); but cf. *jdn* "ear" (?) in pTurin Museo Egizio 1791, Tb 146 [14. Tor][20] — Sem. *ʾ*uḏn-*, *id*.

Intriguing evidence: the root doublets

There are pairs of roots, whose meaning is similar or alike, that have ꜥ and *d*, respectively, as one of their radicals,[21] like

"hand":	ꜥj	:	dj
"horn":	ꜥb	:	db
"here":	ꜥꜣ	:	dj (< *dꜣ ?)
"squirt":	*ꜥꜣ	:	*dꜣ.

Root *d-j "lower arm, hand (⟨sign⟩ !)" (cf. Sem. *yad-, id.):

ꜥ(*j*) "hand" (since Pyr.) : *dj id., in LEg. *m-dj* "with", replacing old *m-*ꜥ, lit. "in the hand of", Coptic ⲛ̄ⲧⲁ⸗, ⲛ̄ⲧⲉ-.

Root *d-l, deictic (cf. Sem. *ðā and *li, etc.):

ꜥꜣ "here" (since MK) : *dj* id. (since Amarna), Copt. ⲧⲁⲓ.

Root *d-l "squirt", redublicated stems:

ꜥꜣꜥ "to spew; to ejaculate, beget" (since PT) : *dꜣdꜣ* "to have sexual intercourse" (since Tb)

Root *d-b "push, beat", simple stem:

ꜥb "horn (cattle, ram)" (since OK), copt. ϩⲱⲡ, hence *ꜥắbVw : *db* id. (since medical texts), Copt. ⲧⲁⲡ, hence *díb (from a verb *ꜥb/*db* "to push")

Root *d-b "push, beat", reduplicated stem ~ repeated action:

ꜥb-b "to knock (on door)" (since MK) : *db-db* "to pound (of the heart) (medical text)"

Root *d-b "push, beat", stem with prefix *l-, "to push/beat to an effect":

ꜣ-ꜥb "oppression" (since D. 18) : *n-db* "to injure" (D. 19)

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[20] According to

http://aaew.bbaw.de/tla/servlet/GetWcnRefs?f=0&l=0&of=0&ll=34070&db=0&lr=0&mo=1&wt=y& bc=Start.

[21] Cf. W. SCHENKEL, 'Zu den Verschluß- und Reibelauten im Ägyptischen und (Hamito)Semitischen. Ein Versuch zur Synthese der Lehrmeinungen', *Lingua Aegyptia* 3 (1993), 137-149, notably 140; H. SATZINGER, 'Egyptian 'Ayin in Variation with *d*', *Lingua Aegyptia* 6 (1999), 141–151.

Root *d-b "push, beat", stem with prefix *ḥ-, "to push down, subdue":

ḥ-ʿb in *CT* II 203 probably a synonym of ṯwn, "to gore; to attack" : ḥ-db "to overthrow, subdue" (since MK)

ḥ-ʿbj.w, a term used for enemies: "those to be subdued"? (Ptol.) : ḥ-dby.t, of a group of massacred enemies (Ramess.)

Root *ɣ-f-d:

ḫfʿ "to grasp, seize" (since Pyr.) : šfd id. (D. 21)

Root *d-l-b, a fruit tree:

ʿꜣb, a tree (since Pyr.); ʿꜣb (OK), var. of dꜣb "fig" : dꜣb "fig" (since Pyr)

Root *š-d "cut, dig"

šʿ "to cut" (since Pyr.) : šʿd id. (a compromise spelling, with both ʿ and d; since medical texts; replaces šʿ in the NK), Copt. ϣⲱⲱⲧ; cf. šdj and šꜣd "to dig" (both since OK)

Root *s-d-l "tremble":

sʿj (*sʿꜣ ?)"to tremble" (Med. Habu) : sdꜣ id. (since Pyr.); cf. dꜣ id. (*CT*, medical texts)

So there are a number of lexical items with ʿ (< d ?) that have doublets with d in its place (i.e., ṭ ?), like ʿb "horn", and db, id. This can be most plausibly explained as the result of dialectal variation (one must keep in mind, though, that oscillation between voiced and emphatic consonants also occurs within Semitic languages, as well as between individual Semitic languages[22]).

A comparable evidence concerns the Proto-Egyptian *l phoneme, which recurs in historical Egyptian both as ꜣ and as *n*. Also in the former case, the assumption of dialectal variation and interplay of closely related idioms can yield a plausible explanation.[23]

This would mean that phonemes *d and *l were pronounced differently in parts of the Egyptian speaking area. Conservative dialects preserved the traditional pronunciations, while innovative idioms changes them into ʿ [ʕ] and ꜣ [ʔ], respectively. We can also state that the

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[22] Cf., e.g., E. LIPIŃSKI, *Semitic Languages. Outline of a Comparative Grammar*. Second edition (Leuven — Paris — Sterling (Virginia), 2000), 122–123 § 12.2. For Arabic, cf. ZEMÁNEK, *Pharyngealization*, 20ff.; he assumes that ṭ became d in many cases when the original glottalised articulation changed to pharyngealisation.

[23] Cf. H. SATZINGER, 'Das ägyptische «Aleph»-Phonem', in M. BIETAK — J. HOLAUBEK — H. G. MUKAROVSKY — H. SATZINGER (eds.), *Zwischen den beiden Ewigkeiten*. Festschrift Gertrud Thausing (Wien, 1994), 191-205.

idiom of the inventors of the hieroglyphic script belongs to the progressive ones. There can be produced arguments that /ꜣ/ has the value [ʔ], or similar, in that idiom, rather than [l], or similar; and /ꜥ/ has the value [ʕ], or similar, rather than [d], or similar.

We do not know for sure the Egypian word for the white vulture (*neophron percnopteros*); but we have an idea why its picture was used for rendering the *ꜣ phoneme: when disturbed or slightly irritated, the bird utters a grumbling sound like *'a'a'a'a'a*;[24] but certainly not

lalalalala. Probably the name of the bird was actually an onomatopoetic *'a'a*, spelt with ꜣ — hence the <ꜣ> grapheme rendered some sound like [ʔ].

A similar argument for the pronunciation of the <ꜥ> grapheme can be found in another bird, viz. in the cormorant, biconsonantal sign for ꜥḳ. Again, the name of the bird is not preserved. But it can be observed that it utters a cry that resembles an *ꜥaaaḳ*, much more than a *daaaḳ*.[25]

Another animal cry reconfirms these arguments. "Donkey" is *iꜣ*, Coptic ⲉⲓⲱ, hence *ꞌiꜥáꞋ – a nice rendering of the animal's cry; whereas a pronunciation *ꞋidáI* would be far off the mark. Which means that those Egyptians who generated and used the hieroglyphic writing pronounced as a glottal stop, rather than as *l*, and their *d* had already become an ꜥ.

But other speakers of Egyptian must have stuck to the traditional pronunciation for some 1000 years longer: in the Middle Kingdom renderings of Asiatic place-names the Aleph graphemes serve to render Semitic *l* and *r*; and there are numerous doublets with both ꜣ : *n*, and ꜥ : *d*.

The South (?) said *ꜥib* for "horn"; the North (?) said *dib* for the same. How, then, to spell Northern words properly in hieroglyphics ? There was no sign for [d]. (*d had become ꜥ in the South.) The /d/ of Northern words was spelt with the same sign as /ṯ/, namely . And eventually pronounced the same way, namely [tꞋ] (cf. Coptic ⲧ).

Similarly, the /l/ of Northern words (corresponding to Southern /ꜣ/) was spelt with the same sign as /n/, namely . But was obviously pronounced [l] in many cases, as in *ns* "tongue", Coptic ⲗⲁⲥ.

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[24] See SATZINGER, '«Aleph»-Phonem'.

[25] Personal observation. Cf.
http://www.enature.com/fieldguides/detail.asp?sortBy=has+audio&curFamilyID=266&curGroupID=1
&lgfromWhere=&curPageNum=3.

Southern form (?):   Northern form (?):

ꜣꜥb "oppression" (since D. 18)   ndb "to injure" (D. 19)

originally, *ldb "to do harm," or sim.

"North"			"South"		
*ꜥ	*d	*ṯ	*ꜥ	*d	*ṯ
⌐⌐	⌐⌐	⌐	⊖, 𓆓	⌐⌐	⌐⌐
Egn. *iꜥr* / *ꜥrj* "rise"— Sem. *ꜥli̯- "high"			Egn. *wsḫ* "be wide" — Sem. *wšꜥ, id.		
Egn. *ꜥn* sign — Sem. *ꜥai̯n- "eye"			Egn. *nḏm* "be pleasant" — Sem. *nꜥm, id.		
Eg. *id* "child, youth" — Sem. *wld "give birth"			Egn. ꜥꜣ "here" — Sem. *ðā, *li-, deictic elements		
Egn. *idn* sign — Sem. *ʾuðn- "ear"			Egn. ꜥꜣ "door-wing" — Sem. *dal-, id.		
LEgn. *dj* "here" — Sem. *ði- "this"			Egn. *ḳdf* "pluck" — Arab. ḳatafa, id.		
Egn. *tmm* "close" — Heb. ʾāṭam, id.			Egn. *ḳnd* / *dnd* "be furious" — Sem. *ḳnṯ, id.		

So far the dentals and alveolars. The situation of the palatals, velars and laryngeals is comparable, though different in detail. Numerous words with *ḏ* or *g* or *ḫ* or *ḳ* are found to have doublets with another phoneme of this group, if not with more than one. Now, *g* is generally regarded as voiced, *ḳ* as emphatic; *ḫ* is generally regarded as voiceless, though it is voiced in Rössler's system; and *ḏ* is voiced in the general opinion, though emphatic in Rössler's system. In regard to the root doublets, as also according to the evidence of the transcriptions from, or into, Semitic, of the 2nd and 1st millennium, both *ḏ* and *g* may rather be emphatic than voiced. The truth is perhaps that the two categories merged in Egyptian phonology.

However, a detailed presentation of the evidence cannot be done here, as it would unduly extend this paper, and must therefore be preserved for another occasion.