

ARISTOTLE'S *TROCHOS* AND HYENA

by

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ABSTRACT: In his work *On the Generation of Animals* Aristotle mentions and rejects an ancient folk belief that the striped hyena (*Hyaena hyaena* L.) has two (male and female) sexual organs. Also he abandoned Herodorus' false opinion on a mystical animal named *trochos* (Gk. τρόχος). The identification of *trochos* is highly doubtful. It is suggested that the Greek term may denote the Asiatic spotted hyena (*Crocota crocuta* sp. *asiatica*), an extinct species of the hyena family, existing in prehistoric times in Europe and Asia Minor.

In his work entitled *De generatione animalium* (Gk. Περὶ ζώων γενέσεως) Aristotle rejected the opinions of people in ancient times about the striped hyena (Gk. ὕαινα) and an animal called τρόχος as being wild animals with two sexual organs, i.e. both the male and female pudenda.

Aristotle's text (*De gen. anim.* III 6; 757 a 3–4) runs as follows:

Εὐθητικῶς δὲ καὶ λίαν διεψευσμένοι καὶ οἱ περὶ τρόχου καὶ ὕαινης λέγοντες. φασὶ γὰρ τὴν μὲν ὕαιναν πολλοί, τὸν δὲ τρόχον Ἡρόδωρος ὁ Ἡρακλεώτης δύο αἰδοῖα ἔχειν, ἄρρενος καὶ θήλεος, καὶ τὸν μὲν τρόχον αὐτὸν αὐτὸν ὀχεύειν, τὴν δ' ὕαιναν ὀχεύειν καὶ ὀχεύεσθαι παρ' ἔτος. ὦπται γὰρ ἡ ὕαινα ἐν ἔχουσα αἰδοῖον· ἐν ἐνίοις γὰρ τόποις οὐ σπάνις τῆς θεωρίας· ἀλλ' ἔχουσι αἱ ὕαιναὶ ὑπὸ τὴν κέρκον ὁμοίαν γραμμὴν τῷ τοῦ θήλεος αἰδοίῳ. ἔχουσι μὲν οὖν καὶ οἱ ἄρρενες καὶ αἱ θήλειαι τὸ τοιοῦτον σημεῖον, ἀλλ' ἀλίσκονται οἱ ἄρρενες μᾶλλον· διὸ τοῖς ἐκ παρόδου θεωροῦσι ταύτην ἐποίησε τὴν δόξαν. ἀλλὰ περὶ μὲν τούτων ἄλις τὰ εἰρημένα.

Aristotle's text is given in both the English and the Polish translations below.

Much deceived also are those who make a foolish statement about the *trochus* and the hyena. Many say that the hyena, and Herodorus the Heracloteot says that the *trochus*, has two pudenda, those of the male and of the female, and that the *trochus* impregnates itself but the hyena mounts and is mounted in alternate years. This is

untrue, for the hyena has been seen to have only one pudendum, there being no lack of opportunity for observation in some districts, but hyenas have under the tail a line like the pudendum of the female. Both male and female have such a mark, but the males are taken more frequently; this casual observation has given rise to this opinion. But enough has been said of this.

(translated into English by PLATT 1910 [2007])

There is another silly and extremely wrong-headed story which is told about the *trochos* and the hyena, to the effect that they have two pudenda, male and female (there are many who assert this of the hyena; Herodorus of Heraclea [Pontica] asserts it of the *trochos*), and that whereas the *trochos* impregnates itself, the hyena mounts and is mounted in alternate years. In some localities, however, there is ample opportunity for inspection, and the hyena has been observed to possess one pudendum only; but hyenas have under the tail a line similar to the female pudendum. Both male and female ones have this mark, but as the males are captured more frequently, casual inspection has given rise to this erroneous idea.

(translated into English by PECK 1963: 317)

Także na temat borsuka (*Meles meles*, τρόχος) i hieny (ὑάνα) opowiadają naiwne i zgola bezpodstawne baśnie. Twierdzą mianowicie, że zwierzęta te mają dwa organy płciowe, męski i żeński. Wielu twierdzi to o hienie, a Herodoros z Heraklei o borsuku. Utrzymują, że borsuk zapładnia sam siebie, podczas gdy hiena pełni na przemian jednego roku rolę samca, drugiego – rolę samicy. Stwierdzono jednak na podstawie obserwacji, że hiena ma tylko jeden rodzaj organu płciowego. W niektórych okolicach nadarza się rzadka okazja zaobserwowania tego faktu. Hieny bowiem mają pod ogonem rysę podobną do organu płciowego samicy. Tego rodzaju znak mają zarówno samice, jak i samce, lecz najczęściej chwytają się samce [w czasie polowania]. Ta okoliczność dała pobieżnym obserwatorom okazję ułożenia rzeczowej legendy. Lecz już dość na te tematy.

(translated into Polish by SIWEK 1979: 140)

The Polish translation differs from the English ones in one important point. Paweł SIWEK recognises the animal called τρόχος, identifying it with the European badger (*Meles meles*, Pol. *borsuk* = E. *badger*), whereas the English translators believe that this animal cannot be identified and therefore they name it *trochus* or *trochos*, adopting only the Greek term.

In his work Aristotle rejected the folk beliefs referring to the hyena and an unknown animal<sup>1</sup>, named τρόχος after Herodorus of Heraclea Pontica, an author from the 5<sup>th</sup>–4<sup>th</sup> century BC, who “wrote a *History of Heracles*, which seems to have contained a great variety of matters” (PECK 1963: 317, note d). The animal name in question appears in the accessible Ancient Greek dictionaries with the following semantics:

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<sup>1</sup> PECK (1963: 316, note b) correctly indicates that “[t]his animal cannot be identified. It must be distinguished from the genus now called *Trochus*, which are shell-fish. No species of mammal is normally hermaphrodite”. It should be added that a similar Greek term, τροχός, refers to an extinct kind of the Mediterranean sirenian (or sea cow), as documented by Aelian (*NA* XIII 20). However, this name demonstrates a different (oxytonic) stress.

1. 'an animal' (cf. ABRAMOWICZÓWNA 1965: 368: 'jakieś zwierzę'; LIDDELL, SCOTT 1996: 1829: 'an animal');
2. 'a kind of animal, especially badger' (DVORECKIJ 1958: 1651: 'бapcyк'; JUREWICZ 2001: 415: 'jakieś zwierzę, borsuk (?)'; see also WITCZAK 2013: 181, n. 28).
3. 'trochus' (cf. MONTANARI 2003: 2044: 'zool. troco').

It seems reasonable that Herodorus' and Aristotle's term *τρόχος* refers, in fact, to the spotted hyena (*Crocuta crocuta*, Pol. *hiena cętkowana*), whereas the Greek appellative *ῥαινα* refers to the striped hyena (*Hyaena hyaena*, Pol. *hiena pręgowana*).

The African spotted hyena was an exotic animal definitely less well-known to the Greeks, but it was registered in the ancient sources as *κοροκόττας*, *κροκόττας* or *κροκούττας* m. (LIDDELL, SCOTT 1996: 998, Suppl. 187; MALINOWSKI 2003: 112 f.), and as *corocotta* in Latin (MORTA 2004: 52–55). The female spotted hyenas, which are somewhat bigger than the male ones, command the group, preserve male customs and additionally have their false genitals formed as the male hyena genitals<sup>2</sup>.

The false male genitals of the female spotted hyena are treated as a curiosity in the world of mammals (KALETA 1998: 54). The Polish zoologist explains it as follows (*ibidem*):

Łechtaczka [samicy hieny cętkowanej] jest powiększona i wydłużona tak, że przypomina męskie prącie (może być nawet wprowadzona w stan erekcji), natomiast wargi sromowe zwinęły się i połączyły tworząc strukturę do złudzenia przypominającą worek mosznowy. Jeśli dodać do tego, że samice h[ieny] c[ętkowanej] są większe od samców (różnica w masie ciała wynosi ok. 7 kg), zrozumieć można, iż rozróżnienie płci u tego gatunku jest niezmiernie trudne.

The clitoris [of a female spotted hyena] is enlarged and elongated, so that it resembles a male penis (it can even achieve an erection), while the labia curled up and joined together creating a structure resembling a scrotal sack. If we add that female spotted hyenas are larger than male ones (the difference in body weight is about 7 kg), we can understand that it is extremely difficult to distinguish sex in this species (my translation).

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<sup>2</sup> According to PECK (1963: 565 f.), "An important piece of research on the spotted hyena recently carried out in Tanganyika Territory by L. Harrison Matthews has established that externally the female of the spotted hyena closely resembles the male; it has a peniform clitoris, similar in form and position to the penis of the male, and scrotal pouches closely simulating those of the male. Indeed the male and non-parous female are indistinguishable externally. Matthews points out that Aristotle did not distinguish between spotted and striped hyenas: the legend 'relates to the spotted hyena, but Aristotle's refutation of it to the striped, the genital anatomy of which he correctly describes' (Matthews refers to the description in *H.A.*). Of 103 specimens collected by Matthews, 63 were males; this is a lower percentage than that given by the hunter with whom Aristotle discussed the subject: he found ten out of eleven were males, but these may have been striped hyenas". See also FUNK 2012; KATZ 2015.

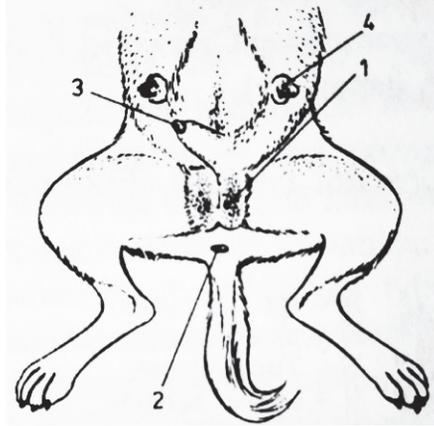


Fig. 1. False male genitals of the female spotted hyena.  
 1 – false scrotum; 2 – anus; 3 – clitoris imitating male hyena’s penis; 4 – nipples.  
 Source: KALETA (1998: 54).

People in ancient times did not know that the female spotted hyena has false male genitals. This may explain the folk belief that all hyenas (called ὕαινα and τρόχοι) have two sexual organs: the female one and the male one. On the other hand, spotted hyenas could be regarded, according to ancient (and modern African) folk belief, as being exclusively male, but changing their sex every second year.

It is a well-known fact that the European spotted hyena (*Crocota crocuta* sp. *Europaea*, Pol. *hiena cętkowana jaskiniowa*), an extinct species of the hyena family, existed in prehistoric times in Europe and Asia Minor. It cannot be ruled out that this (or a cognate) species survived in some residual areas of Asia Minor for a time in antiquity. Ancient literary works (written in Greek and Latin) indicate not only an Aethiopic (i.e. African), but also an Asiatic (especially Indic) distribution of the spotted hyena, which is usually called κροκόττας or κοροκόττας in Ancient Greek (see BRUST 2005: 364–368 for a discussion).

The spotted hyena is closely related to the striped hyena (*Hyaena hyaena* L., Pol. *hiena przęgowana*), which was known as ἡ ὕαινα (hence Lat. *hyaena*). This name is traditionally and unanimously derived from Ancient Greek ὕς f. ‘pig’ by means of the female suffix -αινα (BOISACQ 1916: 996; HOFMANN 1950: 380; FRISK 1962: 952; CHANTRAINE 1977: 1161; BEEKES 2010: 1523). This etymology is, however, wrong, as the name in question is nothing other than a derivative from Luwoid *\*suwan-* ‘dog or a dog-like animal’, cf. Hier. Luw. *suwan(i)-* c. ‘dog, *Canis*’; Phrygian *\*φάνος* ‘hyena’ (attested as γάνος or γλάνος in Ancient Greek sources, beginning with Aristotle), Bithynian ούανοῦς, acc. sg. ούανοῦν f. ‘fox’, Gk. dial. σύας ‘dog’ (in the tongue of the Cretan Polyrrhenians) (WITCZAK 1995: 22 f.) < PIE. *\*kúnos* m. f. ‘dog, *Canis*’ (gen. sg. *\*kúnos*), cf. Hittite <sup>L</sup>ku-*ua-aš* c.

'hound-man', acc. sg. *ku-ya-na-an*, gen. sg. *ku-ú-na-aš*, glossed by the Sumerian ideogram <sup>LU</sup>UR.G17 'hound-man' (KLOEKHORST 2008: 505 f.). Thus the Ancient Greek name for 'striped hyena' is of Anatolian (Luwoid) origin and does not belong to the native vocabulary.

Also the Greek name ὁ τρόχος, which has no convincing etymology, seems to derive from an unknown oriental source, perhaps from the extinct Bithynian language (note that Herodorus of Heraclea Pontica<sup>3</sup>, who first used this word, originated from Bithynia) or perhaps an Anatolian tongue. Unfortunately, nothing is known of Bithynian vocabulary, whereas animal terminology is only partially attested in the ancient Anatolian languages (WEEKS 1985: 35–47). Is it possible to prove an oriental origin of the Ancient Greek term τρόχος? I am convinced that a definite source of the Greek loanword can be indicated.

A term similar to the Greek τρόχος 'a kind of hyena' can definitely be found in the Indo-Aryan language world, e.g. Skt. *tarákṣu-* m. 'hyena', also 'tiger', *tarakṣa-* m. 'hyena, wolf', *tarakṣuka-* m. 'hyena' lex., *tarkṣu-* m. 'hyena' lex. (MONIER-WILLIAMS 1999: 439), Pali *taraccha-* m., *taracchi-* f. 'hyena'; Prakrit *taraccha-* m., *taracchī-* f. 'hyena'; Lahnda *tarakh*, dial. (Ju.) *tarkh* m.; Hindi *taras* m.; Gujarati *taras* m.; Marathi *taras*, *tarās* m. n. 'hyena'; Oriya (Bastar) *turukā* 'small tiger, leopard', *patara turuki* 'wolf, hyena'; Singhalese *tarasā* 'hyena' (TURNER 1966: 324, No. 5698). The Indo-Aryan term for 'hyena', *tarákṣu-*, is usually explained as a native (Indo-Aryan) compound denoting '[an animal] preying on cattle / Vieh überwindend', hence 'predator / Raubtier' > 'hyena, tiger / Hyäne, Tiger' (MAYRHOFER 1956: 479 f.; 1992: 628 with some reservations), cf. OInd. *tárati* 'to surpass, overcome; to acquire, gain' (MONIER-WILLIAMS 1999: 454) and *kṣú-* n. 'cattle' (in ṚgVeda 'food', according to MONIER-WILLIAMS 1999: 330). The development of the Indo-Aryan cluster *\*-kṣ-* to *-kh-* is already attested in the Middle Indic period, cf. Pali *makkhikā-* f. 'fly', Prakrit *makkhiā-* f. 'id.' < OInd. *máksikā-* f. 'fly, bee' (FAHS 1989: 32), see also Lahnda *makhī* 'fly' (TURNER 1966: 554, No. 9696).

The above-mentioned Indo-Aryan terms for 'hyena' correspond to Gk. Ion. τρόχος [*trokʰos*] m. 'a kind of animal, similar to a hyena' (cf. especially Lahnda *tarakh*, dial. *tarkh* m. 'hyena'). It seems to denote a (now extinct) Asiatic kind of 'spotted hyena, *Crocuta crocuta* var. *asiatica*', probably related to the cave hyena or the Ice Age spotted hyena (*Crocuta crocuta spelaea*). It cannot be excluded that Ctesias of Cnidus, who described India at the end of the fifth century BC in his work *Indica* (Gk. *Ἰνδικά*), was an intermediary in adopting an oriental (Indo-Aryan) term into the Greek language. Of course, the foreign (Middle Indic) term could easily be accommodated as a derivative of the Greek verb τρέχω 'to run, hurry'.

<sup>3</sup> Heraclea Pontica was located on the south shore of the Black Sea, about 200 km east of the Bosphorus. It was a colony of Megara in the territory of the Bithynians, see PECK (1963: 316, note d).

My analysis can be concluded as follows:

1. The Greek term ὕαινα f. ‘striped hyena, *Hyaena hyena* L.’ represents a borrowing from an Anatolian Luwoid source, cf. Hier. Luw. *su-wa-n(i)*- ‘dog’ (< PIE. \**k̑uon-s* ‘dog’); Bithynian οὐανοῦς, acc. sg. οὐανοῦν f. ‘fox’; Phrygian \**ḫános* ‘hyena’ (attested as γάνος or γλάνος in the Ancient Greek sources). It has nothing to do with the Ancient Greek appellative for ‘pig’, cf. Gk. ὕς m. / f. ‘pig’, Lat. *sūs* m. / f. ‘id.’.

2. The Anc. Gk. τρόχος hardly denotes the European badger (differently KATZ 2015). It refers most probably to a species of the spotted hyena which lived in Asia Minor and India. It is possible that a northern species of the spotted hyena (now extinct) existed in some residual areas of Anatolia or the Near East Asia in ancient times. The Greek term in question also represents an oriental (probably Indo-Aryan) loanword. There are numerous terms for ‘hyena’ in Indo-Aryan languages, which are phonologically similar to the Anc. Gk. τρόχος, cf. OInd. *taráksu-* m. ‘hyena’, also ‘tiger’, Skt. *tarakṣa-* m. ‘hyena, wolf’, *tarakṣuka-* m. ‘hyena’ lex., *tarkṣu-* m. ‘hyena’ lex., Pali *taraccha-* m., *taracchi-* f. ‘hyena’; Prakrit *taraccha-* m., *taracchī-* f. ‘hyena’; Lahnda *tarakh*, (Ju.) *tarkh* m. ‘id.’; Hindi *taras* m. ‘id.’; Gujarati *taras* m. ‘id.’; Marathi *taras*, *tarās* m. n. ‘id.’; Oriya *patara turuki* ‘wolf, hyena’; Singhalese *tarasā* ‘hyena’.

3. Herodorus’ opinion on the double (female or male) sexual organs of the striped hyena (*Hyaena hyaena*) and the Asiatic spotted hyena (*Crocuta crocuta* var. *asiatica*) resulted from the fact that the female spotted hyenas have false genitals imitating the male sexual organs.

4. According to Aristotle, “the males [hyenas] are captured more frequently“ (ἀλίσκονται οἱ ἄρρενες μᾶλλον). In fact, the female spotted hyena was frequently thought by ancient hunters to be male, as she is usually larger and has false male genitals. If a captured female spotted hyena, wrongly recognised as a male, appeared to be pregnant, then the Greeks were likely to reach the wrong conclusion that all hyenas have two sexual organs and, if they want to, can change their gender.

5. It is highly probable that Herodorus of Heraclea Pontica repeated a misconception created by ancient hunters from Asia Minor. A similar folk belief exists today in Africa. Many tribes in Africa (especially South Africa) are convinced that hyenas change their sex every year.

6. Aristotle as a scientific investigator and an excellent zoologist correctly rejects Herodorus’ folk opinion.

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