



## IUGS International Commission on the History of Geological Sciences (INHIGEO)

### "Anniversaries": Nicolas Steno, born 380 years ago, bared not his own but fossils' teeth

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Figure A: Illustration from a new edition on Steno's 1667 paper comparing a tooth from a shark's head with a fossil tooth, Tab. IV: *Elementorum Myologiae*, 1669, Amsterdam, Elizeus Weyerstraet, by permission of the Library of the University of Vienna

Let us go back to the year 1666 when, in October of that year, a number of fishermen caught a huge shark near Livorno (Italy). The Duke of Tuscany, Ferdinand II, a generous patron of the arts and sciences, summoned the anatomist Nicolas Steno (1638-1686) to examine the curious specimen. Steno (Danish Niels Steenson, latinized to Nicolaus Stenonius) was born in Copenhagen, had studied anatomy in Leiden (Netherlands) and had travelled to Paris and Montpellier. Being without employment he moved to Florence to the court known for being Galileo Galilei's most prominent work-place. Already famous for his first publications in anatomy Steno was elected to the *Accademia dei Cimento* and made contact with the Duke.

Steno, who was concerned with the contraction of muscular systems, compared the shark's teeth with the so-called *tongue stones* which were previously thought by ancient scholars and by humanists to have fallen from the sky or moon. Other contemporaries felt confident that the stones grew within rocks. To demonstrate that these *tongue stones* were fossils Steno emphasized causal explanations and favoured the strategy of focusing on observed facts.

Although Fabio Colonna, however, had already shown that *glossopetrae* or *tongue stones* are fossils from a shark in his "*De glossopteris dissertation*" (1616), it was Steno whose observation did not go unnoticed within the debate of the nature of fossils and was vigorously discussed in following years.

We can see that when a unique instance, a pure coincidence and a well-trained scholar come together, then science goes further and shows remarkable consequences. Apart from this episode, the history of science emphasises Steno's strategy of making a distinction between his observations and his conclusions. With the fact that he avoided the mere compilation of previous opinions, in the traditional encyclopaedic manner, he favoured empirical observation rather than previously existing explanations.

For more information on Steno's Discovery:

Martin J. S. Rudwick, *The Meaning of Fossils. Episodes in the History of Palaeontology*. Chicago and London: The University of Chicago Press [1976], 1985.

Nicoletta Morello, "Steno, the fossils, the rocks and the calendar of the Earth", in G. B. Vai and W. G. E. Caldwell eds., *The Origins of Geology in Italy*, Geological Society of America Special Paper 411, 2006, pp. 81-93.

Nicolaus Steno, *Elementorum Myologiae Specimen, seu Musculi description Geometrica, cui accedunt canis carchariae dissectum caput ex dissectus piscis canum genere*. Florence: Stellae 1667.