

## APPARATUS ARCHITECTURE AND ALLOMETRY: THE KEYS TO CONODONT ELEMENT FUNCTION?

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Much effort has been expended in determining the geological utility of conodont elements; little has been spent on determining their usefulness to the conodont animal. Most conodonts had an apparatus made up of a number of morphologically distinct, complex elements. Such apparatuses were borne by members of the Ozarkodinida, Prioniodinida, and Prioniodontida, together accommodating ~75 percent of known conodont genera.

The ozarkodinid apparatus consisted of an anterior battery of S and M elements behind which lay opposed pairs of Pb and Pa elements. Debate over its function has centered on two main hypotheses. These have considered the apparatus either as a filter feeding system, or as teeth. Ontogenetic analysis reveals that ozarkodinid apparatus growth was incompatible with a filtering function. The rate of increase in size of the S and M elements (the postulated filtering system) was insufficient to have met the increasing food requirements of the growing animal.

Like the apparatus of ozarkodinids, that of prioniodinids was differentiated into an anterior S and M element series and posterior, paired Pa and Pb elements. Despite these similarities in element arrangement, the prioniodinid apparatus does not exhibit the same degree of morphological differentiation as that of ozarkodinids. The Pa and Pb elements were probably involved in swallowing rather than cutting and grinding food.

The prioniodontid apparatus is poorly known but it is clear that although the morphology of elements is comparable to ozarkodinids, their arrangement in the apparatus was markedly different. Until the architecture of the apparatus has been determined, its mode of function can only be guessed at. Preliminary knowledge of the apparatus, however, suggests that it operated differently to those of ozarkodinids and prioniodinids.

Understanding of the function of conodont elements requires that their morphology is studied within the context of an integrated multielement apparatus. There is substantial variation in apparatus composition and differentiation, and element morphology between clades. This variation undoubtedly reflects, to a large extent, differences in apparatus adaptability and versatility, functional flexibility, and food specificity; all factors that in other groups have had a major influence on evolutionary patterns.