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## Wolf-Ernst Reif (27.06.1945–11.06.2009)



Wolf, as he was called by many colleagues, was born in Heidenheim an der Brenz, 30 km north of Ulm, in southern Germany. His parents were both scientists from the university town of Jena, and he was the oldest of three children. Wolf was born under difficult conditions, at the end of a string of carts of immigrants from east-central Germany to the south. As the US Army withdrew from Thuringia, they had to leave infrastructure behind but took around 2000 German academics with them — mostly rocket scientists, physicists, and chemists — and among them were Wolf's parents. This move to secure part of the German intelligence was coined “we take the brain” by the Americans. In the case of the Reif family, they took an unborn scientist with them they still could not know about.

Wolf was born with a spina bifida, which caused an increasing paralysis during all of his life. But health did not keep him away from choosing his profession very early: when three years old, he already loved to collect stones

(“Stoinale”). By the age of eight, he was fascinated by the Swabian Alb and its formation on the ground of a tropical sea, and reported that in his imagination he could “hear the waves at the Jurassic coast”. Collecting fossils and reading books became his favoured hobbies, and by seventeen he had written a scientific paper which was granted the Hörlein Prize by the Verband Deutscher

Biologen (Association of German Biologists). Thus, he had become a palaeontologist even before he entered university, and his first specialization was in Upper Jurassic sponges.

In 1965, Wolf went to Tübingen, then one of the best places to study palaeontology and geology in Europe. Before his training in geology started, he absolved a one-year college devoted to interdisciplinary topics (Leibniz-Kolleg). This proved befitting for his general attitude towards science, and in a sense foreshadowed what there was to come. During that time, he wrote an essay on the history of Czechoslovakia and worked on the early ontogeny of salamanders. He was a voracious reader of many kinds of books, a habit he fortunately did not give up even in his last months. His interests ranged from geology, biology, and physics to logic, philosophy, architecture, and art.

At Tübingen, Wolf became a student of Adolf Seilacher, with whom he shared broad interests in evolution, palaeontology, and geology (fossils' deposit). This appears only logical, as both supervisor and student took unconventional paths and faced problems avoided or neglected by others. The topic Wolf chose for his diploma thesis (then a degree roughly comparable to a master) was the origin of the famous Triassic bonebeds. This project includes aspects of vertebrate palaeontology, palaeoecology, taphonomy, and sedimentology, again highlighting his interdisciplinary interests.

In his doctoral thesis, Wolf focussed on sharks, a topic that should form his centre of research for years to come. He developed a diverse set of research questions on the evolutionary biology of these fishes: how do shark scales and teeth *form* and how are they *repaired* (embryology), how do they *differ* (systematics), what is their *fossil record* (palaeontology), what is their impact on the *swimming ability* of sharks (functional morphology), and how did they *evolve* (evolutionary biology). In all named fields, Wolf was to make substantial, often ground-breaking contributions. In 1973 he finished his dissertation on shark tooth morphology and ultrastructure. The next step was to study on the role of shark scales for swimming, and in 1975–76 he spent a year in Hawaii with his family to focus on this project. This was a very active period, in which he travelled around the world and cooperated with many colleagues, among them functional biologists, physicists, and architects such as Otto Frei. In Tübingen, Wolf was further intimately involved in research programmes (SFBs) on palaeoecology, geology, and constructional morphology. During that time, he took part several times in the famous Dahlem Conferences, interdisciplinary workshops to which only very few German palaeontologists were invited.

In 1982, Wolf finished his Habilitation, in which he developed the sophisticated Odontode Regulation Theory. This theory explains the origin and evolution of scales and teeth in jaws of vertebrates by means of a morphogenetic model. By 1984, he was appointed a 4-year professorship (C2) at Tübingen. The functional morphology of shark scales led him to consider general aspects of hydrodynamics, and for his contribution to the field of bionics he was granted the Ernst Mach Award in 1986. Finally, in 1988, he became an assistant professor (C3) for constructional morphology, funded by the Stifterverband der Deutschen Wissenschaft explicitly in honour of his outstanding contributions.

In concert with Frank Westphal, Wolf made vertebrate palaeontology a hot spot at Tübingen. In the 1970s–1990s, the place attracted many students, postdocs, Humboldt and Royal Society Fellows, and visiting professors from around the world. Characteristically, Wolf regarded his professorship essentially as a research position — a decision from which his students profited substantially. He held that proper science requires a lot of time to think, and it needs the freedom to read and think in any direction. Apart from research, he devoted much time and effort to editing, such as for *Neues Jahrbuch and Paläontologische Zeitschrift*. Naturally, Wolf also had to teach and administer, but after his early retirement in 1996 he was finally freed from such dependencies. In 2008, he became an honorary member of the German Palaeontological Society.

Wolf's analysis of major theories was focused on many topics in geology and biology, but the centre of gravity clearly lay on evolution. This is exemplified by his vast library, which he partly acquired by writing so many thoughtful book reviews — sometimes more than a hundred per year! Among the eminent biologists, Lamarck, Darwin, Wallace, Haeckel, Abel, Weismann, Zimmermann, Mayr, Goldschmidt, Hennig, and Gould form just a few of the many foci Wolf chose during his career, and often he returned to earlier interests after many years of further thinking. The work of Charles Darwin, particularly *On the Origin*, was perhaps the most often revisited, since multi-faceted theme for him. Wolf's respect for Darwin was immense and apparently ever growing, but this did not keep him away from “dissecting” each of Darwin's sentences in his usual way.

The implications of Otto H. Schindewolf's work, Wolf's academic grandfather, also formed a topic that attracted him repeatedly. Schindewolf was a professor at Tübingen from 1948–1964, a successful director and scientist widely known for his integrity. His research was focused at the stratigraphy, systematics, and evolution of ammonoids and corals, but like Wolf Reif he was deeply interested in theoretical issues. Yet both his primarily geological background and the strong German tradition in seeing evolution as subject to internal forces — Goethe's shadow was long — led him to hold very different views from that of the Modern Evolutionary Synthesis. In more than one sense, Schindewolf formed the opposite pole to Darwin: here the gradualistic, stochastic, unpredictable course of evolution (Darwin), there the saltational, lawful, and historicist path of typostrophes (Schindewolf). This whole story was not only a matter of arguments, but also about tradition and cultural heritage, as Schindewolf traced back his ideas not only to those of von Baer and Haeckel, but also to Spengler! For most German-speaking palaeontologists, evolution was seen through the eyes of a stratigrapher, and if at all, the German biologists were consulted rather than Darwin. Wolf Reif broke with this tradition in that he took the position of Darwin without compromises, albeit acknowledging the logic and internal consistency of Schindewolf's Typostrophe Theory. His thorough analysis of these issues led him to expand on typology, a pre-Darwinian concept that had once formed the foundation of morphology, but also caused many problems for biology and palaeontology. A few colleagues mistook Wolf's rigorous analysis of Schindewolf's typology as a critique of the person, but this is clearly a profound misunderstanding.

Wolf passed away on Thursday, June 11, 2009.

*Rainer Schoch, Uwe Hoßfeld, and Georg S. Levit*

## **Вольф-Эрнст Райф (27.06.1945–11.06.2009)<sup>1</sup>**

Вольф, как его звали многие коллеги, родился на юге Германии в трудное время, когда армия США, покидая Тюрингию, забрала с собой многих немецких ученых, в том числе и родителей Райфа. Будущий зоолог появился на свет в обозе беженцев, он родился с нарушением ЦНС, которое привело к прогрессирующему параличу. Однако болезнь не помешала Райфу увлечься науками, в частности геологией и палеонтологией, привлекавшими его с раннего детства. В 1965 г. он поступил в Тюбингенский университет, славившийся своими курсами палеонтологии и геологии на всю Европу. Здесь Вольф стал учеником Адольфа Зайлахера, с которым он разделял взгляды на

<sup>1</sup> Составление аннотации на русском языке — Н.Е. Берегой.

эволюцию и палеонтологию. Его дипломная работа охватывала разные дисциплины: палеоэкологию, тафономию, седиментологию и пр. Кандидатскую диссертацию Райф посвятил изучению акул. В 1973 г. он завершил свой труд о морфологии и ультраструктуре акульего зуба. После этого он провел несколько лет на Гавайях, где продолжил исследования в этой области.

В 1982 г. Вольф-Эрнст Райф получил докторскую степень за создание теории, объясняющей происхождение и эволюцию чешуи и зубов позвоночных на примере морфогенетической модели, после чего в 1984 г. он получил место профессора в Тюбингене на 4 года. Совместно с Франком Вестфалем он привлек интерес к палеонтологии позвоночных. Кроме научной работы занимался преподаванием, однако после выхода на пенсию в 1996 г. был освобожден от этой обязанности. В своих трудах Райф обращался к работам выдающихся ученых, таких как Ламарк, Дарвин, Уоллес, Геккель, Вайсман, Циммерман, Майр, Голдшмидт, Гулд, и конечно, Шиндегольц. В 2008 г. он стал почетным членом Немецкого палеонтологического общества.

Вольф-Эрнст Райф ушел из жизни 11 июня 2009 г.

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