Micropaleontological Formations

Paleontology with a microscope

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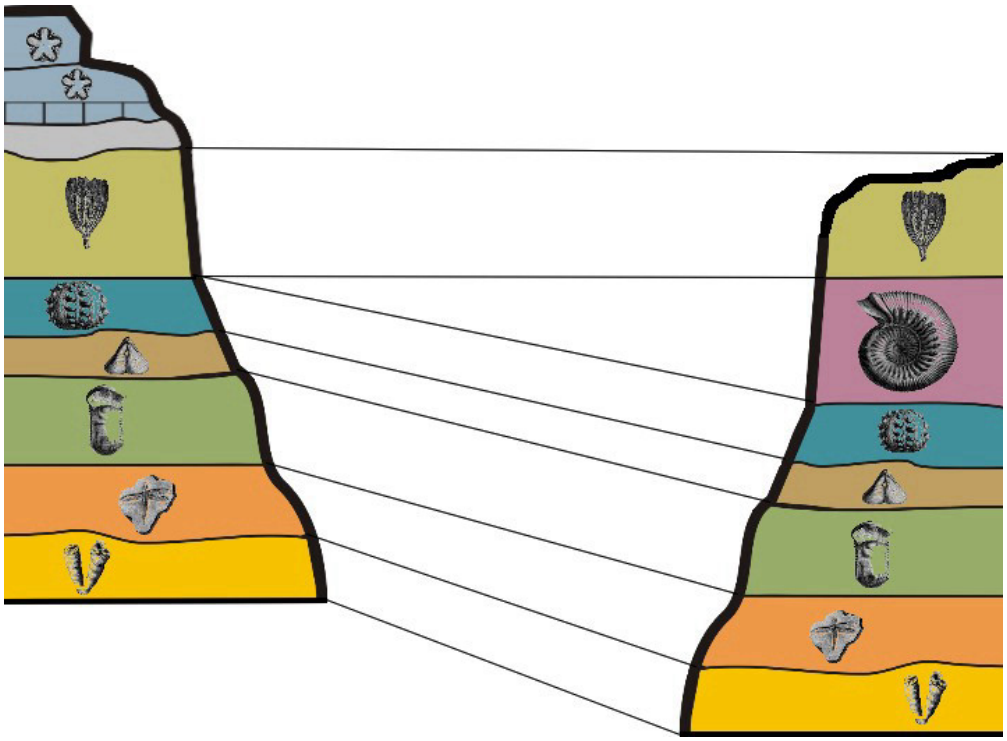

Illustration of biostratigraphic formations. (Source: thin/Wikimedia. CC BY SA)

Micropaleontology is the scientific study of microfossils, fossilised remains that are microscopic in size and are not visible to the naked eye. As the nature of this object of study suggests, the field is extremely diverse: microfossils can include anything, from a plethora of unicellular organisms with different biochemistries, to microscopic larvae, pollens, seeds, and spores, to fragments of larger fossils, like teeth and scales. Moreover, microfossils can be studied in many different ways: scientists can be interested in the organisms themselves, or they can use them as (environmental indicators); microfossils can represent series in evolutionary time, but they can also be treated as geochemical materials, as well as proxies for other geological, environmental or biological variables. The resulting diversity of micropaleontology makes it hard to trace one clear linear history of this discipline, which still struggles to find a unitary definition.[1] Crucial to micropaleontologists' methods, though, is the approach of (biostratigraphy): since microscopic organisms get incorporated in the sediment as they die, differences in their forms can help scientists date geological strata. Perhaps, then, rather than searching for one unitary history of this diverse field, it is useful to proceed in analogy to micropaleontologists' own approach: i.e.

tracing different formations across geological strata, in order to understand the ongoing dynamic relations that connect them.

This episodic history of micropaleontology, then, is especially interesting as it brings to the surface different strata of how we came to understand and define nature. As this field brings together planetary sciences, microbiology, but also chemical and physical sciences, and technosocial transformations, it offers a good case to trace the [history of transformations] in how animals can become objects in scientific collections. As microfossils are invisible without the support of complex technical systems and (microscopic media), the story of how we came to understand them also opens up interesting questions on the relation between seeing, knowing, and understanding – and complicates how the technosciences fit into this relation. Additionally, micropaleontology is interested in deep geological and evolutionary time, and in the global interconnectedness of planetary systems. This unique perspective, bringing into contact the infinitely small with the infinitely large, challenges the temporality of the narratives on this website. Moving between these different scales, micropaleontological formations include the smallest specimens, like (Cycladophora davisiana) and its [microbial worlds], but also broader processes, like the complex dynamics linking (microbes and planets) by way of changing scientific approaches and infrastructures, like [taxonomies], [scientific disciplines], and (databases).

The (chaotic origins of micropaleontology) shed light on foundational structures that still shape this disciplinary field. At the same time, they help illustrate the radical changes which our understanding of [microbial worlds] has undergone over the last few centuries. Similarly, this early history of the field illustrates how sociotechnical and conceptual conditions led this study to what appeared to be (micropaleontological evolutionary dead ends). It was only much later, when the revolutionary discoveries of Esther Applin, Alva Ellisor, and Hedwig Kniker – scientists employed by oil companies – challenged previous dogmas, that the study of microfossils came back to life and developed into what came to be known as (industrial micropaleontology). This particularly fortunate application of micropaleontology, converging with postwar oceanography, brought (micropaleontology to sea) once again, while also making microfossils a crucial part of the complex technoscientific machinery that allows us to tell scientific stories and histories (of microbes and planets) today. Across these formations, micropaleontology gives shape not only to microfossils and scientific knowledge, but also technologies, sociopolitical projects, individuals and communities – human, but not only. These formations simultaneously tell stories of planetary changes, and change how we (know the world). As you dig into these strata of micropaleontological history, what it means to collect, (preserve), and understand 'animals as objects' radically shifts time and again, which shows how diverse the practices of [getting animals] and [putting animals on display], and [recording worlds] can be.

Footnotes

1. This becomes clear already in the title of an important 1980s article in this field: Jere H. Lipps. "What, If Anything, Is Micropaleontology?" *Paleobiology* 7, no. 2 (1981): 167-199. http://www.jstor.org/stable/2400472. And in a more recent reprise: onald E. Martin. "What, If Anything, Is Environmental Micropaleontology?" *Microbiology* 1 (2004): 1-10.↩