A personal Tribute to *Herbert Stradner:* a consummate discoverer and an incomparable scholar of the "inner space"

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Herbert Stradner in 1977

I met my friend and mentor Herbert Stradner in 1965 in Vienna when I was a mere lad and attending a yearlong post-graduate research program sponsored by UNESCO and the Geologische Bundesanstalt (Geological Survey of Austria). Here I also met many other eminent Austrian geoscientists of that time, including Rudolf Grill, Heinrich Kuepper, Kuno Bruno Kuntz, Rudolf Oberhauser and Manfred Schmid, among others, all of who were great teachers for a young budding geologist. Initially, I worked with Rudolf Oberhauser and a distinguished Vienna University professor, Adolf Papp, on Miocene planktonic foraminifera from the Vienna Basin. However, later in the program, Herbert Stradner introduced me to the wonders of the "inner space" through the electron-microscopic world of calcareous nannoplankton (marine microplankton with an evolutionary history going back to the Triassic). Herbert was already mentoring another student (who was to become my life-long friend from Japan, Toshiaki Takayama), but he readily took me under his wing as well. I was immediately smitten with these nanno-critters and decided to study them for my thesis at the University of Stockholm where I had been invited by a Swedish professor, Ivar Hessland, on a PhD fellowship.

On my first meeting with Herbert, we immediately developed a great rapport. He was an imposing and striking figure with well-chiseled Viennese countenance and a most kindly disposition. In the short two months before my departure, he patiently taught me whatever he could so that upon arrival in Stockholm I could get started on my thesis without delay. This was a tremendous help. He accepted the role of being my mentor with enthusiasm, even though I was not officially assigned to him as a student and he encouraged me to pursue my newfound passion for the "inner space". At Stockholm University, Ivar Hessland generously provided me with my own electron microscope and I went wild exploring the "inner space" and the nanno-world beyond the power of ordinary light microscopes. During the next four years, I regularly consulted with Herbert and eventually defended my doctorate thesis in Stockholm in 1972 with Herbert as one of my external examiners (see above).

Two views of Herbert Stradner with the author in 1972, at the conclusion of the author's doctoral dissertation. Left: Herbert congratulating the author at the conclusion of the thesis defense, and right: Herbert and Ivar Hessland flanking the author at dinner that night in a Stockholm Gamla Stan (old city) restaurant.

Since that time, I have occasionally visited with Herbert in Vienna and met him in other places while attending scientific conferences, and throughout this time, my memories of Herbert have been very pleasant ones. He is amongst the most soft-spoken and kindest people I have ever met. My most recent visit with him was during the EGU annual meeting in 2012, when he invited me to visit the Albertina Museum, followed by lunch at his favorite restaurant in the center of city, with a typical Viennese meal of asparagus soup, followed by beef goulash, and downed with Krügels of Gösserbräu.

Left: Herbert Stradner teaching the author how to make a proper Wiener Schnitzel at his Klosterneuburg *home in 1977. Right: Sharing a nice Viennese meal in Herbert's favourite restaurant in the centre of Vienna in 2012. Notice how during this time Herbert has remained youthful and handsome as ever.*

Herbert Stradner's active career as one of the world's most eminent calcareous nannoplankton researchers spans over five decades, publishing nearly 70 research papers, predominantly on nannofossils, but also including other micro-fauna and flora. Three decades of this interval (1960s through 1980s), was a period of great discovery in nannofossil taxonomy and biostratigraphy and Herbert has a lion's share of discovering new taxa (nearly a 100 at the last count) and documenting their biostratigraphic utility. His passion for the discovery of new forms (new genera, species and subspecies) is demonstrated by the fact that he described new taxa in most of his published works since he started publishing in 1958.

Herbert's doctoral thesis at Vienna University was on the Tertiary silicoflagellates of Austria (1956). Soon thereafter, several papers of discovery (1958–1961) followed this, many of them first reports on the occurrence of nannofossils in basins in Europe and elsewhere. Most of these early papers had a special focus on the nannofossils that are restricted to the Tertiary, the Discoasters. This culminated in a profusely illustrated tome on Discoasters of Austria, Rumania, Italy and Mexico and their biostratigraphic significance (1961), published together with Adolf Papp. This volume, with beautifully hand-drawn figures by Herbert, became the must-have reference for all Tertiary nannofossil researchers and remains important to this day.

After the Tertiary, Herbert diverted his attention to the Mesozoic (1962–1963) while still continuing to discover new taxa in the Tertiary. Several papers reported on the nannoflora of the regional Tertiary stratotypes and neostratotype sections in Europe, e.g., Tortonian, Helvetian, Wemmelian, Biarritzian, Messinian, Ergerian and Sarmatian (1963–1980).

Herbert also participated in a number of Deep Sea Drilling Program legs, either as a shipboard nannofossil expert, or as shore-based contributor, starting with the all-important Leg 13 in Mediterranean (1970) that was first to document the Messinian Salinity Crisis and the desiccation of the Mediterranean Sea in latest Miocene. His expertise contributed to accurate biochronology of the basins that were drilled (DSDP Leg 13, Mediterranean; Leg 29, South Pacific; Leg 42, Aegean Basin; Leg 66, Middle America Trench; and Leg 75, Angola Basin) with his studies of nannofossils, Archaeomonadaceae, diatoms and silicoflagellates (1973–1984). He also contributed to the resolving of the controversy across the Cretaceous-Tertiary boundary with nannofloral evidence from sections in Austria (1987–1988).

Herbert has continued to be active since his retirement in the late 1980s, writing papers on nannofossils and silicoflagellates together with many well-known Austrian and international researchers and contributing with his special knowledge of stratigraphy of the European basins. Herbert has remained engaged with the pursuit of his passion for science well into his late 1980s, his most recent contributions having been in cataloguing the type specimens of nannoplankton, silicoflagellates and archaeomonids in the collections of the Geological Survey of Austria (2010–2014).

Herbert Stradner's bibliography clearly illustrates his standing as the indefatigable scholar of the "inner space" who has not only contributed a large body of basic scientific knowledge to micropaleontology, but has also inspired many young researchers to take up the same pursuit and develop a passion for the unravelling the hidden mysteries of nature.

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