

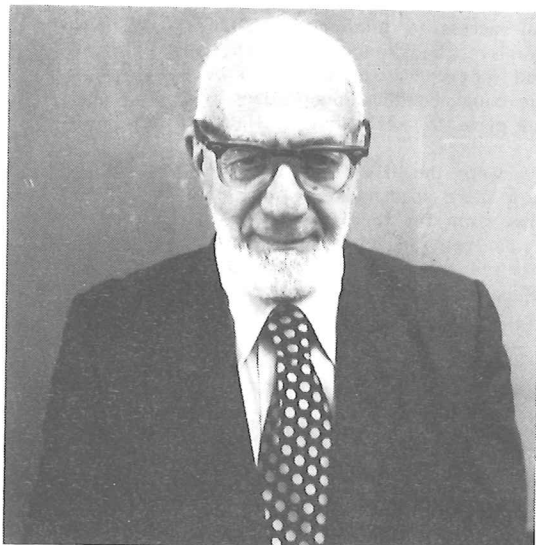
REMEMBERING AN OLD FRIEND

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This article could also be entitled "The Latter Years With Hans Elias," because I only knew Hans personally from the Fall of 1979 to his death in the Spring of 1985. Over that time, we wrote 3 manuscripts (Elias and Hyde, 1980; 1982; Elias *et al.*, 1981) and 1 book (Elias and Hyde, 1983) together. Certainly, our collaboration was the basis of our relationship, but there was also a side to the relationship that was father-son-like. Hans was very concerned that, when he passed away, much of his work and insights into stereology would be forgotten and that younger investigators would not benefit from his knowledge. I believe it was this concern that led Hans to take a very personal interest in my development in stereology.

I was introduced to Hans and Analiessa Elias at the 4th International Congress for Stereology. Even at that time, I was intrigued by his common-sense approach to the stereology of the colonic mucosa. It was subsequent to that meeting that I read his review article on stereology (Elias *et al.*, 1971) and the supplement on stereology in his histology text (Elias *et al.*, 1978). It was in this frame of reference that I began to appreciate the contributions of Hans Elias to the science of stereology.

It was subsequent to the 5th International Congress for Stereology, in Salzburg, that I renewed my acquaintance with Hans. Hans did not attend the Salzburg congress, and we were at opposite ends of the country, I in Florida and he in California, for that intervening period (1976-79). It was after my return to the Anatomy Department at Davis, in the Fall of 1979, that my anatomy colleague, Walt Tyler, invited Hans Elias to visit the Davis campus and to give a seminar. It was over dinner in the Old Town section of Sacramento that Hans realized that I shared his keen interest in stereology as a science.



A handwritten signature in cursive script that reads "Hans Elias".

In the Spring of 1980, Hans was invited to write a review on stereology for the American Journal of Anatomy. Subsequent to this invitation, Hans called and asked me to be a co-author on the review with specific input on computerized applications in stereology; so began our collaboration and friendship.

Hans Elias was truly a renaissance man. This became clearly evident to me when we worked on the review article for the American Journal of Anatomy. Since it was tiring for Hans to drive to Davis from San Francisco, a distance of about 90 miles, I would visit him about one day a week so that we could work on the review. The first time I drove to his house I was struck by the steepness of the terrain. He lived very close to the foot of Mount Davidson. As I took the circuitous route to Marietta Drive, I noticed the spectacular views of the San Francisco Bay. When I turned onto Marietta Drive I drove down the narrow road and looked for a facade of Prometheus, the god of fire, painted on the front of the house. The buildings were 2 story vertical fronts with garages opening onto the sidewalk. I noticed a painting about 6 by 4 feet in size on the second floor over a glass door. Beside the doorbell a small metal plaque read "Hans Elias - Sculptor." When Hans greeted me at the door I entered into a small garden and courtyard that was partially open to the sky above. Besides a profusion of ferns and fuschias in the garden, numerous sculptures were placed along the wall and one was on a small worktable being only partially complete. I stopped to look at his creation and it looked familiar. As an anatomist, I couldn't help seeing a structure that looked exactly like the optic chiasm. There were the olfactory bulbs, the trigeminal nerve and facial nerve all at the base of the brain. So I asked Hans, "Are these the cranial nerves in plaster?" Hans chuckled and in a delighted voice said, "It's so good to have another anatomist around who appreciates true beauty." We spent the next few minutes discussing the other sculptures in his courtyard and then ventured into his house. On every wall hung paintings that he had completed since he came to America. Many of them were woodland scenes from Chicago or spring flowers from San Francisco.

The entire lower floor of his house was his office and laboratory. A large sliding glass door and numerous large windows on the entire back wall gave marvelous views of the surrounding hills and the Bay. Hans told me that he could only work in this type of setting, close to nature. He hated sterile, brick buildings with windowless offices. His huge desk, about 8 by 3 feet on its top, was patterned after a partner's desk and allowed him to sit facing this grand view. The desk allowed him quick access to microscopes, slide projectors and drawing materials. In a curious mixture, books and equipment lined the walls. Tucked in between the staircase and garage was a small darkroom with a sink and enlarger. It amazed me; Hans could conduct independent research right in his own house. It was a wonderful place to work, but to Hans it wasn't work, it was his life, his toil and relaxation.

Up the stairs to the top floor were the living quarters. Again, the back wall was almost all glass with even a more spectacular view. Hans told me that when he and Analiessa walked in this room for the first time with a realtor, one look at the view and they knew this was the house for them. Analiessa was Hans' constant companion, confidant and secretary. I can still remember those delicious lunches she made and Hans dropping everything when she rang the lunch bell at the top of the stairs. Often Hans would dictate letters to Analiessa concerning invitations to speak, consult or write manuscripts. Analiessa was a true sounding board for Hans. She provided counsel, encouragement and a special sensitivity that complemented Hans' dominant personality.

Our usual schedule consisted of my arrival at Hans' house about 8:30 a.m., working until 11:00 when we took a break to walk down the back hillside to sit on the view-bench for 15 minutes, then work until 12:30 or 1:00 when we ate lunch. Hans always took a 15 or 20 minute nap after lunch. He said, "I've always taken a nap after lunch and often get my best ideas during that nap." Later we would work until 4:30 when I'd return to Davis. Sometimes in the afternoon we'd take a break for a hike on Mount Davidson or on the sand dunes by the ocean. Hans loved to hike and be outdoors. He always used a walking stick and eventually convinced me that it wasn't proper to hike without one. Some afternoons we would work in the hillside garden, planting flowers, pruning trees or repairing the steps and terraces. In short, we took time to relax and enjoyed our work.

By the fall of 1981, Hans' health was deteriorating because of constant pains in his legs. As a result, he was unable to attend the First North American Society on Stereology in 1981. Subsequently, Hans had surgery on his lumbosacral plexus which greatly limited his mobility and energy. At this time Hans and I were working on the stereology book (Elias and Hyde, 1983). We had a rough draft that we both felt was too long and didn't correspond to our original intention of a practical workbook on stereology. I can still remember our disagreement on Chapter 13 "Potential Future Applications of Stereology." I wanted to delete it from the book and he wanted it in. I specifically didn't understand the concept of "hyperstereology." To convince me, Hans recommended that we take a break and go to Golden Gate Park in San Francisco. He directed me to the boat docks where we rented a row boat and rowed out onto the lake. After the boat settled motionless on the lake, Hans took a small cup out of his coat pocket and dipped it into the lake. He asked me to watch as water from the cup dripped in the lake. A series of concentric waves expanded from the boat across the lake. He explained that the waves expanded from the point of impact without changing the density of the water or air; it is the same with the expansion of the universe in the third dimension. The analogy was that concentric waves in two dimensions are created by a force generated from the third dimension, the dripping water. Hence the universe expands and contracts in three dimensions by forces from the fourth dimension. Still to this day I have difficulty comprehending the fourth dimension, but I appreciated Hans taking the time to teach me this concept by a clever example. Besides, it was a beautiful day and Hans loved the park.

In 1983 Hans experienced more problems with severe pain and returned for another round of surgery. At 76 he was in relatively good shape, but the last surgery greatly limited his ability to hike. I remember arriving at his house one morning when he greeted me wearing roller skates. His new plan was to rehabilitate his ability to hike by skating around his desk. I was amused at the time, but 3 months later we took a hike on Mount Davidson. His determination was inspiring. Even though he walked with two canes, and could only walk short distances before stopping to rest, he was hiking.

During our association Hans remained active at the University of California Medical Center as a Research Stereologist and a Lecturer of Anatomy at the City College of San Francisco where he taught anatomy and embryology to undergraduate students. Often students from the City College would visit him and Hans always made time for them. Hans was a gifted teacher with such a wealth of knowledge of anatomy that he virtually mesmerized his students. I attended a few of his lectures as it was an evening class. He lectured in a casual manner, using the blackboard for illustrations. Once while drawing brain sections he used chalk in both hands to draw symmetrical structures. He never used notes and yet he recalled every anatomical feature as if it were a best friend. Hans serves as a model for every academic scholar.

Whenever I think of afternoon naps, I think of Hans. Once, during the summer when Hans visited me in Davis to finish a study using the electron microscope, we had the occasion to eat lunch in a local restaurant. Of course, after lunch one must take a nap so we drove to the city park and parked in a shady spot. Hans informed me that he was going to open the back doors, stretch out and take a nap. As he did I took a short walk around the park. Upon my return Hans was still asleep and I thought "why not take a nap, too?" So I laid down in the front seat with my feet hanging out the door and fell asleep. We must have looked rather peculiar with our feet protruding from the car that way. I was awakened by a tapping on the bottom of my shoe and sat up to focus on a policeman who asked, "Are you guys all right?" "Sure, we're just taking a nap," I explained. He walked away, still a little puzzled.

It seems somehow appropriate that Hans passed away peacefully while taking his after-lunch nap at his home in San Francisco. His death on April 11, 1985, came as a shock to me because I always told him with his determination he would live to be 90, and I believed he would. I miss Hans every time I read a new paper in stereology and want to hear his opinion on it. His insights into new methods in stereology were particularly acute and were evidence of a very active mind. Hans will always endure in my memory as a unique person, a scientist with the sensitivity of an artist. His contributions to stereology are countless. As founder of the International Society for Stereology and as our honorary president, we are grateful for all of his efforts on our behalf. We are all richer today for having known Hans Elias, and we will miss him very much.

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