



IN MEMORIAM

Vincent Matthew Sarich
Professor of Anthropology and Biochemistry, Emeritus
UC Berkeley
1934 – 2012

Vincent Matthew Sarich, one of the pioneers of the application of biochemical methods to the study of evolution who was responsible for establishing the basic outlines of human evolutionary history among primates and other mammals, passed away peacefully on October 27, 2012, in Seattle, Washington, after a long battle with Lewy- Body dementia.

Vince was born and raised in Chicago, Illinois, the child of Croatian immigrants. He attended Gage Park High School, graduating in 1952. He received a B.S. in Chemistry from the Illinois Institute of Technology in 1955 and then entered the graduate program in chemistry at the University of California at Berkeley. In an early indication of his broad interdisciplinary interests and inquisitive mind, Vince stopped working on his dissertation in chemistry just before he was due to hand it in, explaining that he was being asked "to learn more and more about less and less." In 1958 he left his studies to serve a stint in the US Marines, completing his commitment as a Reservist in 1962. During this time he met his future wife, Jorjan Snyder, and attended lectures with her in classes taught by Sherwood Washburn, Theodore McCown and John Rowe in the Anthropology Department at the University of California at Berkeley. Vince became so intrigued by the topics discussed in these lectures that it motivated him to apply to the graduate program to study under Sherwood Washburn, where he received his Ph.D. in Anthropology in 1967. The broad field of research he found in anthropology was the perfect fit for his background in chemistry, his enquiring mind, and eagerness to explore evolutionary questions.

Vince became a professor of physical anthropology at Berkeley in 1967, and remained there, teaching several generations of students, until receiving emeritus status in 1994. He also taught at Stanford University from 1967 to 1971, and after retirement from Berkeley, he lectured for several years in anthropology at the University of Auckland, New Zealand. He was particularly known for his willingness to teach any student, from freshman to graduate student, engaging them in basic questions of human evolution, and emphasizing the importance of the evolutionary perspective for understanding the human condition.

In his research, Vince was able to combine his background in chemistry with his fascination with hominid evolution. Allan C. Wilson, Professor of Biochemistry, invited Vince to work in his lab and introduced him to the work of G. H. F. Nuttall (PhD, UCB, 1884) who had demonstrated in 1899 "that antisera made to fowl sera also precipitated antigens from pigeon serum" and that the results could be used to "determine degrees of relationship" (quoted in Boyden, 1951:2). This ultimately motivated Vince to assess degrees of similarity between species by comparing proteins using immunological methods. Vince and Allan Wilson were responsible for proposing the relative rate test for molecular evolution, which allowed them to show that the blood proteins albumin and transferrin must have evolved at a regular rate in all the lineages connecting the species they had assessed. This was the first demonstration of a 'molecular clock' in primate evolution for

albumin and transferrin. Though their work was often misunderstood to have simply assumed that a constant rate of mutation had occurred, they in fact demonstrated that the pattern of molecular differences in the data demanded a constant rate of molecular evolution. The method and logic behind the conclusion that the data itself demonstrated a molecular clock (and that it wasn't simply assumed beforehand) was first published in the Proceedings of the National Academy of Sciences in 1967, though it was unfortunately often overlooked.

Once Vince and Allan demonstrated that albumin and transferrin had evolved in a clock-like fashion among the primates in their sample, they realized this could then be used to derive a valid phylogenetic tree of relative primate relationships. To then derive actual absolute dates for the branch points in the tree, the most secure paleontological data could be used, which at the time was the recognition that no primates were evident in the fossil record until after the K/T boundary (capping the primate phylogenetic tree at ~65 million years ago), and also that the split between Old World and New World Monkeys probably occurred ~35 million years ago (based on fossils from the Fayum in Egypt). Vince would later tell his students that the calibration of the tree was done with fossil dates that would “make the most number of paleontologists the least unhappy.” This calibration led to the realization that the human lineage must have shared a common ancestor with the modern African apes as recently as 3 – 5 million years ago, a finding that was very unpopular among paleontologists at the time, many of whom thought the human/ape split was likely at least 15 million years ago. The results of Vince's dissertation were published in 1967 in an article in *Science* that is still cited today.

Over his career, Vince and his students, in particular John Cronin, applied his methods to a wide range of mammal groups, ranging from carnivores, to pinnipeds, the giant and lesser pandas, and rodents. Vince's work produced significant information on all orders, and most families of living mammals. In July and August of 1959, Vince was an enthusiastic participant in a rigorous field trip collecting mammals in Papua New Guinea. Emphasis was on collecting blood and tissues for use in phylogenetic analyses. Vince also produced the first significant demonstrations of phylogenetic relationships of extinct taxa using these techniques, outlining the positions of the extinct mammoth and Tasmanian wolf. His original work and later thoughts were ultimately described for the general public in the book: *The Monkey Puzzle*, recapturing the evolutionary tree, John Gibson and Jeremy Cherfas (Pantheon Books, NY, 1982). The impact of this work on popular understanding of our evolutionary history can be seen in references to Vince's and Allan Wilson's work in the 1980 Hollywood Movie: “*Altered States*”.

Throughout his career Vince worked to improve the application of other molecular techniques and the analysis of the resulting data. Some of the methods he pioneered in phylogenetic modeling laid the groundwork for the use of these methods in fields such as epidemiology and linguistics. In the late 1980's Vince was responsible for helping expose important problems in published analyses of DNA hybridization data.

Vince and Allan Wilson's work on molecular evolution also attracted the interest of Rebecca Cann, who came to work with them in Allan's lab. Rebecca Cann was responsible for the groundbreaking early work on variation in mitochondrial DNA, which has provided critical support for a relatively recent origin of all modern humans.

Later in his career, Vince became increasingly interested in understanding human behavior from an evolutionary perspective. One area of particular interest was schizophrenia. One of his Ph.D. students, John Allen, published a paper with Vince pointing out that – given the negative fitness effects of overt schizophrenia, and that its incidence was so much higher than the rate of mutation – any genetic influences predisposing for schizophrenia must have had some positive evolutionary effects. John Allen went on to do pioneering work demonstrating the cross-cultural validity of schizophrenia as a disorder using a novel eye-tracking method. Another of Vince's Ph.D. students, Karen Schmidt, studied the cross-cultural universality of facial expressions of schizophrenics. Jonathan Karpf, also a Ph.D. student of Vince's, studied populational differences in the ability to metabolize alcohol from an evolutionary perspective. Yet another Ph.D. student, Tom Schoenemann, studied the relationship of brain anatomy and behavior in modern humans using MRI, to better understand human brain evolution.

In collaboration with the linguist William S.- Y. Wang, Vince also pioneered the application of distance methods – that he developed for reconstructing mammalian evolutionary relationships – to the analysis of language evolution. Thus, he recognized that evolutionary principles could be applied to cultural traits as well. Vince applied these tools to map the relative rates of change in human languages in the Pacific islands. After Vince's retirement, he often travelled to New Zealand to collaborate with his friend and linguist Fay Wouk, of the School of Cultures, Languages and Linguistics at the University of Auckland.

Not content to confine his intellectual activities to the academy, Vince believed passionately in educating the public about evolution. He engaged in numerous public debates with the creationist Dr. Duane Gish (PhD UCB '83) over the years. He thought it was important to debate creationists publicly, believing evolutionists should not be afraid to have the public hear both creationist and evolutionary explanations. He argued that if the evolutionary explanation really is the most convincing explanation for the myriad of scientific fact relating to biology, the public would see this – particularly when presented with the alternative explanations. For this reason, Vince believed that both evolution and creationism should be discussed in high school, provided that the information was presented honestly and in a balanced fashion. He had a deep trust in the power of science to ultimately arrive at the truth, which speaks to his profound respect for the human mind.

Vince was an iconoclast. Much of his work was controversial. The recalibration of the temporal relationship between humans and primates from 15 million years ago to only ~5 million years ago was strongly challenged by academics and the general public at the time, though it later became the scientifically accepted view, fully confirmed by later work using DNA sequencing. His conclusions regarding the relative branching order of primates during their evolutionary history has not been seriously challenged even with the advent of much more costly techniques. Vince would often note that there was in fact one correct history that all evolutionary scientists were trying to uncover. It might have been a complicated history, but all the sources of information about this history – derived from fossil, molecular, archaeological evidence – must necessarily ultimately agree. To the extent that the interpretations of different legitimate sources of evidence did not agree with each other, he believed this was evidence that something was necessarily wrong about the analyses somewhere. His goal was not to privilege one source over another, but to combine all sources, and to explore why they might differ.

His lectures also ventured into territory few others in the scientific community have dared to tread: race, IQ, physical ability. In his Introduction to Physical Anthropology I handout, Vince wrote: "A more descriptive title for the course would be The Human Condition in Evolutionary Perspective. He added "that the insights provided by considerations of evolutionary processes are vital to any realistic understanding of ourselves as we are today." In the conclusion he added: "No one is going to try to require that you come to believe, only that you become conversant with... the data and logic used to come to the conclusions presented."

With respect to the idea of geographic variation in biology, Vince often argued that the evolutionary process necessarily produces differences, it does not create identity. Thus, he argued that it was likely inevitable that there would be meaningful biological variation distributed geographically around the world. Vince wrote a positive review of *The Bell Curve*, which was the catalyst for both in- class and on- campus demonstrations and brought charges of racism and Nazism against him. Many colleagues and students reacted positively to his lectures and there are numerous letters from Berkeley and other institutions giving Vince robust support and many students thanked him for making them think even if they didn't agree with him. This attests to his basic character — the fact that he truly respected all of his students and colleagues, even if he disagreed with them. In 2004, he and Frank Miele wrote *Race: The Reality of Human Differences*, which laid out their views on this subject.

In 2004, Vince was awarded the Kistler Prize in recognition of his courage and determination to trust the scientific method. The award serves to "recognize original contributions to the understanding of the connection between the human genome and human society, especially those contributions stemming from research conducted with courage and conviction despite opposition from peers or the public."

His calmness in the face of this criticism was frequently understood as arrogance. However, when asked how he endured the harsh criticism, he often said "I will only be correct about this (or any other issue) until I am proven wrong." Vince had an unshakeable belief in the power of empirical science to explain the natural world. One of Vince's favorite quotes was from Rabbi Hillel: "If I'm not for myself, who will be for me, but if I'm only for myself, what am I?"

Vince is survived by Jorjan Sarich (UC Berkeley '97) of Hailey, Idaho; his sons Kevin and Brandis (Johnson) Sarich (UC Berkeley '91) of Maui; his daughter Tamsin Sarich (UC Berkeley '93) and her husband Clark Youmans and their son Calder of Seattle. He will be fondly remembered and missed by his family, friends, and colleagues.

Thomas Schoenemann