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How *American Mineralogist* and the Mineralogical Society of America influenced a career in mineralogy, petrology, and plate pushing, and thoughts on mineralogy's future role

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Abstract

My geologic research began at Carleton College. I studied heavy minerals in some midcontinent orthoquartzites, publishing my very first paper in *American Mineralogist* in 1954. As a master's candidate at the University of Minnesota, I investigated igneous differentiation in a diabase-granophyre sill of the Duluth Gabbro Complex. Later, in a Ph.D. program at Johns Hopkins University, I became Joe Boyd's apprentice at the Geophysical Laboratory (GL), and for a time was phase-equilibrium god of the Na-amphiboles. Doctoral research earned me an offer of a UCLA assistant professorship as a mineralogist in 1960. There, I continued pursuing amphibole P-T stability relations in lab and field. My glaucophane phase equilibrium research would later be found to have instead crystallized Na-magnesiorichterite. However, amphibole research led me to map field occurrences of HP-LT (high P-low T) blueschists of the Franciscan Complex. Thus, when plate tectonics emerged in the late 1960s, I was deep in the subduction zone. My recent studies focused on the petrology and geochemistry of oceanic crustal rocks, Californian calc-alkaline arcs, and coesite ± microdiamond-bearing crustal margin rocks in various parts of Eurasia. Other works treated global mineral resources and population, mineralogy and human health, and early Earth petrotectonic evolution. I tried to work on important problems, but mainly studied topics that fired my interest.

For the future, I see the existential challenge facing humanity and the biosphere as the imperative to stop our overdrafting of mineral resources. This will require reaching a dynamic equilibrium between the use and replenishment of near-surface resources (i.e., nutrients) essential for life. Earth scientists are planetary stewards, so we must lead the way forward in life-supporting mineral usage, recycling, substitution, and dematerialization. In any event, sustainable development will soon return to the Earth's Critical Zone of life because Mother Nature—the ruling terrestrial economist—abhors long-term overdrafting of resources[1].

Keywords: Clinoamphibole stability, subduction-zone metamorphism, ultrahigh-pressure belts, Franciscan Complex, Sanbagawa metamorphic belt, western Alps metamorphism, sustainable development, early Earth plate tectonics