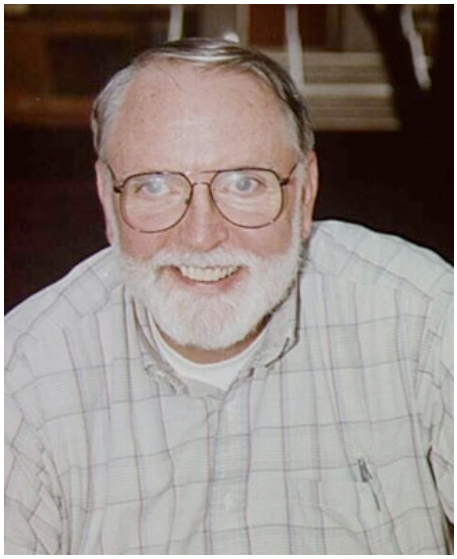

Elmor L. Peterson -- A Professional Biography -- July, 2008 *

Elmor Peterson was born on December 6, 1938 in McKeesport, Pennsylvania -- in the heartland of the American steel industry. With the help of a Mellon Scholarship, a US Steel Subsidiary Scholarship, a Socony-Mobil Fellowship, and a Teaching Assistantship, as well as summer jobs at US Steel Research (as a Technician), Westinghouse Atomic Power Division (as an Associate Engineer), Atomics International (as a Research Engineer), and Lawrence Livermore National Laboratory (as a Physicist), he received a BS degree in physics, as well as MS and PhD degrees in mathematics (the latter in 1964) -- all from the Carnegie Institute of Technology (now Carnegie-Mellon University).

In September of 1963, while still working on his PhD dissertation on complex variables, Peterson started a new full-time one-year in-house consulting job at the nearby Westinghouse Research and Development Center -- mainly to gain additional industrial experience prior to going into academic research and teaching. This became a "lucky move to the right place at the right time" -- in that he soon entered into a three-year collaboration with both his dissertation advisor, Professor Richard J. Duffin, and the Director of Science for Westinghouse Electric Corporation, Doctor Clarence Zener. This collaboration, which was stimulated by Zener's surprising closed-form solution to some important optimization problems in engineering design, laid the mathematical foundations for a new subfield of nonlinear optimization, termed "geometric programming". It also produced, in early 1967, the first book on the subject, which was translated into Russian in 1972, and which spawned the publication of at least five books as well as numerous introductory expositions and research articles by others. Moreover, in May of 1978, the largest construction company in the world, Bechtel Corporation, announced in the Operations Research/Management Science news publication INTERFACES that its engineers had been able to save, with the help of geometric programming, at least $50,000,000 while designing and constructing a water storage and distribution system for Algeria (a country in North Africa). Currently, there seems to be more than 40,000 Internet references to the theory, algorithms, and applications of geometric programming (which has been implemented with user-friendly software by MOSEK that is readily available in the MATLAB Optimization Toolbox and elsewhere). The subject has also been being taught at many leading research universities (such as in the graduate engineering colleges at Cal Tech, MIT, Princeton, Stanford, and UCLA).

Peterson returned to academia as a full-time faculty member in September of 1966, initially for three years at the University of Michigan [Ann Arbor] (including both a one-semester visit to West Virginia University [Morgantown] and a one-year visit to the US Army Mathematics Research Center at the University of Wisconsin [Madison]), and then for ten years at Northwestern University (including a sabbatical year at Stanford). During this thirteen-year period (in which he became a full professor at Northwestern in 1973), with the help of research grants from both the Mobil Foundation and the Air Force Office of Scientific Research, he published twenty-eight papers (seven invited) -- ranging in subject matter from complex analysis to the mathematical foundations of both linear optimization and general nonlinear optimization/equilibration (including major extensions in the applicability of geometric programming). He also gave eighty-one invited lectures -- thirty-four at national or international conferences, and more than twenty-five at major research centers and universities (such as Arizona [Tucson], AT&T [Holmdel], California [Berkeley], Carnegie-Mellon, Chicago, Florida [Gainesville], IBM [Yorktown Heights], Illinois [Urbana], Maryland [College Park], Michigan [Ann Arbor], Michigan State [East Lansing], Mobil Research [Princeton], National Bureau of Standards [Washington, DC], Naval Postgraduate School [Monterey], NC State [Raleigh], Northwestern, Oakland [Michigan], Purdue, Rensselaer, Stanford, Waterloo [Canada], Wisconsin [Madison], and Yale). In addition, he was the principal advisor for eight PhD students, at least three of whom eventually received full professorships at three different major research universities (with at least two of the professorships being endowed and at least one that became a deanship). He also served for twelve years on a "consultants bureau" for the Mathematical Association of America, and completed four short projects individually requested by the American Mathematical Society, the Mathematical Programming Society, the National Science Foundation, and Carnegie-Mellon University, while performing brief consulting services for three corporations (McGraw Edison, Montgomery Ward, and Westinghouse Tele-computer).

Born and raised in the "hills of western Pennsylvania", Peterson and his wife Miriam eventually became "tired of the flat mid-west topography and its extremely cold winters". In July of 1979, they joined Professor Salah E. Elmaghraby and his wife Amina in "the culturally improving and intellectually exciting Research Triangle, North Carolina (with its hilly terrain and moderate climate, only two and a half hours from both the Blue Ridge mountains and the Atlantic seashore)". He became Professor of Mathematics and Operations Research at NC State [Raleigh], and she became Director of the Wake County Nutrition Program for Women, Infants and Children, as well as both Adjunct Assistant Professor of Public Health Nutrition at the University of North Carolina [Chapel Hill] and weekly nutrition commentator for WTVD.

During his twenty-six years at NC State, with the help of research grants from both the National Science Foundation and CRAY Research, Peterson continued his previous research and began writing books on the mathematical foundations of both linear optimization and general nonlinear optimization/equilibration (including the "generalized geometric programming" he had developed in the 1970's). While publishing thirteen papers (three invited), and while giving twenty-two invited lectures (seventeen at national or international conferences, one at the University of North Carolina [Chapel Hill], three at Georgia Tech, and one at the Colorado School of Mines), he was the principal advisor or co-advisor for at least five PhD students, one of whom eventually received a full professorship at a major research university in Taiwan, and another who eventually received both a full professorship and a deanship at an international business school in Japan. He also served for six years on the editorial board of the Journal of Discrete Mathematics (published by the Society for Industrial and Applied Mathematics), and completed five short projects (four requested by the Operations Research Society of America and one by the College of William & Mary) while performing brief

consulting services for two corporations and one non-profit institution (AT&T, Glen Raven Mills, and the Research Triangle Institute). Moreover, he served the NC State University Graduate Program in Operations Research in various administrative capacities: as Acting Director from July of 1981 until August of 1983, Acting Associate Director from January of 1996 until August of 1996, Facilitator from September of 1996 until December of 1996, Acting Associate Director again from January of 2000 until August of 2000, and finally as Co-Director from September of 2000 until December of 2001.

In retirement from the teaching of large undergraduate classes since July of 2004, Peterson recently served from July of 2007 until February of 2008 as an Interim Program Manager for the Mathematics Division of the US Army Research Office -- during which he introduced potentially important new "message-routing protocols" for wire-less military communication networks that might also be applicable to wire-line networks such as the Internet. In addition, he will soon be publishing his new algorithmic approaches to large-scale linear systems -- approaches that might provide serious competition for both the widely used "iterative algorithms" for solving large-scale systems of linear equations and the widely used "interior-point algorithms" for solving large-scale linear optimization problems. He will also be publishing his complete solution to the most fundamental problem in stochastic linear optimization -- a solution (unsuccessfully sought by many others over the past fifty years) that provides explicit formulas for the relevant "output probability distributions" (concerning problem consistency, problem bounded-ness, and problem optimality) induced by a given "input probability distribution" (jointly describing the given input data). He has already given, in November of 2006, an invited lecture on the first of these two discoveries -- in a special session at the national conference of The Institute for Operations Research and Management Science, held in Pittsburgh, Pennsylvania. That special session was part of a cluster of special sessions -- entitled "Geometric Programming: Research inspired by the work of Dick Duffin, Elmor Peterson, and Clarence Zener" -- in celebration of the birth of geometric programming in the Pittsburgh area in 1961. He has also been invited to lecture on these two discoveries in Bulgaria during August of 2008, and in China during July of 2009, as well as to organize a cluster of special sessions of invited papers on associated topics in computational optimization for the national conference of The Institute for Operations Research and Management Science, to be held in San Diego during October of 2009. As an explanation for his continuing research activity in retirement, Peterson describes personal mathematical creation and discovery (especially when followed by publication and eventual application) as "extreme highs -- in that defining significant new mathematical concepts or seeing important mathematical relationships not previously seen by others will always be one of the truly great joys in my life."

In retirement from all classroom teaching and committee work in academia since July of 2005, Peterson also has more time now for his main hobby -- the acquisition (usually via estate and consignment auctions or tag sales) of period furniture, accessories, decorative art, folk art, and fine art (including at least one old-master painting) dating mainly from the 1500s to the early 1900s, as well as artifacts (such as native-American arrow heads) dating from as early as 8000 BC. Thirty-two years in the making, the resulting collections, which now fill most of his Raleigh home, also illustrate the evolution in design over the centuries for various types of devices used in the home, on the farm, at sea, or in warfare (devices such as barometers; baskets; bed warmers, braziers and other heating devices; bells; candle sticks, chamber sticks, cressets, rush-light holders, grease and oil lamps, lanterns, chandeliers and wall sconces, as well as flint lighters, candle extinguishers and snuffers; carpenter, farm, cloth-weaving and shoe-making tools, as well as hunting and fishing devices; chains, locks and keys; churns, jugs, bowls, pans, chocolate, coffee and tea pots, and other food-preparation devices, as well as chalices, flagons, steins, tureens, plates, eating utensils, and other food-serving devices; coffer chests, trunks, document boxes, portable desks, and other personal-storage devices, as well as styluses,

personal seals, and other writing devices; clocks, sand timers, and other timing devices; coins and cathedral tokens, pagan fertility symbols and votives, as well as coats-of-arms, flags, and various types of Christian icons and statues; cradles and high chairs; gambling chips, as well as bone and lead dice; personal armor and hand weapons, various types of nautical and terrestrial canons, as well as compasses, telescopes, and military whistles; a sewing bird, scissors, needles, thimbles, and related sewing devices, plus brooches, buckles, buttons, pins and rings; a powdered wig with accessories, silk top hats, and an 18'th century Frenchman's suit with needle-point vests, as well as other antique clothing and textiles; a medieval stone gargoyle, as well as an early cathedral stained-glass window and ceramic tiles; tobacco jars, smoking pipes and tampers, as well as an early opium pipe and water bottle. Displayed as if they would have been displayed when in normal daily use (which many still are), these collections have attracted the attention of the North Carolina Museum of Art, which has expressed an interest in possibly showcasing them.

The Petersons also have more time now to enjoy their quarter-time ownership of an ocean-front house on Bald Head Island, North Carolina -- less than a mile down the beach from the tip of Cape Fear (where he helped the local history museum locate and acquire a previously photographed but missing 1807 pen-and-ink sketch of the first Cape-Fear lighthouse, which was replaced in 1817 with the still-standing Old Baldy, whose construction was originally authorized by President Thomas Jefferson). They are also renovating both their Raleigh home (including the incorporation of some innovative architectural elements designed by them) and a recently acquired lake-side mountain cottage in Highlands, North Carolina -- located in the Blue Ridge Mountains close to Smoky Mountains National Park, on a 4,000-foot high plateau that makes the lake and town the highest power-boat-useable lake and highest incorporated town east of the Rocky Mountains (with the cottage having originated as a small hunting lodge approximately a century ago, possibly making it eligible for inclusion on the National Register of Historic Places).

* An updated version of "A Conversation with Elmor L. Peterson", by Alexander B. Sibley, 2006.