



The AMA History Project Presents: Biography of Dr. LARRY FOGEL

March 2, 1928 – February 18, 2007

Started modeling in the 1940s

AMA #45448



Written by GBF (1995), Updated by GBF (02/2007); Transcribed by NR (01/1998); Edited by SS (2002), Updated by JS (02/2007, 03/2012, 08/2021), Reformatted by JS (08/2009)

Career:

- Was a founding member of the Torrey Pines Gulls Radio Controlled Soaring Society (TPG) in the late 1960s. Served as club President on two separate occasions, and held numerous other board positions.
- Was a founding member of the Torrey Pines Scale Soaring Society (TPSSS) in the 1980s
- Larry founded the Torrey Pines Soaring Council (TPSC) in 1978, as a user-group advisory board to the City of San Diego Parks and Recreation Department regarding silent flight at the Torrey Pines Gliderport in San Diego.
- In the early 1990s, Larry Fogel led the effort to preserve the Torrey Pines Gliderport as a National Soaring Landmark of the National Soaring Museum, City of San Diego Historical Site, and via its listing on the California and National Registers of Historic Places.
- In the early 2000s, Larry and his son Gary Fogel, together with Rich Hanson's effort as AMA District X Representative, established a program of selecting and recognizing landmarks significant to the development and furtherance of model aviation. The Torrey Pines Gliderport was selected as the first such Model Aviation Historical Landmark.
- The author of numerous articles on Radio Control Soaring in magazines such as Flying Models, American Modeler, Sailplane and Electric Modeler, and through a monthly column in Model Builder magazine (1974 to 1980), writing monthly articles concerning model sailplanes in southern California and across America.
- Contributed greatly to local community awareness regarding model aviation, especially through years of volunteered flight instruction at the Torrey Pines Gliderport and other Radio Control locations in San Diego.

Honors:

- 1993: awarded an honorary membership in the Torrey Pines Gulls Radio Control Soaring Society, to acknowledge his continued commitment to the organization
- 1996: AMA Life Fellow

Mr. Gary Bryce Fogel, Dr. Larry Fogel's son, submitted the following biography in February of 2007.

Biography of Dr. Larry Fogel

Competitor

Larry Fogel was a competitor in many Radio Control soaring contests from 1969 to 1993. He flew sailplanes in the Nationals at Riverside, California in 1977 and Lake Charles, Louisiana in

1978. He competed in several early League of Silent Flight (L.S.F.) competitions in Visalia, Oakland and Camarillo, California and Framingham, Mississippi in the 1970s and early 1980s. Also, he competed in the S.O.A.R. contests at Jaquette, Illinois in the 1970s. He was awarded first place at a competition in Palm Springs in the mid-1970s with his ¼ scale Kestral-17. He competed in numerous contests in the Southern California area over the last 35 years. Larry was the winner of the vintage sailplane category in the First Annual Torrey Pines Radio Controlled Sailplane Championships and placed second in the modern category. Larry obtained LSF Level IV. Larry directed local Torrey Pines Gulls thermal and slope soaring contests in the early 1970s in the San Diego area. He also heavily promoted the concept of group “fun fly” events rather than contests to promote group coordination rather than competition of local members.

Designer/Experimenter

Larry Fogel experimented with several launching systems including a launch of a sailplane from a hot air balloon near Miami, Florida in 1980 and launching a Radio Control sailplane from on top of a Radio Control powered plane in the early 1970s. Larry was the first to fly a 1/4-scale fiberglass Radio Control sailplane from the cliffs at Torrey Pines, this in May of 1975. At the time, this was a significant advancement in the Southern California area, using a 7-channel Kraft radio and a 15-foot wingspan, fiberglass sailplane originally designed in Australia by Ralph Learmont. The aircraft ushered in a new flying tradition of ¼-scale and 1/3-scale sailplanes at Torrey Pines.

Leader

Larry Fogel was a founding member of the TPG in the late 1960s. He served as president of that organization on two separate occasions, vice-president, and secretary many times. In 1993, he was awarded an honorary membership to acknowledge his continued commitment to the organization. In 1990, Larry Fogel was the founder of a new soaring club, the TPSSS, which continues to fly scale sailplanes at the Torrey Pines Gliderport and elsewhere in San Diego County. Larry was a member of the League of Silent Flight (LSF) from its inception in the early 1970s. From 1975 to 1977, Larry was the second president of the National Soaring Society (NSS), serving after Rod Smith and before Stan Pfof. It was during this time that Radio Control soaring was gaining substantial national attention. Most importantly, Larry founded the Torrey Pines Soaring Council (TPSC) in 1978 as an advisory board to the City of San Diego Parks and Recreation Department. This forum was created to establish rules for the flight park and convey recommendations on site use and improvement directly from the users to the city of San Diego. The TPSC was instrumental in organizing the safety of flight operations at the site. Before the council, the airspace was crowded with hang gliders, Radio Control sailplanes and full-scale sailplanes competing for the same air. The council allowed representatives from the different organizations to voice their concerns and work on compromises with safety as a primary concern to all users. The City of San Diego Parks and Recreation Department has incorporated the advice of the TPSC in its regulation of the gliderport. Larry Fogel served on this council as AMA representative from 1978 to 2006. With the Torrey Pines Soaring Council, Larry Fogel helped obtain a National Soaring Landmark (series #5) for the Torrey Pines Gliderport through the National Soaring Museum and Soaring Society of America located in Elmira, New York. With this dedication in 1992, the entire gliderport was recognized by the soaring community at large, including representatives from national hang glider, paraglider, full-scale sailplane and Radio

Control sailplane organizations. Larry Fogel was instrumental in convincing the San Diego City Historical Site Board that the Gliderport was indeed historic and that the site should be preserved for future flight activities. In August of 1992, the Historical Site Board voted unanimously in favor of such a decision and a ceremony was held at the gliderport on March 21, 1993. Larry continued his efforts to preserve all forms of motorless flight at the site by presenting an application for State and National recognition of the site as a historical landmark, which was approved later that year. This action ensured the continued use of Radio Control sailplanes, hang gliders, paragliders, and full-scale sailplanes at this world-famous site. Inspired by the National Soaring Landmark program, Larry and his son Gary Fogel conceived of the concept of preserving model aviation sites with a historical landmark series of the AMA, and the Torrey Pines Gliderport was later dedicated as Model Aviation Landmark No. 1 in the United States.

In addition to his leadership in the community, he trained both of his sons David and Gary to pilot both Radio Control sailboats and Radio Control sailplanes. David was NSS junior champion for the year 1977, and continued to fly full-scale sailplanes and powered aircraft, attaining a commercial instrument rating. His younger son Gary has continued flying Radio Control sailplanes and electric models, setting several world and national records. Gary also writes regularly about the history of soaring.

Writer

Larry Fogel was author of the Radio Control Soaring column in Model Builder magazine from approximately 1974 to 1980, writing monthly articles concerning model sailplanes in Southern California and across America. Through this column, Larry encouraged many newcomers to the hobby and personally assisted with their training at Torrey Pines in a purely voluntary capacity. Local flight demonstrations were arranged at local schools to encourage youth interest.

Scientific Education

- New York University, B.E.E., June 1948
- Rutgers University, M.S. in Electrical Engineering, June 1952.
- University of California at Los Angeles, School of Engineering, Ph.D. 1964, major in Biotechnology, minors in Mathematics and Communication Theory

Scientific Accomplishments related to Aerospace Engineering

During 1948-1949, Dr. Larry Fogel worked at Watson Laboratories, of the U. S. Air Force. He computed radiation antenna patterns in connection with the design and development of VHF and UHF radio direction finders for ground-to-air use. He designed comb-type inverse feedback amplifier filters for the signal-to-noise ratio improvement of Radio Set AN/CRD-6. Larry controlled a phase of the final flight test program for the Diversity Antenna Array performed at Eglin Air Force Base, Florida.

In 1950-1953, Larry worked for the Coles Signal Laboratory, U.S. Army Signal Corps as Engineer in charge of the newly formed group concerned with the installation of electronic communication and navigation equipment in Army aircraft (including helicopters).

In 1954-1956, Larry worked for Stavid Engineering, Inc. He contributed to an Air Traffic Control Study in terms of guidance radar, navigation control, and antenna side lobe suppression. He directed field operation of the Regulus Missile Guidance System aboard submarines and was concerned with the analysis and design of flight instrumentation for high performance aircraft including helicopter and vertical takeoff aircraft. He performed conceptual design of various individual instruments, including all altitude indicators, airspeed indicators, altimeters, as well as related displays. As a part of this research, Larry conceived and formulated a solution for a mathematical model of the human operator as part of an aircraft flight control system that included such qualities as anticipation, development of a computer facility incorporating such a mode for use in the design of more effective man-machine relations.

While employed by Convair, a Division of General Dynamics Corp. (1956-1960), Larry headed the Reliability Group, with assigned responsibility for both maintaining and improving the reliability of Convair products, including the F-102/F106, Interceptor Weapons Systems, Model 880 Jet Transport, and other missile and electronics products. He was responsible for human engineering systems analysis and design for manned aircraft. Larry Fogel initiated a program of investigation into the use of anticipatory displays that allow the pilot to “fly ahead” of the aircraft system he controls. He devised a radical new display and control cockpit, which for the first time offered inter-sensory compatibility as a protection against the onset of vertigo. This invention resulted in a U.S. Patent (number 2,960,906).

During 1960-1961, Larry Fogel worked at the National Science Foundation, as Special Assistant to the Associate Director (Research), Consultant to the Science Resources Planning Office. In this capacity, he prepared mathematical models useful for formulating statistical projection of national resources, qualified manpower, the economic value of the resulting technology and the effect of uncertainty of the international situation. These projections were coordinated with interested agencies including Department of Defense, National Aeronautics and Space Administration, Department of Health, Education, and Welfare, and the Atomic Energy Commission. During this time, he invented a novel method of simulating evolution on computers as an alternative approach to artificial intelligence, a method that he termed “evolutionary programming.”

He returned to San Diego in 1961-1965, as a Senior Staff Scientist at General Dynamics/Astronautics. He conducted a research program in artificial intelligence (evolutionary programming) and advised management on technical aspects of man-machine relations within aerospace systems, the estimation and improvement of reliability of complex missile systems, and future capabilities for information processing systems. He devised the COFEC Reliability Data System for the Atlas Weapon System.

In 1965 Larry formed a company, Decision Science, Inc., for which he served as President and directed company activities on both the management and technical level covering research and development in the information sciences with specialties in computer simulation, mathematical prediction and control systems, real-time data processing, materials handling systems, and so forth. During this time, Larry further developed evolutionary programming specifically for air-to-air combat, leading to the Adaptive Maneuvering Logic flight simulator. This simulator was so effective that it had to be “tuned down” to give human pilots a chance to defeat it. In July 1982, Decision Science, Inc. was merged with and became a Division of Titan Systems, Inc.

From 1982 to 1993, Larry worked at Titan Systems, Inc. and at ORINCON Corp. on a variety of applications of artificial intelligence methods, mainly for purposes of national defense. In 1993, he co-founded a new company, Natural Selection, Inc., for which he served as President until his passing in 2007. At Natural Selection, Inc., the methods of artificial intelligence he pioneered in the 1960s were applied to a broad set of problem areas including aeronautics, UAVs, medicine, and industrial optimization.

Larry held leadership positions in biologically related machine learning for over 35 years. He was the founding editor-in-chief of the *Journal of Cybernetics* (1970-1972). He was a member of the Creative Science Seminar at NYU (1966-1972), participating in technical discussions on research and education in the sciences, social problems, and national security.

Larry had hundreds of publications in the scientific literature, and although his most widely known is the 1966 book *Artificial Intelligence through Simulated Evolution* (with a second edition in 1999), he also authored the definitive treatment of biotechnology in 1963, *Biotechnology: Concepts and Applications* (Prentice-Hall). Biotechnology then referred to bionics, human factors, and modeling of sensing in living organisms.

Scientific Honors

- Lifetime Achievement Award, Evolutionary Programming Society (1996)
- Inaugural IEEE Neural Networks Council Pioneer Award in Evolutionary Computation (1998),
- Inaugural SPIE Computational Intelligence Pioneer Award (jointly with his son David Fogel) (2003).
- Inaugural IEEE Frank Rosenblatt Technical Field Award (2006)
- Fellow of the IEEE

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