

# Curriculum Vitae

## **Russell M. Genet**

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## **Teaching**

**1999-Present Adjunct Professor of Mathematics, Astronomy, and Social Science** Central Arizona College, Apache Junction, Arizona. Central Arizona College is a two-year community college. Currently I teach algebra, astronomy, anthropology, history, and sociology at the small Superstition Mountain campus in Apache Junction. I typically teach two classes per semester, and enjoy the small class sizes and close student contact at this lovely little junior college.

**1997-1998 Humanities Instructor** Northern Arizona University, Flagstaff, Arizona. I developed and taught *The Epic of Evolution*, an overview of science for non-scientists. The course covered physical, biological, and cultural evolution, and considered alternative futures for humanity and Earth.

**1975-1983 Aviation Instructor** Civil Air Patrol, Dayton, Ohio. I provided both ground and flight instruction to young cadets. Ground instruction included navigation, instruments, aerodynamics, and meteorology. Flight instruction (one-on-one) included basic flight procedures, maneuvers, cross-country and instrument flying, and emergency procedures.

**1973-1974 Experimental Design** Aerospace Guidance and Metrology Center, Newark, Ohio. I developed and taught a course on experimental and quasi experimental design. The course topics included research methodology, avoidable causes of experimental error, design and layout of experiments, and mathematical analysis of experimental results using analysis of variance and various non-parametric techniques.

**1971-1973 Mathematics and Electronics** Muskingum Area Technical College, Zanesville, Ohio. I taught courses in Boolean algebra, and beginning and advanced electronics. I customized these courses to train the top management and then the entire work force of the National Cash Register company plant in nearby Cambridge, Ohio. NCR-Cambridge, at the time, was switching from the production of mechanical cash registers to all electronic cash registers. For this newly-established two-year college, my series of courses represented a major outreach to the community, directly upgrading the job skills of hundreds of employees to an entirely new technology and, at the same time, launching a number of them on a college education.

**1959-1961 Instructor of Electronics** Keesler Air Force Base, Biloxi, Mississippi. I taught beginning and advanced theory of electronics as well as HF and UHF communications, direction finding, and facsimile. I also developed tests and evaluations and supervised other instructors.

## **Research**

**1993-1999 Independent Scholar of Humanity** Awaroa, New Zealand, Hilo, Hawaii, and Apache Junction, Arizona. As an independent scholar, I read recent books and papers on biological evolution, primate behavior (with emphasis on chimpanzees), fossil hominids, the origins and spread of modern humans, the origins of agriculture and pristine civilizations, the historical expansion of civilizations, the origins and evolution of both machines and science, and various possible futures envisioned for humanity and Earth. I discussed these topics in person with dozens of faculty at Victoria University of Wellington, The Auckland University, The University of Hawaii at Hilo, The University of Arizona, and Arizona State University. I also developed a lively international correspondence with experts in these areas world wide, and organized (with Brian Swimme) a symposium, *The Epic of Evolution*, which was held in Arizona in late 1995. With Michael Corballis and James Liu, I organized a symposium on *Evolutionary Views of Humanity*, which was held at Awaroa, New Zealand, in February of 1997. The concrete end product of this independent scholarship was the book, *The Chimpanzees Who Would Be Ants: The Evolutionary Epic of Humanity*.

**1993-1995 Scientific Society President** The Astronomical Society of the Pacific, San Francisco, California. I was elected by the membership to the society's board of directors in 1989 and reelected in 1991. In 1993 I was elected by the board as the 51st President of this century-old scientific society. The Astronomical Society of the Pacific was founded in the late 1800's by west-coast (American and Canadian) astronomers as a counterbalance to the then eastern-dominated American Astronomical Society. The expansive growth, in the west, of such premier mountaintop observatories as Lick, Mt. Wilson, Palomar, Kitt Peak, Mt. Hopkins, and Mauna Kea greatly enhanced the prestige and membership of the Astronomical Society of the Pacific. My duties as president included presiding over four semi-annual board meetings, two annual meetings (San Diego, California, and Flagstaff, Arizona), and selecting a new executive director. It was an intriguing, hands-on introduction to the high-level politics of science.

**1979-1993 Research Astronomer** The Fairborn Observatory, Mt. Hopkins, Arizona. I founded and then directed (with Louis J. Boyd) the Fairborn Observatory for its first decade, and established and edited (with Douglas Hall) the first international astronomical photometry journal, the *IAPPP Communications*. With Boyd, I developed the first fully automatic telescopes—robots that make precise photometric measurements of stellar brightness variations. From the beginning, these robots were inhumanly productive and eventually their measurements became more precise than the best human efforts. The Smithsonian Institution kindly provided our pioneering robotic observatory with a premier site on Mt. Hopkins (south of Tucson), while the National Science Foundation provided financial support. Our mountaintop astronomical observatory, utilized by dozens of astronomers

from around the world via Internet, single-handedly transformed what had been a data starved field into a data rich field, revolutionizing both the quality and scope of stellar photometric investigations.

**1976-1990 Research Supervisor** Air Force Human Resources Laboratory, Dayton, Ohio, and Mesa, Arizona. Besides conducting my own research on simulators for pilot training (giant video games), as branch chief, I supervised the research of others on complex man-machine systems via simulation and analysis (in Dayton), and on experimental real-time simulators for training pilots (in Mesa). As laboratory senior scientist (Dayton), I established laboratory policy, secured overall funding, and evaluated the scientific merits and progress of laboratory research projects.

**1969-1975 Mathematical Analyst** Aerospace Guidance System Center, Newark, Ohio. I applied the then newly-computerized multivariate analysis techniques (which I borrowed from medical and social science research) to the evaluation of complex machine diagnostic tests. I designed and implemented large-scale experiments to evaluate test reliability and validity, and developed Markovian state-change simulation models of complex system test and repair processes. I also developed the first computerized models for the analysis of the life cycle costs of complex systems. Earlier manual analysis had contented itself with the costs of production and operation, occasionally with system design and testing costs, and only rarely with logistical support costs. I brought these separate areas together in a single computerized simulation model which allowed highly non-linear interactions, such as the effects of design variations on eventual logistical support costs, to be examined from a total life perspective.

**1964-1968 Rocket Scientist** Space and Missile Systems, San Bernardino, California. In the early days of the space age, I designed and tested experimental guidance systems for rockets and spacecraft—the brains that kept these systems on course. I also developed an experiment for a Gemini space capsule, launched from Cape Kennedy. My experiment visually recorded the plasma that shrouded the spacecraft during reentry.

## Education

**Electronics Technician**, 1957-1958, Scott Air Force Base, Belville, IL. Intense course in mathematics and electronics.

**Fundamentals of Teaching**, 1959, Keesler Air Force Base, Biloxi, MS. Course organization, preparation of materials, effective speaking, and testing and evaluation.

**BS 1964, Electrical Engineering**, Univ. of Oklahoma, Norman, OK, 1961-1964. A highly mathematical treatment of electromagnetism and electronics with emphasis on analysis.

**Officer's Candidate School**, Lackland Air Force Base, San Antonio, TX, 1964. Fast-paced training on leadership, public speaking, and military traditions.

**Commercial Aviation**, Zanesville Flight Institute, Zanesville, OH, 1972-1974. Advanced flight techniques.

**Flight Instructor and Instrument Instructor**, Dayton School of Aviation, Dayton, Ohio, 1976-1978. Instrument flying under instrument conditions (Ohio has more than its fair share of socked in weather).

**MS 1980, Logistics Management**, Air Force Institute of Technology, 1979-1980. A highly quantitative approach to complex systems that included the theory and application of statistical analysis and linear programming techniques.

**Courses in Psychology and the Humanities**, San Bernardino Valley College and Univ. of Ohio, 1965-1971. Psychology and humanities courses taken to broaden my outlook. These courses initiated a growing interest in the humanities and their interaction with the sciences that continues to this day.

**MS Liberal Studies** (completed except for in-process thesis), Northern Arizona University, Flagstaff, AZ. Courses primarily in the humanities taken to broaden my scientific outlook.

**PhD Astronomy** (minor in cultural evolution, in process), The Union Institute. The emphasis of my doctoral program is on “cosmic evolution,” including biological and cultural evolution in addition to the physical evolution inherent in doctoral astronomy programs. I expect to receive my doctoral degree in August of 2002.

## **Television Appearances**

*The Perfect Stargazer*, 1993, a PBS documentary produced by Tim Carrier, SCETV, 57 minutes, aired nationwide and overseas (the story of my development of robotic telescopes with Louis J. Boyd).

Television Segments: CNN Nightly News (1994), *Charles Crawford's Technology Week* (1994), and KAET *Horizons* (1994).

## **Symposia, Colloquia, and Public Talks**

I have organized or co-organized some two dozen symposia in the last 35 years. I have been the invited guest speaker at a numerous symposia in the United States, Canada, New Zealand, and Ireland, and have been the colloquia speaker at several dozen universities in these countries. I enjoy giving public talks at universities, high schools, and museums. Early on, I gave many talks on astronomy, especially on robotic telescopes, while in the past several years I have concentrated on talks dealing with humanity: how we came to be and what our future might be. Currently, with Cheryl Davidson, I am organizing a symposium on *The Epic of Evolution and the Human Spirit* to be held in Arizona in mid-February, 2002.

## **Books as Author or Co-author**

*Real-Time Control With the TRS-80*, 1982, Howard W. Sams, Indianapolis.  
*Photoelectric Photometry of Variable Stars*, first edition 1982, second, enlarged edition 1988, Willmann-Bell, Richmond.  
*Microcomputer Control of Telescopes*, 1985, Willmann-Bell, Richmond.  
*Supernova 1987A: Astronomy's Explosive Enigma*, 1987, Fairborn Press, Mesa.  
*Robotic Observatories*, 1989, AutoScope, Mesa.  
*Telescope Control Handbook*, 1997, Willmann-Bell, Richmond.  
*The Chimpanzees Who Would Be Ants: The Evolutionary Epic of Humanity*, 1998, Nova Scientific, Commack (NY).

## **Books as Editor or Co-editor**

*Solar System Photometry Handbook*, 1983, *Microcomputers in Astronomy I*, 1983, *Advances in Photoelectric Photometry, Volume 1*, 1983, *Advances In Photoelectric Photometry, Volume 2*, 1984, *Microcomputers in Astronomy II*, 1984, *Near Infrared Photometry*, 1985, *Automatic Photoelectric Telescopes*, 1986, *New Generation Small Telescopes*, 1987, *The Photoelectric Photometry Handbook I*, 1987, *The Photoelectric Photometry Handbook II*, 1987, *Automatic Small Telescopes*, 1989, *Remote Access Automatic Telescopes*, 1989.

## **Selected Popular Magazine Articles** (author or coauthor)

"Real-Time Control With Microcomputers," *80 Microcomputing*, 1981.  
"Our Turn at Kitt Peak," *Sky and Telescope*, 63, 240, 1982.  
"Gerald Kron and the 1P21 Photomultiplier," *Astronomy*, 11, No. 2, 28, 1983.  
"Backyard Photoelectric Photometry," *Astronomy*, 11, No. 2, 51, 1983.  
"The Boom In Small Telescope Photometry," *Sky and Telescope*, 67, 211, 1984.  
"APT's: Automatic Photoelectric Telescopes," *Sky and Telescope*, 70, 16, 1985.  
"Is Evolution Evolving?" *Science and Spirit*, Vol. 9, 1, 1998.

## **Selected Journal Papers** (author or coauthor)

"Avionics Proliferation -- A Life Cycle Cost Perspective," *Defense Management Journal*, 1976.  
"On Equipment Modularization," *Defense Management Journal*, 1978.  
"Aircraft Acquisition," *Defense management Journal*, 1979.  
"Logistics Research and Engineering," *Journal of the Society of Logistics Engineers*, 1980.  
"Logistics Analysis," *Journal of the Society of Logistics Engineers*, 1980.  
"Life Cycle Cost and Effectiveness Analysis of Major Weapon System Alternatives," *Air Force Journal of Logistics*, 1981.

### **Selected Astronomy Refereed Papers** (author or coauthor)

- "Five Years of Photometry of Lambda Andromedae," *Astrophysics and Space Science*, Volume 90, pages 197-206 (1983).
- "Automatic Telescopes Large and Small," *Pub. Astronomical Society of the Pacific*, 98, 618, June 1985.
- "Spot Cycles in the RS CVn Variable AY Cet," *Astronomy and Astrophysics*, Volume 157, 1, (1986).
- "Starspots on HK Lacertae," *Astrophysical Letters*, Volume 25, pages 133-138 (1986).
- "Six Years of Photometry of HD 185151 - V1764 Cygni," *Astronomical Journal*, Volume 93, pages 427-429 (1987).
- "Discovery of Optical Polarization in Lambda Andromedea," *Astrophysical Journal Letters*, Volume 317, pages L29-L32 (1987).
- "Six Years of Photometry of the RS CVn Binary EI Eridani = HD 26337," *Astronomical Journal*, Volume 94, pages 723-725 (1987).
- "The Automatic Photoelectric Telescope Service," *Publications of the Astronomical Society of the Pacific*, Volume 99, pages 660-667 (1987).
- "Photometric Variability in Chromospherically Active Stars: The Binary Stars," *Astrophysical Journal Supplement*, Volume 69, pages 141-215 (1988).
- "UBV Photometry of the Spectroscopic-Visual Triple HD 165590," *Astrophysics and Space Science*, Volume 155, pages 27-38 (1989).
- "Precise Automatic Differential Stellar Photometry," *Publications of the Astronomical Society of the Pacific*, Volume 103, pages 221-242 (1991).
- "New 1982-1990 Photometry of Lambda Andromedae and Its 11-year Cycle," *Journal of Astrophysics and Astronomy*, Volume 12, pages 281-287 (1991).
- "Suspected Starspots Found on the K Giants in Seven Ellipsoidal RS CVn-Type Binaries," *Astronomical Journal*, Volume 109, pages 2177-2186 (1995).

### **Selected Government Reports On Multivariate Mathematical Analysis, Experimental Design, and the Evaluation of Tests** (author or coauthor)

- "An Introduction to the Theory and Improvement of Multi-Level Tests in Repair Processes," AD 909620, 1974.
- "The Application of Latin Squares to the Determination of the Primary Cause of Test Unreliability." 1972. AD 909487.
- "An Experiment to Determine if Temperature Cycling Causes Leaks in AGMC Repaired A-200 Accelerometers." 1972. AD 909489.
- "The Development of an Experimental Design to Evaluate LN-12 Platform Improvements." 1973. AD 918391.
- "Statistical Analysis of Gyroscope Data." 1969. AD918426.
- "The Application of Stepwise Linear Regression Analysis, Discriminant Analysis, and Chi Square Analysis to Gyroscope Float Group Prediction." 1969. AD 787186.