Dr. Len Troncale

Dr. Troncale served as Chair of the Biological Sciences Dept. from 1997 to 2001 and is currently Professor of Biology, Director of the Institute for Advanced Systems Studies, and Coordinator of the Comparative Systems Analysis Minor at California State Polytechnic University, one of the 23 campuses of the California State University System. Dr. Troncale has produced 148 publications consisting of 20 grant and contract reports, 40 articles, 23 research posters, and 65 abstracts, editorials, and short reports. He served as Editor on 11 projects including, editing proceedings and workbooks. Dr. Troncale has delivered 81 invited lectures and computerized demonstrations throughout the U.S., Western & Eastern Europe, and Asia, most of these in the area of systems science and interdisciplinary education. He has been awarded 53 grants and contracts for a total of $4.3 million from a variety of federal, state, and private organizations such as the NSF, DOE, ONR, HUD, the Keck Foundation, and the CSU System.

Dr. Troncale has an international reputation in the new field of the systems sciences having served as President of the International Society for the Systems Sciences (ISSS), 1990-91, and continues as a member of its Board of Trustee's. He was VP and Managing Director of the International Society for General Systems Research from 1981-87. He was a member of the Board of Directors of the International Federation for Systems Research (IFSR) from 1982-85, and is a Founding Board Member of WISINET (World International Systems Institution Network) based in Hungary. He has been a Visiting Professor at the University of Vienna and a Research Associate at the International Institute for Applied Systems Analysis (IIASA) in Austria.

Dr. Troncale has 40 years experience in the design, delivery, and evaluation of interdisciplinary courses and academic programs. In 1969, as a Project Coordinator for the Interdisciplinary communications Program of the Smithsonian Institution (formerly of the NY Academy of Sciences) he directed a multidisciplinary project entitled "Technological Augmentation of cognition" involving such national-level participants as Prof.'s Licklider, Glaser, Newell, Papert, Atkinson, and Suppes, all pioneers in computer-assisted instruction. After joining Cal-Poly, Dr. Troncale founded the Institute for Multidisciplinary Programs and directed faculty from six Colleges in the design, approval, prototyping, and evaluation of 14 interdisciplinary courses and a Minor in Comparative Systems Analysis. Five additional courses were added to Institute offerings in 1992 for a current total of 16 found in the current university catalogue. He also designed and offered the department's first several courses in Molecular Biology (Bio 450 Concepts, 451 Techniques, 555 Cell and Molecular Developmental Biology, & 459 Bioinformatics) at the nexus between chemistry and biology. He is currently designing new courses in the developing areas of Bioinformatics-Socioinformatics, Systems Biology, Microarrays & Stem Cell Biology, and the Biology of Aging.

His entrepreneurial interests include design of an innovative computer peripheral, a medical device based on fractal analysis of melanoma's for hospitals and offices of dermatologists, design of educational multimedia authoring programs and products, and consulting in systems science. His biology research interests range from the molecular biology and microarchitecture of the cell nucleus, to the nuclear matrix and evolution of the nucleus, to the evolution of closed to open cell division and differentiation. His systems research interests range from initiating the

three new specialties of Systems Allometry, Systems Pathology, and Artificial Systems Research to research on an empirically refinable theory of system, system of systems processes, empirical approaches to a general theory of emergence, and advancing systems education programs K-20.

As Managing Director of the oldest professional society dedicated to systems research, Dr. Troncale was responsible for several innovations that continue to this day. He initiated the first SIG's in the society (Special Integration Groups), and founded the Council of SIG Chairs. He guided revision of the name of the ISGSR to ISSS to better focus its efforts on investigation of systems and avoid proselytizing for only general systems theory. As Editor of the *General Systems Bulletin*, he established many of the sections and formats still in use. He initiated the concept of National Division's and named the first National Division Chair's that subsequently led to the foundation of independent systems societies in several countries.

Dr. Troncale's primary systems research interests include the following:

- Investigating Isomorphies (Principal Systems Processes) across the Natural Sciences
- Linkage Propositions between Isomorphies (Towards A "System" of Systems Concepts)
- Empirical Refinement of A Proposed Theory of Emergence
- Hierarchical Structures and Processes Across the Sciences
- Multimedia Lessons that teach Systems Science to Non-Scientists (ISGE)
- The New Field of Systems Allometry
- The New Field of Systems Pathology
- The New Field of Artificial Systems Research
- The Cell As System (complex networks of feedback in cell biology)

He is most interested in improving the methodology that guides work in the systems sciences since this is its weakest element at present and inhibits development and acceptance of the field.