

*ARTHUR S. IBERALL*

**CURRICULUM VITAE**

**EDUCATION**

- 1936-1940 B.S. in Physics, City College of New York.  
1940-1941 Studied Mechanical Engineering, City College of N.Y.  
1942- 1945 Graduate Studies in Physics, George Washington University, Washington, D.C.  
1945-1950 Selected graduate courses & seminars at the National Bureau of Standards

**EXPERIENCE**

- 1991-2002 Publisher, Researcher, Group Leader,  
Cri-de-Coeur Press, Laguna Hills, CA, 92653-1876  
Group research and publications in the field of complex systems
- 1985-1991 Independent Researcher,  
Oral Biology, Dept. Dentistry UCLA-Space made available by Asst. Dean  
To conduct neurophysiological and other systems' research.  
Continuing complex systems' research on self-organization in cosmic,  
stellar, galactic, planetary, biological, ecological, social, evolutionary,  
social, intelligent, and civilizational systems.
- 1981-1985 Visiting Scholar,  
Crump Institute for Medical Engineering, UCLA.  
Developing a physical scientific foundation for complex systems: systems  
of nature, life, humankind, mind and society.
- 1964- 1981 Chief Scientist, President,  
General Technical Services, Inc., Pennsylvania.  
Built organization for primary research and development in the applied  
physical sciences for Government and industry.
- 1954- 1964 Chief Physicist,  
Rand Development Corporation, Cleveland, Ohio.  
Built up a laboratory and staff for primary research and development in  
the applied physical sciences for Government and industry.

- 1953-1954     Research Director,  
ARO Equipment Corporation, Cleveland, Ohio.  
Built up a laboratory and staff for primary development of new  
instruments and aircraft and industrial systems.
- 1941- 1953     Junior professional in physics, advancing to project leader of four projects  
with ten physicists on instrument theory, research, development and  
evaluation, and systems.  
Consultant in measurement problems and safety equipment.  
National Bureau of Standards: Aeronautic, later Mechanical, Instruments  
Section.

**EXTRACURRICULAR EFFORTS**

- 1945            Post-War Program for the National Bureau of Standards  
1959            Philosophy for Mid-Twentieth Century  
1960            Problems of Education and Science - U.S.A. (prepared for US Senate  
Subcommittee on Govt., Hithenberg?, chairman)  
1962            Scientific Needs of the U.S.A. (ditto)  
1963            Science as a Profession in the U.S.A. (ditto)  
1979?          Scientific needs of the USA (invited testimony, US Senate Subcommittee  
on Govt., Kennedy, chairman)

**MEMBERSHIPS**

- New York Academy of Science  
Society of Sigma XI  
American Physiological Society  
American Society for Cybernetics  
Instr. Society of America  
Biophysics Society  
American Society of Mechanical Engineers  
Microcirculatory Society  
Biomedical Engineering Society  
International Society for the Comparative Study of Civilizations

- ASME Past committee activities: Chairman, Theory Committee, IRD.  
Member, Dynamic Systems Committee, IRD.  
Chairman, Biosystems Panel, ACD.  
A Chairman, IRD Annual Conference.  
Alternate to AACC for ACD.  
Chairman, Biosystems Committee, in AACC for ACD.

	Chairman of ACD (national)
ISA	Member, Research Committee (national)
ASC	Technical Vice President (national)
ISCSC	Member of Executive Board (international)

## HONORS

1975	Alza Distinguished Lecturer, Biomed. Engr. Society.
1976	Doctor of Science (honorary), Ohio State University.

Well known in regulation and control theory and dynamic systems theory, particularly in engineering circles, having been chairman and member of many of the technical committees of the Instrument and Regulator Division, now Automatic Control Division of the ASME, as well as past Chairman of the Division and has been elected to Fellowship grade in ASME.

## PUBLICATIONS (this has been superseded)

1. Iberall, A.S. Linear Pressure Drop Flowmeters. National Bureau of Standards Report, 1947.
2. Iberall, A.S. Effective 'Gamma' in isentropic expansion of real gases. *J. Applied Physics*, 19:997, 1948.
3. Iberall, A.S. A novel recording accelerometer. *Review of Scientific Instruments*, 20(4):304-307, 1949.
4. Iberall, A.S. Attenuation of oscillatory pressures in instrument lines. Research paper RP2115. *J. Research of the National Bureau of Standards*, 45:85-108, 1950.
5. Iberall, A.S. Permeability of glass wool and other highly porous media. *J. Research, National Bureau of Standards*, 45:398, 1950.
6. Iberall, A.S. Fundamental considerations in the design of mobile pressure suits. National Bureau of Standards Report, April 1951.
7. Iberall, A.S. Pressure drop in oxygen systems. NBS Report, 1115, 1951.
8. Iberall, A.S. Elastic contact transducer. NBS Report, 1951.
9. Iberall, A.S. Stability of a simple relief valve. ARO Equip. Corp., 1953.
10. Iberall, A.S. Development of a subliming carbon dioxide hypsometer. NBS Report 2387, 1953.
11. Iberall, A.S. Static flow characteristics of single and two stage spring loaded gas pressure regulators. *Trans. ASME*, 76:363, 1954.
12. Iberall, A.S. Characteristics of slack diaphragms. *ASME*, 54-A-195, 1954.
13. Iberall, A.S. and D.E. Platt. Bumper stop design. Cleveland Pneumatic Tool Co., 1955.
14. Iberall, A.S. Flat plate burner design. Westinghouse Electric, Two Reports, 1955.
15. Iberall, A.S. A novel approach to high speed weighing. Rand Dev. Report, 1955.
16. Iberall, A.S. A tentative design theory for lift valve seats used in dead end regulation. Rand Dev. Report, 1955.

17. Iberall, A.S. A new method for the non-destructive testing of homogeneity of structural materials. Rand Dev. Report, 1955.
18. Iberall, A.S. and R. Hitchcock, Jr. Study of some fundamental considerations in the design of screw fasteners and locking devices. Illinois Tool Works, 1956.
19. Iberall, A.S. Preliminary considerations for an end point control of a drying cycle in a clothes dryer. Whirlpool-Seeger Corp., 1956.
20. Iberall, A.S. Measurement of paint viscosity in the can. Sherwin-Williams, 1956.
21. Iberall, A.S. Color matching of paints. Sherwin-Williams, 1956.
22. Iberall, A.S. Development of a full pressure altitude suit. Report to USAF, WADC TR 58-236, 1957.
23. Iberall, A.S. Bumper Stop Theory. Ohio Brass Co., 1958.
24. Iberall, A.S. In H. Gortler (ed.), *Boundary Layer Research*, NY: Springer-Verlag, 1958.
25. Iberall, A.S. and S.Z. Cardon. Study of research needs in protecting the quality of waters in the USA. Report to HEW, Contract SAPH 76238, 1960.
26. Iberall, A.S. Human body as an inconstant heat source and its relation to clothes insulation, Part 1 – Descriptive Models of the Heat Source. *J. Basic Engr., Trans. ASME*, 82:96-102, 1960
27. Iberall, A.S. Human body as an inconstant heat source and its relation to clothes insulation, Part 2 – Experimental Investigation into the Dynamics of the Source. *J. Basic Engr., Trans. ASME*, 82:103-112, 1960
28. Iberall, A.S. Human body as an inconstant heat source and its relation to clothes insulation, Part 3 – Precise Measurement of Clothes Insulation During Controlled Operation of the Human. *J. Basic Engr., Trans. ASME*, 82:513-527, 1960.
29. Iberall, A.S. A physical critique of the description of thermoregulation in the human. *Proceedings of the 4th Intl. Conf. Med. Electr.*, 1961.
30. Iberall, A.S. Fundamental engineering considerations in the application of screw fasteners, 2 Reports to Industrial Fasteners Inst., Cleveland, 1961 (issued as a national handbook by the Institute).
31. Iberall, A.S. A study of the engineering aspects of life sciences for military needs. 4 Reports to US Army, Contract DA-49-183-MD-2152, 1961.
32. Iberall, A.S. Some fundamental considerations in the drying of clothes in modern gas home dryers. Amer. Gas Assoc., 1961.
33. Iberall, A.S., S.Z. Cardon, and H. Schneider. A study of the physical description of the hydrology of a large land mass pertinent to water supply and pollution control. 4 Reports to HEW, Contract SAPH 78640, 1961-62.
34. Iberall, A.S. Study of an electronic time. Report to Diamond Ord. Fuze Lab., Contract DA-49-186-ORD-1052, 1962.
35. Iberall, A.S. and S.Z. Cardon. A study to develop improved water pollution measurement techniques. 3 Reports to Public Health Services, Contract PH-86-62-106, 1962.
36. Iberall, A.S. Fallout shelter material investigation. Report to Flinkote, 1962.
37. Iberall, A.S. Studies for an accurate low frequency shock resistant oscillator. Army Contract DA-49-186-ORD-1089, 1962-63.
38. Iberall, A.S. A new class of inertial guidance systems. Report to Office of Naval Research (ONR), Contract NONR 3778(00), 1962-63, 1965-66, 1968-69.

39. Young, E. and A.S. Iberall. A direct description of the transmission of pulses in arterial trees. *Proc. Ann. Conf. Engr. Med. Bio.*, 8, 50, 1963.
40. Iberall, A.S. Contributions toward solution of the equations of hydrodynamics. Part A. The continuum limitations of fluid dynamics. Report to ONR, 1963.
41. Iberall, A.S., S.Z. Cardon and J. Ellis. Studies of principles of clothing design to minimize interference with body motion. 3 Reports to Natick Labs., US Army Contract DA-19-129-AMC-45(R), 1963-64.
42. Iberall, A.S. Human temperature regulation - A 1964 model. *Proceedings of 17th Ann. Conf. on Engr. in Med. and Bio.*, 1964.
43. Iberall, A.S. Control in biological systems - A physical review. *Ann. N. Y. Acad. Sci.*, 117:445-515, 1964.
44. Iberall, A.S. The use of lines of non-extension to improve mobility in full-pressure suits. Report to USAF, AMRL-TR-64-118, 1964.
45. Iberall, A.S. and S.Z. Cardon. Regulation and control in biological systems. In: K. Kaneshige and C. Izawa (Eds), *Proceedings of IFAC Tokyo Symposium on Sys. Engr. for Control Sys. Design*, Toyko: Science Council of Japan, 1965.
46. Iberall, A.S. Contributions toward solution of the equations of hydrodynamics. Part B. Primitive solutions for the fluctuating components of turbulent flow between parallel plates. Report to ONR, 1965.
47. Iberall, A.S. and S.Z. Cardon. Analysis of the dynamic systems response of some internal human systems. Clearinghouse for Federal Scientific and Technical Information; Reports to NASA: CR-129, Oct. 1964; CR-141, Jan. 1965; CR-219, May 1965; Interim Report, Dec. 1965.
48. Iberall, A.S. Advanced technological planning for interdisciplinary physical research. Report to ARO, Contract DA-49-092-ARO-45, 1965.
49. Iberall, A.S. Metabolic control in biological systems. In: *Theory of Self-Adaptive Control Systems*, Plenum, 1966.
50. Iberall, A.S. and S.Z. Cardon. Aeration mass-transfer related to Reynolds number. *J. Applied Chem. London*, 16:64, 1966.
51. Ehrenberg, M. and S. Cardon. Dynamics of the microcirculation. *Proc. Ann. Conf. Engr. Med. Bio.*, 8, 50, 1966.
52. Iberall, A.S. and S.Z. Cardon. Technical forecasting, A physicist's view. AD#635-811; Information science. AD#635-809; Army-wide aspects of research planning and management. 3 Reports to Army, Contract DA-49-092-114, 1966.
53. Iberall, A.S., M. Ehrenberg and S.Z. Cardon. General-dynamics of the physical-chemical systems in mammals. Contractors Report to NASA, NASW-1066, Aug. 1966.
54. Young, E., A.S. Iberall, M. Ehrenberg, and S.Z. Cardon. *Proc Annual Conf Engineering in Medicine and Biology*, 8, 1966.
55. Iberall, A.S. Quantitative modeling of the physiological factors in radiation lethality. *Ann. N.Y. Acad. Sci.*, 147:1-81, 1967.
56. Iberall, A.S. Anatomy and steady flow characteristics of the arterial system with an introduction to its pulsatile characteristics. *Math. Biosci.*, 1:375, 1967.
57. Iberall, A.S. A 'Universal' geometric model of the arterial tree. *Digest 7th Intl. Conf. Med. Bio. Engr.*, Stockholm, 1967.

58. Iberall, A.S. Anatomy and DC characteristics of the arterial system with an introduction to its AC characteristics. Contractors Report to NASA, NASA CR-770, 1967.
59. Iberall, A.S. A note on thermoregulation. *Currents in Modern Biology*, 2(3):140, 1968.
60. Iberall, A.S., M. Ehrenberg, S. Cardon and M. Simenhoff. High frequency blood glucose oscillations in man. *Metabolism*, 19:1119, 1968.
61. Iberall, A.S. and W.S. McCulloch. 1967 behavioral model of man - His chains revealed. *Currents in Modern Biology*, 1:337, 1968.
62. Iberall, A.S. Regulation and control in the complex biological system - An introductory overview. *Joint Auto. Control Conf. of AACC*, 1968.
63. Iberall, A.S. Oscillatory processes in biology. *Biophys. Soc. Abstract*, Pittsburgh, 8, MD1, 1968.
64. Iberall, A.S. Introduction to the content of a general systems science. Final Report to ARO, Contract DAHC 1967 C-0027, AD836-746, June 1968
65. Iberall, A., C. Beckman, D. Lulejian, F. Pavone, and E. Pikalow. Active primate simulator. General Technical Services, Inc. Final Report to NASA under contract NASW-1638, 1968.
66. Iberall, A.S. A personal overview. In: C. Waddington (ed.). *Towards a Theoretical Biology, 2. Sketches*, Chicago: Aldine, 1969, 10-17.
67. Iberall, A.S. New thoughts in biocontrol. In: C. Waddington (ed.). *Towards a Theoretical Biology, 2. Sketches*, Chicago: Aldine, 1969, 166-178.
68. Iberall, A.S. Hierarchical regulation in the complex biological organism. *Record of IEEE Sys. Sci. Cybernetics Conf.*, Philadelphia, PA., Oct. 1969.
69. Iberall, A.S. A strategy for the research director in his irrational world. *Innovation*, 3, 1969.
70. Iberall, A.S. and S.Z. Cardon. Hierarchical regulation in the complex biological organism. *Record of the IEEE Systems Science and Cybernetics Conference*, Phila., October, 1969.
71. Iberall, A.S. and W.S. McCulloch. The organizing principle of complex living systems. *J. Basic Engr.*, ASME 290-294, 1969.
72. Iberall, A.S., J. Shannon, E. Young and C. Beckman. General systems science. Part II - Illustrating the technical methodologies for well-defined systems. Final Report to Army Research Office, Contract DAHC 19-68-C0023, April 1969.
73. Iberall, A.S., S. Cardon and C. Beckman. A cybernetic approach to synthesis of field army intelligence systems. Final Report to ECOM, Ft. Monmouth, N.J., Dec. 1969.
74. Iberall, A., Reswick, J. (eds.). *Technical and Biological Problems of Control - A Cybernetic View. Proc. IFAC Conference*, Yerevan, Armenia, Instrum. Soc. Amer., Pittsburgh, 1970.
75. Cardon, S.Z. and A.S. Iberall. Oscillations in biological systems. *Currents in Modern Bio.* 3:237-249, 1970.
76. Iberall, A.S. Homeokinesis - The organizing principle of complex living systems. In: A. Iberall, J Reswick (eds.), *Technical and Biological Problems of Control - A Cybernetic View*, Inst. Soc. of America, Pittsburgh, PA., 1970.
77. Iberall, A.S. The experimental design of a mobile pressure suit. *J. Basic Engr.* 92:251-264, 1970.

78. Iberall A.S. Regarding periodic phenomena. *Science*, 168:152, 1970.
79. Iberall, A.S. Periodic phenomena in organisms seen as non-linear systems. *Theoria to Theory*, 4:40, 1970.
80. Iberall, A.S. On the general dynamics of systems, *General Systems Yearbook XV*:7, 1970.
81. Iberall, A.S. Outlining the principles of general systems' science. *Proceedings of Third Hawaii Intl. Conf. on Sys. Sci.* Part 2, Western Periodicals Co., 1970.
82. Iberall, A.S. Periodic phenomena in organisms seen as non-linear systems. *Theoria to Theory*, 4:40-53, 1970.
83. Cardon, S., C. Ostermeyer, and E. Bloch. Effect of oxygen on cyclic red blood cell flow in unanesthetized mammalian striated muscle as determined by spectroscopy. *Microvas. Res.*, 2:67, 1970.
84. M. Weinberg and A.S. Iberall. The oscillatory nature of glucose regulation. *Biomed. Engr. Society Abstract*, 1970.
85. Iberall, A.S. An interpretive note on weight reduction. *Biophys. Soc. Abstract*, 10, TPM FO, 1970.
86. Iberall, A.S., A. Schindler and J. Shannon. General systems science. Part III - Illustrating the technical methodologies for fairly well-defined systems problems. AD 869-663. Final Report to ARO, April 1970.
87. Iberall, A., D. Patel, R. Groat, N. Suwa, and E. Bloch (researcher and reviewers). Geometric model of vascular bed. In: Altman, P. and D. Dittmer (eds.), *Respiration and Circulation*, Table 144, Fed. Am. Soc. Exp. Bio., 1971.
88. Iberall, A.S. Physiological control - A physical view: Life and the biochemical oscillator. *AICHE, Chem. Engr. Symp. Series* 67(114):190-194, 1971.
89. Iberall, A.S. On large deflection of diaphragms. Discussion to a paper by Soedel-Cohen, Design Engr., *Trans. ASME*, August. 1971.
90. Iberall, A.S. Our engineering future and our professional society. Some data for long range planning. *J. Dyn. Sys. Meas., Control, Trans.*, ASME 93:11, 1971.
91. Iberall, A.S. A systems science theoretic for goals or the engineering for psychology, sociology and so forth. *J. Dyn. Syst. Meas., Control, Trans.*, ASME 93:206, 1971.
92. Iberall, A.S. A contribution to the theory of turbulent flow between parallel plates. *Seventh Symposium on Naval Hydrodynamics*, Office of Naval Research, Dept. of the Navy, 705-748, 1971.
93. E. Bloch, S. Cardon, A.S. Iberall, D. Jacobowitz, K. Kornacker, L. Lipetz, W. McCulloch, J. Urquhart, M. Weinberg and F. Yates. Introduction to a biological systems science. NASA Contractor Report, CR-1720, June 1971
94. Iberall, A.S. The nature of heart rate regulation. *Fed. Proc.* 30, 703 Abstract, 1971.
95. Iberall, A. The weight specific nature of blood flow and oxygen uptake. *Biophys. Soc. Abstract 11*, 161a, 1971.
96. A. Schindler and A.S. Iberall. Towards a physically consistent theory of human thermoregulation. NASA Contractor Report, NASW-1815, 1971.
97. Iberall, A.S., M. Weinberg and A. Schindler. General dynamics of the physical-chemical systems in mammals. NASA Contractor Report, CR-1806, June 1971.
98. Iberall, A.S. *Toward A General Science Of Viable Systems*, New York: McGraw-Hill, 1972.

99. Iberall, A. Blood flow and oxygen uptake in mammals. In: T. Malinin et al. (eds.), *Reversibility of Cellular Injury Due to Inadequate Perfusion*, Thomas, 1972.
100. Yates, F.E., D.J. Marsh and A.S. Iberall. Integration of the whole organism: A foundation for a theoretical biology. In: J.A. Behnke (ed.) *Challenging Biological Problems: Directions Towards Their Solution*, AIBS 25-year celebration volume, pp 110-132, Oxford Press, 1972.
101. Iberall, A.S. Blood flow and oxygen uptake in mammals. *Annals of Biomed. Engr.* 1:1-8, 1972.
102. Iberall, A.S. Illustrating key problems that can lead toward a quantitative physical biology. *Am. J. Physics* 40:902-906, 1972.
103. Iberall, A.S. Introducing some operational characteristics of mind - The human outlook and the dynamics of society. *J. Dyn. Syst. Meas. Control, Trans. ASME* 94:285, 1972.
104. Iberall, A.S. On a third-dimensional manifold of human mind - A speculation on its embodiment. *Int. J. Psychobiology*, 2(3):219-231, 1972.
105. Iberall, A.S. Change and the human condition. *Teachers College Record*, 73(4):539-545, 1972.
106. Iberall, A.S. On the distinction between regulation and control. *J. Dyn. Syst. Meas. Control, Trans. ASME* 94:33
107. Iberall, A.S. Comments on the biological problems. Proceedings IFAC 5th World Congress, *Intl. Fed. Auto. Control*, Paris, 1972.
108. Iberall, A. Comments on 'A review on mathematical models of the human thermal system'. *IEEE Trans. Biomed. Engr.*, 19:67, 1972
109. Iberall, A. A primary regulatory construct for the complex multicellular organism. *Proc. 25th Ann. Conf. Engr. Med. Biol.*, p. 49, 1972.
110. Iberall, A.S., S. Cardon, A. Schindler, F. Yates and D. Marsh. Progress toward the application of systems science concepts to biology. Report to Army Res. Office, AD 750174; Sept. 1972.
111. Iberall, A.S., S. Cardon and E. Young. *On Pulsatile and Steady Arterial Flow - The GTS Contribution*. General Technical Services, Inc., Upper Darby, PA., 1973.
112. Iberall, A.S. and A. Schindler. *Physics of Membrane Transport*. General Technical Services, Inc., Upper Darby, PA., 1973.
113. Iberall, A., Guyton, A. (eds). *Regulation and Control in Physiological Systems*. *Proc. Joint IFAC, Am. Physiol. Soc.*, Intern Union Physiol. Sci. Conference, Rochester, NY, Instru. Soc. Amer., Pittsburgh, 1973.
114. Iberall, A.S. A fantasia on the design of a mammal. In: A. Iberall, A. Guyton (eds.). *Regulation and Control in Physiological Systems*, ISA, Pittsburgh, 1973.
115. Yates, F.E. and A.S. Iberall. Temporal and hierarchical organization in biosystems. In: J. Urquhart and F.E. Yates (eds.) *Temporal Aspects of Therapeutics*, pp. 17-34, Plenum, N.Y., 1973.
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117. Iberall, A.S. On systems design of mammals. *Proceedings of the 4th Ann. Meeting Biomed. Engr. Soc.*, Los Angeles, Jan. 1973.
118. Iberall, A.S. and A.M. Schindler. A kinetic theory, near continuum model for membrane transport. *Annals of Biomed. Engr.*, 1:489, 1973.



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120. Iberall, A.S. On a suggestion why flow in capillary blood vessels is not stochastic. *Microvascular Res.*, 6:238, 1973.
121. Iberall, A.S. On growth, form, and function - A fantasia on the design of a mammal. *J. Dyn. Syst. Measurement & Control, Trans. ASME* 95:291-295, 1973.
122. Yates, F.E. and A.S. Iberall. Critique of chance and necessity: an essay on the natural philosophy of modern biology, by Jacques Monod. *Ann. Biomed. Engr.* 1:381-384, 1973.
123. Iberall, A.S., S.Z., Cardon, and A. Schindler. Toward a general science of man systems, a venture into social physics: Beginnings. Report to US Army Research Inst., May 1973.
124. Iberall, A.S., A. Schindler and S. Cardon. To apply systems science concepts to biology. Report to ARO, AD 765762, July 1973.
125. Iberall, A.S., S. Cardon and A. Schindler. Application of systems science to man systems. Report to US Army Inst., Sept. 1973.
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128. Schindler, A.M. and A.S. Iberall. The need for a kinetics for biological transport. *Biophys. J.* 13:804, 1973.
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134. Iberall, A.S. Letter to the editor. *Microvasc. Research* 7:385, 1974.
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140. Iberall, A.S. A proposal for a force essential to biological organizations. *Perspectives in Biology and Medicine*, 18(3):399, 1975.
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142. Iberall, A.S. On nature, man and society: A basis for scientific modeling. *Annals of Biomed. Engr.*, 3:344-385, 1975.
143. Iberall, A.S. Letter to Editor, (regarding applicability of continuum mechanics). *Microvasc. Research*, 9:361, 1975.
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155. Llinas, R. R. and A.S. Iberall. A global model of neuronal command-control systems. *Biosystems*, 8:233, 1977.
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## RECENT TECHNICAL TALKS

- March 12, 1981 Invited Talk: A Physical Model of Brain Function; Rockefeller Institute, N.Y.
- May 18, 1981 Guest Seminar: Systems Science for Politics; graduate course on systems' theories, Political Science Dept., Wilkinson (2 hr. lecture)
- May 30, 1981 Invited Lecture: Physical principles for organizing civilizations; Intl. Soc. Compar. Study Civil., Bloomington, IN. (2 hr. lecture)
- June 8, 1981 Invited talk: Homeokinesis--principles relevant to organization of brain activity; Conference on Event Perception, University of CT., Storrs.
- June 11, 1981 Workshop: On a physical theory of language; Conf. on Event Perception, University of CT., Storrs. (1 hr. presentation)

- June 26, 1981 Lecture presentation: Principles relating to survival of complex systems; U.S. Army Communications Command, Hexagon, N. J.
- October 16, 1981 Invited Seminar: A Wide Range Description and Theory of Heat and Mass Transfer; Chem. Engr. Dept. Seminar, UCLA. (2 hr. seminar)
- November 26-27, 1981 Invited Lecture: How physics can provide principles for brain theory; Psychiatry Dept., Mandell, UCSD. (2 day seminar)
- March 27, 1982 Workshop seminar: A New Physical Theory of Language; Arrowhead Conf. on Language and Movement, UCLA. (1 hr. presentation)
- April 1, 1982 Invited lecture: A physical insight into complex systems. Example - corporate decisions for the future in the food industry; General Mills Engineering Conference, MN.
- April 29, 1982 Invited lecture: A Physical Foundation for the Biological and Social Sciences; Aging Institute and Dept. Anthropology, U.S.C.
- May 3, 1982 Paired presentation: 50 new theoretical notions about aging; Seminar to Aging Institute, U.S.C. (Yates & Iberall, 4 hrs.)
- May 5, 12, 1982 Invited lectures: Irreversible Thermodynamics for Complex systems; graduate course, Dept. Chem. Engr., Robinson. (2-2 hr lectures)
- May 12, 1982-Jan. 12, 1984 Seminar: On a Physical Foundation for Complex Systems; on principles and character of complex systems for graduate students, faculty, and outside professionals, UCLA. (75-2 hr seminars)
- May 20, 1982 Invited lecture: On meaning, language, and culture; Honors seminar, Goldberg, UCLA. (2 hr. lecture for undergraduates)
- May 26, 1982 Invited lecture: Connection between Science and the Arts and Social Sciences; Wright State U., Dept. of Sociology and Anthropology, Melko, W.S.U., Dayton. (2 hr. seminar)
- May 28, 1982 Commentator: Session - On Iberall's physical modelling of civilization; Intl. Soc. Compar. Study of Civil. (3 hr. seminar)
- July 29, 1982 Invited talk: A physical foundation for the brain; City of Hope, Roberts. (2 hr. talk to research staff)
- August 2, 1982 Dual TV interview: Acoustic-mechanical signals organize the biological organism; (Yates, Iberall--interviewed by Strawn Bovee, Pacifica Station)
- October 27, 1982 Invited Seminar: Problems relating to R and D management; Invited discussion with corporate managers and consultants, General Mills, MN.
- October 29, 1982 Marshak Lecture: On demography; Marshak lecture series, Intrilligator, Series Director, Graduate School of Management, UCLA. (2 hr. lecture)
- May 26, 1983 Invited seminar: Can physics reach to mind and brain? Psychoanalytic Society at L.A.
- June 1, 1983 Invited talk: Physical foundations for mind-brain; Faculty Study Group, Medical School, UCLA.
- June 22, 1983 Invited talk: Demography as a stochastic process. USC-UCLA Systems Science Study Group, DiStefano.
- September 7, 1983 Invited Seminar: Homeokinetics, A Physics for Complex Systems; Mathematical, Scientific, Medical Faculty. University of Wellington, New Zealand, McIntosh.
- October 4, 1983 Invited talk: Brain as culture; Conference on Chemical Information Processing in Brain. Max-Planck Inst. for Psychiatry, Munich.

- November 22, 1983 Invited talk: Physical foundation for the social sciences; Social Science Faculty, U.C., Irvine.
- January 5, 1984 Invited talk: A model for the social sciences-- discovering economics; Annual Conf. on Economic Theory, Dept. of Economics, U.S.C.
- January 25, 1984 Invited talk: Physical foundations for brain; Panel--Winter Conf. on Brain Research, CO.
- January 30-31, 1984 Invited lectures: Physics of simple and complex systems. Graduate course for students and faculty. Dept. of Biomedical Engineering, U. Utah. (2-2 hr. lectures)
- February - April 14, 1984 Seminar Series: Relating a physical foundation to the social sciences; (6 hr. seminars, conducted with 8 senior faculty at UCLA, USC, UC-Irvine, San Diego to consider a reductionist foundation for the social sciences)
- Feb. 28-29, 1984 Invited lectures: A physical foundation for demography; Graduate course for students and faculty. Dept. of Biomed. Engr., U. Utah. (2-2 hr. lectures)
- April 2, 1984 Invited lecture: Regulation in complex systems-- physical view; Regulation Symposium--FASEB meeting.
- April 3, 1984 Invited lecture: Pressure regulation in mammals synthesis; Regulation symposium--FASEB meeting.
- 1984-1993 A dozen or so additional invited lectures or series. Illustratively, that 1984 series, A Concerto for Nine Disciplines, was an honors course given under the sponsorship of the Dept. of Political Science at UCLA, in which nine of us colleagues gave an intensive interdisciplinary course covering all the subjects from physics, chemistry, biology, ethology, ecology, anthropology, economics, through political science, law, and comparative civilizations from a homeokinetic point of view.. It was a test whether these senior academics were prepared to present such study. It was very successful. A second effort was made by the group to a School of Occupational Therapy at USC, in which that school had about a dozen faculty, many students, and about 16 graduate students. Their interest was in getting a systems' point of view, which we furnished. A third was the invited effort to take over Intrilligator's course, conducted in parallel with the Marshak series, which concentrated on the mathematics of all other fields that might be of interest to economists and their students. The invitation I received and accepted was to provide a similar foundation for all physical study that might be of interest to economics. Another invitation received was one to present physical foundations for the study of economics at the First Conference of the Eastern Economics Society
- March 1993 Invited lectures: On the character of belief systems, and the foundation for operational scientific systems theory. Dept. of Psychology, U. Conn., Storrs. (24 hours of taped lectures)
- Aug. 1993 Invited lecture: A physical foundation for the Gibsonian theory of perception and action. Invited keynote talk at 7th Annual Intern, Conf. on



- Event Percept. and Action, Intern. Soc. for Ecolog. Psych., U. Brit. Columbia.
- June 1996 Invited lecture: A social-physical revue of Quiglean and other modern creators of civilization theory. 25<sup>th</sup> Annual ISCSC Conference and 5<sup>th</sup> Annual International World History Association Conference, Cal Poly, Pomona.
- July 1998 Panels on Homeokinetics, 1998 Homeokinetics Conference, University of Connecticut, Storrs, CA.
- March 1999 Poster presentation on Social physics-next century! By Iberall, Soodak, & Hassler; American Physical Society, Centennial Meeting, Atlanta, GA.
- May 2002 On the Development of a Social Physics. 31st Annual ISCSC Conference, Port Antonio, Jamaica.