

11/6/834  
Engineering  
Electrical Engineering  
Biological Computer Laboratory Publications, 1951-1978

## Box 1

### Publication Lists

1. Publications List, 1971-1981

### Notices

2. Notices, 1967
  - a. Report on Education Simulation. Gordon Pask. May 24, 1967
  - b. Report on Education Simulation II, July 20, 1967

### Proposals

3. Nonr Contract 1834(21). Proposal and Revised Budget. June 6, 1960
4. The National Science Foundation. Proposal for the Continuation of a Comprehensive Study of the Theory and Circuitry of Property Detector Fields and Nets. February 28, 1962.
5. Proposal for the Continuation of a Comprehensive Study of the Theory and Circuitry of Systems with Mind-Like Behavior. Department of Electrical Engineering; University of Illinois. 10 June 1963
6. Air Force Office of Scientific Research. Proposal for a Study Toward the Integration of Anatomical, Neurophysiological and Theoretical Knowledge of Vision into a Unified Concept of Visual Perception. March 15, 1965
7. Proposal for a study entitled: Theory and Application of Computational Principles in Biological Systems. Department of Electrical Engineering; University of Illinois. August 1, 1965.
8. AF-OSR. Theory and Applications of Computational Principles in Complex, Intelligent Systems. Sept. 15, 1966.
9. NASA. Toward the Mechanization of Cognitive Processes. May 1, 1967.
10. AF-OSR. Theory and Application of Computational Principles in Cognitive System. June 1, 1967.
11. Proposal for a study entitled: Notation of Movement. Department of Electrical Engineering; University of Illinois. December 15, 1967
12. OEC Grant. 2 Cognitive Memory: A Computer-Oriented Epistemological Approach to Information Storage and Retrieval, March 1, 1969.
13. AF-OSR. Analysis and Synthesis of Cognitive Processes and Systems, June 20, 1969
14. AF-OSR. Toward Direct Access Intelligent Systems. Aug. 1, 1970. 52 pp.
15. AF-OSR. Toward Direct Access Intelligent Systems. June 1, 1971. 104 pp.
16. NSF. Cognitive Technology: A Citizen-Society Problem Solving Interface. The Committee for Cognitive Studies. 15 February 1972.
17. AF-OSR. Beyond Numerical Computers: Technology for Information Processing in Higher Order Representations. June 1, 1972.

## Box 1

### Technical Reports

#### AF Grant 7-63

18. TR NO. 2: Constraint Analysis of Many-Dimensional Relations. Ross Ashby. May, 1964.
19. Cognitron Theory. Ronald J. Swallow, June 1964
20. Neural Networks. Section 2, Chapter 6 in The Biological Basis of Pediatric Practice. Heinz Von Foerster, September 30, 1963.
21. Final Report on Direct Access Intelligence Systems. Heinz von Foerster. October 1, 1972.

#### AF Grant 7-64

22. TR No. 4: On Classification and Superposition Principles for Nonlinear Operators, Alfred Inselberg, May 1965
23. TR No. 5: A Study of a Family of Complex Systems, an Approach to the Investigation of Organisms' Behavior. Crayton C. Walker. June, 1965.
24. TR No. 6: Table of the Stirling Numbers of the Second Kind, Alex M. Andrew, December 1965 (Digital Surrogate)
25. TR No. 8: Automatic Adjustment in a Continuous Environment, Alex M. Andrew, September 1965 (Digital Surrogate)

#### AF Grant 7-66

26. TR No. 9: A Method of Decoding Speech. Jenö Gazdag. June 1966.

#### AF-AFOSR Grant 7-67/AF-33(615)-3890

27. TR No. 10: The Significance of the Second Format in Speech Intelligibility, Ian Bryce Thomas, July 1966
28. TR No. 11: The Visual Image Processor, John K. Russell, June 1967
29. TR No. 12: Classification and Enumeration of Autonomous Sequential Machines, Hollis F. Ryan, June 1967
30. TR No. 13: Information Transfer in Complex Systems, With Applications to Regulation, Roger C. Conant, January 1968
31. TR No. 14: On The Realization of Linear Automata, Thomas J.C. Wey, June 1969
32. TR No. 15: Towards a Systematic Method of Behavior, Russell D. Stinaff, June 1969
33. TR No. 16: The Analysis and Synthesis of a Learning Teaching System, Gerald F. Brieske, June 1969
34. Final Report: Analysis and Synthesis of Cognitive Processes and Systems, December 15, 1969
35. Annual Inventory of Research for AF-OSR 767 and AF-OSR 70-1865, December 15, 1969

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36. TR No. 1: On Structural Analysis of Many-Valued Logic. H.S. NA. H. Von Foerster. G. Gunther. 1964.

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### AF 33 (615)-2573

37. Progress Report # 2: Research on Information Processing Capability of the University of Illinois Signal Analysis System. August 1, 1965.

### AF 33 (615)-3890

38. Monthly Progress Reports 1-14. June 10, 1965 – June 28, 1967.
39. Monthly Progress Reports 15- 25. August 3, 1967 – June 15, 1968.

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1. Monthly Progress Reports 26-36. June 15, 1968 – March 31, 1969
2. Cybernetics Research. Technical Reports 1-6. July 1966-October 1967.
3. Cybernetics Research. Technical Reports 7-11. December 1967-January 1969.
4. Cybernetics Research. Final Report. May 1969.

### AF 33 (616)-6428

5. Monthly Progress Reports nos. 7-10. Progress Report on the Research on the Analyzing Principles of the Mammalian Auditory System. March 31, 1960 - July 1, 1961
6. Final Report: Analyzing Principles of the Mammalian Auditory System. July 1962
7. TR no. 1: Computation of Invariants in Continuous and Discrete Manifolds, S. Cheng et. al., July 1962, May 1963
8. TR no. 2: Determination of Equivalence Classes by Orthogonal Properties, H.S. Hsieh, G.W. Zopf, Jr., February 1962
9. TR No. 3-1: A Dynamic Signal Analyzer, M.L. Babcock et. al., January 1962
10. Technical Documentary Report No. AMRL-TDR-63-40: Computation of Invariants in Continuous and Discrete Manifolds. May 1963

### AF 33 (657)-10659

11. Monthly Progress Reports Nos. 1-5: Progress Report on the Research on Information Processing Capability of the University of Illinois Signal Analysis System. Ian B. Thomas. August 1963

### AF-AFOSR 68-1391

12. Annual Report: Between Logical Structure Time and Natural Numbers. Gotthard Gunter. C. 1960s
13. Natural Numbers in Transclassical Systems. Gotthard Gunter. C. 1968-1969.
14. Final Report: Investigation of a Mathematical System for Decision-Making Machines. Gotthard Gunther. 15 January 1971.

### AF-OSR 70-1865

15. Interim Technical Report: Toward Direct Access Intelligence Systems. December 15, 1970
16. Interim Technical Report: Toward Direct Access Intelligence Systems. December 10, 1971
17. TR No. 17: Functional Organization of the Tectum of the Tiger Salamander, Edward R. Gruberg, October 1969

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18. TR No. 18: Cylinders: A Relational Data Structure, Paul E. Weston, February 1970
19. TR No. 19: Neural Modelling: Methodology, Techniques and a Multilinear Model for Information Processing, Michael G. Wilkins, November 1970
20. TR No. 20: Real-Time Display Techniques for the Neurophysiological Laboratory, Kenneth J. Kokjer, October 1970
21. TR No. 21: A Measure of Dimensional Complexity for Multidimensional Systems, Robert F. Madden, October 1970
22. TR No. 22: Pulse Interval Representations of Speech Events, J.W. Atwood, October 15, 1970
23. TR No. 23: To Approach Music, Robert John Martin Jr., May 1972

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24. Some Remarks on Changing Populations, Heinz von Foerster, Undated
25. Report No. 3: Mitotic Indices of Dividing and Differentiating Cells, Heinz von Foerster, February 1961
26. Report No. 4: Label Incorporation and Label Appearance in White Blood Cells, Alfred Inselberg et. al., December 31, 1963

### DAAB-07-67-C-0199

27. Report R-398: An Interactive Document Retrieval System. D.R. Carroll, R.T. Chien, K.C. Kelly, F.P. Preparata, P. Reynolds, S.R. Ray, & F.A. Stahl. December 1968.
28. Report R-456: Design Considerations of On-line Document Retrieval Systems. J.T. Cordaro, Jr., R.T. Chien. February 1970.
29. Report R-463: Pattern Classification with a Partitioned Training Set. James Cheh-Min Chow. April 1970.
30. Report R-469: A Relational Structure for Document Retrieval in Coding Theory. Nicholas Matthew Esser, Jr. May 1970.
31. Report R-390: An Association Processor for Information Retrieval. August 1978

### DA-ARO-D-31-124-G998

32. Final Report: Notation of Movement. 15 February 1970

### GM-10718-01

33. TR No. 1: Electrolytic Growth of Silver Dendrites, William M. Ainsworth, March 1964
34. TR No. 2: Life Span and Self-Repair in Complex Systems. Shih-mei Cheng. May 1964

### GM-10718-03

35. TR No. 3: Optimizing Reproduction in a Risky Environment. Dr. Dan Cohen. July 1965
36. TR No. 4: Optimizing Reproduction in a Risky Environment with Communication. Dan Cohen, November 1965
37. TR No. 5: Significance Feedback in Neural Nets. A.M. Andrew, September 1965 (*Digital Surrogate*)
38. TR No. 6: A Technique for the Analysis of Musical Instrument Tones. Morris David Freedman, October 1965

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### NGR 14-005-111

39. Report No. 1: Search and Evaluation of Significant Event Sequences in Automated Speech Analysis. M.L. Babcock, J.W. Atwood, J.R. Cohen, M.P. Hoffman. April 1, 1969.
40. Report No. 2: An Automatic Process for the Extraction of Pitch Periods of Speech. J.R. Cohen, June 15, 1970
41. Report No. 3: A Study of the Free Response Distortion in Speech Processing. M. P. Hoffman, June 30, 1970
42. TR No. 22/Report No. 4: Pulse Interval Representations of Speech Events. J.W. Atwood, October 15, 1970
43. Report No. 5: An Omnidirectional Loudspeaker System. J.M. Struhar, Jr., April 15, 1971

### NR 049-123 / Nonr 1834(21)

44. Quarterly Progress Reports Nos. 1-3: The Realization of Biological Computers. April 15, 1958 – Oct. 15, 1958
45. Annual Report and Quarterly Progress Report No. 4: The Realization of Biological Computers. January 15, 1959.
46. Quarterly Progress Report No. 5: The Realization of Biological Computers. January 15, 1959.
47. Quarterly Progress Reports Nos. 6-9: The Realization of Biological Computers. July 15, 1959 – May 15, 1960
48. Infallible Nets of Fallible Neurons, Warren S. McCulloch; Natural History of Networks, Gordon Peck; and Self Organizing Systems and their Environment, Heinz von Foerster, July 1, 1959.
49. Some Aspects in the Design of Biological Computers. Heinz von Forster. March 20, 1959.
50. TR No. 1: Reorganization by Adaptive Automation. Murray Lewis Babcock. January 15, 1960.
51. TR No. 2: Some Principles of Preorganization in Self-Organizing Systems, M. L. Babcock, et. al., June 1960
52. TR No. 3: The Present Theory of Switching and Some of Its Future Trends, A.A. Mullin, July 1960
53. TR No. 4: A Predictive Model for Self-Organizing Systems. Gordon Peck and Heinz von Foerster, June 1960
54. TR No. 5: Some Logico-Philosophical Comments on Self-Organizing Systems. A.A. Mullin, November 1960
55. TR No. 6: Qualitative Limits for Authomatic Error Correction Self-Repair. Lars Lofgren, June 1961
56. TR No. 7: Structure of Switching Nets. Lars Lofgren, October 1961
57. The Realization of Biological Computers. Heinz Von Foerster; Transcript of a paper presented at the Second International Conference of Cybernetics on September 5, 1958 in Namur, Belgium. March 20, 1959

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1. TR No. 8: Kinematic and Tessellation Models of Self-Repair. Lars Lofgren. December 1, 1961
2. Final Report: Toward Realization of Biological Computers. Heinz Von Foerster. December 31, 1963.

### NSF 17414

3. TR No. 1: Philosophical Comments on the Philosophies of Charles Sanders Pierce and Ludwig Wittgenstein, A. A. Mullin, August 1, 1961
4. TR No. 2: Linear Property Filters, Alfred Inselberg and Heinz von Foerster, July 1, 1962
5. TR No. 3: Threshold and Stability in Large Networks. W.R. Ashby, H. Von Foerster, C.C. Walker. December 1, 1962.
6. TR No. 4: Cybernetic Ontology. Gotthard Günther, April 1, 1962
7. TR No. 5: Discrete Two Dimensional Property Detectors. Douglas H. Taylor, April 15, 1962
8. TR No. 6: A Theory of Uniform Switching Nets. Lars Lofgren, May 1, 1962

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9. TR No. 7: The Set Theory of Mechanism and Homeostasis. W. Ross Ashby, September 1962
10. TR No. 8: Manually Operated Robot or Network. W. Ross Ashby and John K. Russell, July 1963 (*Digital Surrogate*)

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11. Final Report: Social Cybernetics and Computer-Based Communication Media. S.A. Umpleby, Valarie C. Lamont, G. Carter, J. Gilfillan, Deborah Melchi. June 1973

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13. Interim Report Phase 2: Cognitive Memory. September 15, 1970.
14. Quarterly Technical Progress Reports Nos. 1, 6-8: Cognitive Memory; An Epistemological Approach to Information Storage and Retrieval. December 15, 1967-October 15, 1969
15. Quarterly Technical Progress Report Nos. 10-11: Cognitive Memory. June 15, 1970

### W33-038-ac-14538

16. TR No. 3: Conduction Calorimeter Power Meter. April 27, 1951.

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  3. Günther, G.: "Die aristotelische Logik des Seins, und die nich-aristotelische Logik der Reflexion," Zeitschrift f. Philos. Forschung, 12, 360-407 (1958).
  5. Von Foerster, H.: "Basic Concepts of Homeostasis," in Homeostatic Mechanisms, Brookhaven Symposia in Biology, No. 10, U.S.A. Brookhaven Laboratory; Upton, New York, 216-242 (1957).

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  12. Mullin, A.A.: "The Present Theory of Switching and Some of its Future Trends," *Industrial mathematics*, 10 (2), 23-44, 1959-1960.
  16. Von Foerster, H., G. Brecher, & E. P. Cronkite: "Produktion, Ausreifund und Lebensdauer der Leukozyten" in *Physiologie und Physiopathologie der weissen Blutzellen*, H. Braunsteiner (ed.), Georg Thieme Verlag; Stuttgart, 118-214 (1959).
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  19. Ashby, W. Ross: "Computers and Decision Making," *The New Scientist*, Vol. 7, P. 746. 14 March 1960
  22. Ashby, W. Ross: "The Relativity of 'Meaning'," *Nature*, Vol. 187, No. 4736, p. 532 only, August 6, 1960.
  27. Mullin, A.A.: "A Concept Concerning a Set with a Binary Composition Law," *Trans. Illinois State Academy of Science*, 53 (3/4) 144-145 (1960).
  30. Mullin, A.A.: "More on Stochastic Models," *Science*, 132, 366 (1960).
  33. Von Foerster, H.: "On Self-Organizing Systems and Their Environments," in *Self-Organizing Systems*, M.C. Yovits & S. Cameron (eds), Pergamon Press, London, 31-50 (1960).
18. 33,37. *Self-Organizing Systems*, M.C. Yovits & S. Cameron (eds), Pergamon Press, London, 31-50 (1960).
19. BCL Publications 34 – 85, 1960-1962
34. Von Foerster, H. "Bionics Symposium: Living Prototypes – The Key to New Technology." Wadd Technical Report 60-600. 13-15 September 1960.
  - 35, 57, 59, 85. H. Von Foerster, P.M. Mora, L.W. Amiot. "Combined Population Papers. Doomsday" *Science Volumes* 132, 133, and 136. 1960-1962.
  39. Ashby, W.R. & J. Riquet: "The Avoidance of Overwriting in Self-Organizing Systems," *J. Theoret. Bio.*, 1, 431-439 (1961).
  40. Ashby, W. Ross. "Brain and Computer," 3<sup>rd</sup> International Congress on Cybernetics; Namur, September 11-15<sup>th</sup> 1961.
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  44. Ashby, W.R.: "What is an Intelligent Machine?" *Proc. Western Joint Computer Conf.*, Los Angeles, 275-280 (1961).
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  49. Mullin, A.A., and G.W. Zopf: "Remarks on Berkner's 'Can the Social Sciences be Made Exact?'" *Proc. of the IRE*, 49, 526 (1961).
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64. Ashby, W. R., H. Von Foerster & C.C. Walker: "Instability of Pulse Activity in a Net With Threshold," *Nature*, 196, 561-562 (1962).
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66. Ashby, W.R.: "The Self-Reproducing System" in *Aspects of the Theory of Artificial Intelligence: Proc. 1st International Symposium on Biosimulation*, C.A. Muses (ed.), Plenum Press, New York, 9-18 (1962).
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99. Ainsworth, W.A.: "Electrolytic Growth of Silver Dendrites", *Science*, 146, 1294-1295 (1964).
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