

CYBERNETICS

CIRCULAR CAUSAL AND FEEDBACK MECHANISMS
IN BIOLOGICAL AND SOCIAL SYSTEMS

Transactions of the Ninth Conference
March 20-21, 1952, New York, N. Y.

Edited by

HEINZ VON FOERSTER
DEPARTMENT OF ELECTRICAL ENGINEERING
UNIVERSITY OF ILLINOIS
CHAMPAIGN, ILLINOIS

Assistant Editors

MARGARET MEAD
AMERICAN MUSEUM OF NATURAL HISTORY
NEW YORK, N. Y.

HANS LUKAS TEUBER
DEPARTMENT OF PSYCHIATRY AND NEUROLOGY
NEW YORK UNIVERSITY COLLEGE OF MEDICINE
NEW YORK, N. Y.

Sponsored by the

JOSIAH MACY, JR. FOUNDATION
NEW YORK, N. Y.

TABLE OF CONTENTS

Josiah Macy, Jr. Foundation Conference Program: <i>Frank Fremont-Smith</i>	vii
A note by the Editors: <i>Heinz von Foerster, Margaret Mead, Hans Lukas Teuber</i>	xi
The Position of Humor in Human Communication: <i>Gregory Bateson</i>	1
Group Interchange	
The Place of Emotions in the Feedback Concept: <i>Lawrence S. Kubie</i>	48
Group Interchange	
Homeostasis: <i>W. Ross Ashby</i>	73
Group Interchange	
Discrimination and Learning in Octopus: <i>J. Z. Young</i>	109
Group Interchange	
Reduction of the Number of Possible Boolean Functions: <i>John R. Bowman</i>	120
Group Interchange	
Central Excitation and Inhibition: <i>Ralph W. Gerard</i>	127
Group Interchange	
Mechanical Chess Player: <i>W. Ross Ashby</i>	151
Group Interchange	
Turbulence as Random Stimulation of Sense Organs: <i>G. Evelyn Hutchinson</i>	155
Group Interchange	
Investigations on Synaptic Transmission: <i>Walter Pitts</i>	159
Group Interchange	
Feedback Mechanisms in Cellular Biology: <i>Henry Quastler</i>	167
Group Interchange	
Appendix I	
References	182