

"Potential Impact of Electrical Communication Theory
on Political Ideology"

by

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Dr. Frederick B. Wood an electrical engineer who has a hobby of studying sociological phenomena from a general systems point of view in which concepts which are isomorphic between physical and social phenomena are explored will speak on: POTENTIAL IMPACT OF ELECTRICAL COMMUNICATION THEORY ON POLITICAL IDEOLOGY. An exploration of how analogies from information theory can be useful in developing an ideology suitable for helping mankind make the transition from the Power Era to the Information Era, with power politics being replaced by a theory of human development.

This talk was also given to the Santa Clara Valley Chapter of the American Humanist Association in the latter part of October 1965.

A further development of this talk is given in SEPR No. 56-B.

The development of electronic information processing techniques used in radar, sonar, and related bombsight techniques tipped the balance in World War II in favor of the democratically oriented nations. This victory in favor of democracy signalled the entry of the human race into a new era -- the information or communication era. Marshall McLuhan proclaims it as the electronic age.(2) If this is truly a new era, we should expect the mathematics of communication theory to show us the form of significant features of the social structure of this new era. The mathematics of Information Theory and Cybernetics should give us the insights necessary to perceive abstract models of socio-logical development which could help us direct our political, economic and social activities toward maintaining the proper balance between order and diversity to maximize the growth of democratic institutions.

We examine one electrical communication theory model known as the continuous channel (an abstraction of a telegraph cable) and find that, if we substitute the probability of finding people and resources related to different political views for the probability of different signal voltages occurring on a telegraph line, and then use the mathematical formula for maximizing the transmission of information over the telegraph line as an operator on the probability distribution of political views tolerated in a given country, we find that by analogy we have a measure of what we might call "dynamic-justice" -- a measure of how well the country maintains a balance between order and diversity.

I. Marshall McLuhan, Understanding Media: The Extensions of Man.
N.Y.: McGraw-Hill Paperbacks (1965)

In contrast to the potential for growth of democratic institutions which I perceive, a number of others extrapolate the empirical observations to predict a deterioration of democratic institutions. As world energy production soars exponentially as is shown in Fig. 1, various analysts predict that the large scale organizations and the specialized control features required to produce and distribute such large amounts of energy on our planet will work against democracy. Clark Kerr in Industrialism and Industrial Man predicts an increasing conformity in human organization and Don Michael predicts the central control of government decision processes by an elite group of cyberneticians having intimate knowledge of computer technology and programming. (See Cybernation the Silent Conquest)

"End of Ideology" refers to ^{the} old generation of the 50's before "TV Children" hit college.

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IN WORLD WAR II THE ORGANISED
APPLICATION OF ELECTRICAL COMMUNICATIONS
THEORY AND TECHNOLOGY....

.... BROUGHT FORTH A FAMILY OF
RADAR SYSTEMS
WHICH BROUGHT THE DOWNFALL OF NAZI
AND FASCIST DICTATORSHIPS .

NEW APPLICATIONS OF ELECTRICAL
COMMUNICATION THEORY OFFER PROMISE
OF AIDING DEMOCRACY IN THE
STRUGGLE FOR EXISTENCE -----
--- THIS TIME ON A PHILOSOPHICAL
OR IDEOLOGICAL^{*} LEVEL INSTEAD OF
PHYSICAL WEAPONS

* For generations of humans brought up on Television,
the process of living at communication levels exceeding
normal channel capacity requires reading (or pattern recognition)

The method we can go about finding these new applications is the scientific method. I do not mean examining empirical trends and extrapolating them. What I mean by the "scientific method" is the development of "hypotheses" and defining ways to test the hypotheses. The method of examining empirical trends does not necessarily distinguish between natural trends due to change in quantity (size of organization) and conspiracies of power groups to maintain control of society or to prevent other groups from establishing control. It would be well to stop and review a little book by J. Browowski, Science and Human Values, to refresh our memory of the nature of science and its impact on human society.

We need to learn the difference between planned decisions to force conformity and statistical reactions of individuals to situations which favor conformity.

If we examine history on the right level, i.e., with enough derivatives in the Taylor (or MacLaurin?) series representation to lay bare the different systemic factors and decision factors. If we examine the role of the N.A.M. in 1947 in disabling democratic procedures in the U.S.A., we can find sufficient influence of specific decision factors to question the extrapolation of empirical trends.

Next we need a theoretical base for analysing the development of a country economically, including the degree of democracy in the system. Our first clue to finding analogies between different types of communication channels is to find the channel capacity curves (i.e., output information rate versus input information rate)

Fig. 2A shows the channel capacity curves for a neuron, visual nerves, individual, group, and social institution. Fig. 2B has the scale extended to include electrical communication systems.

The External Similarity of the

Input - Output Curves of these different phenomena are indicative of potential analogies, but alone are not sufficient.

In addition we must look for some internal or structural similarity. For example are there similar NEGATIVE FEEDBACK LOOPS in all these systems?

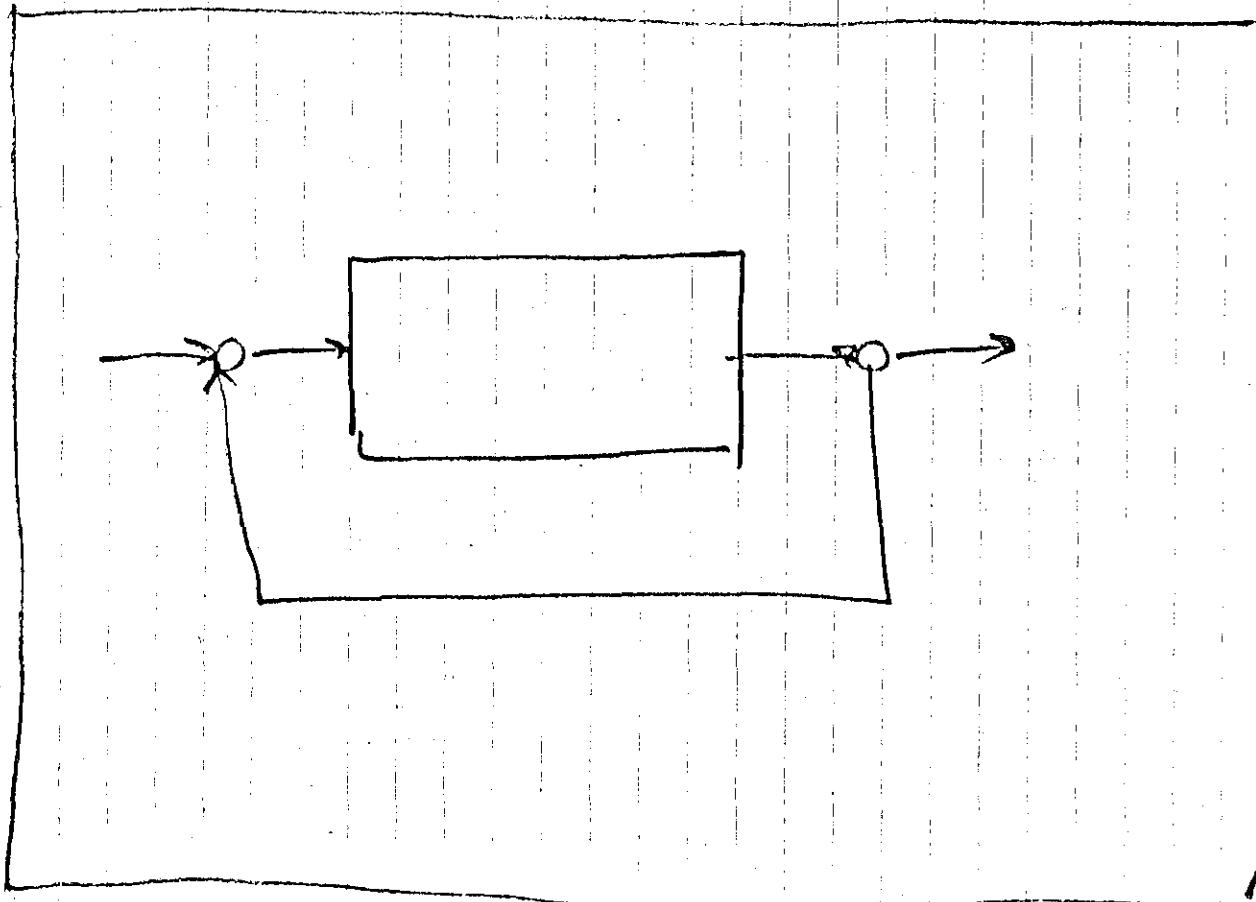


Fig 3. Negative Feedback Amplifier

For a more up-to-date analysis see
David Easton, A Systems Analysis of Political Life
N.Y.: Wiley (1965)

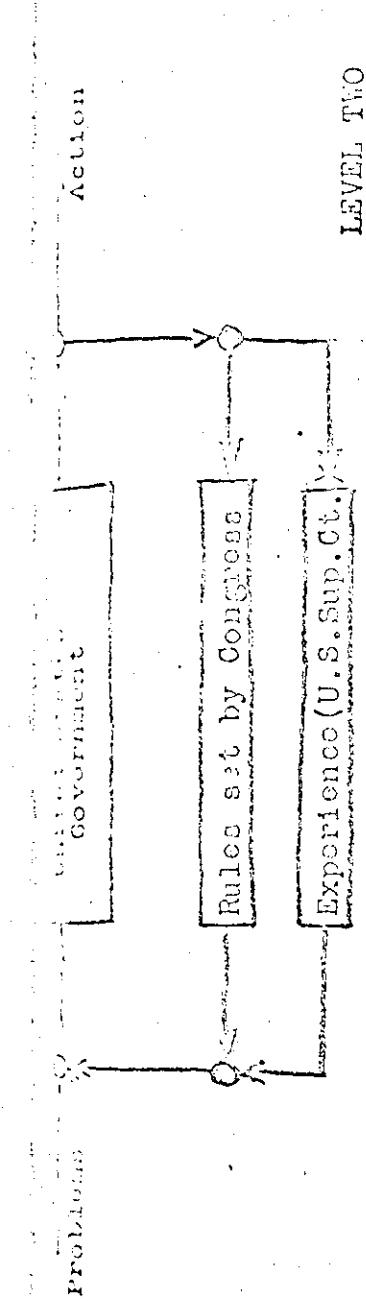


FIG. 4. Negative Feedback Circuit Representation of United States Government (Executive Department).

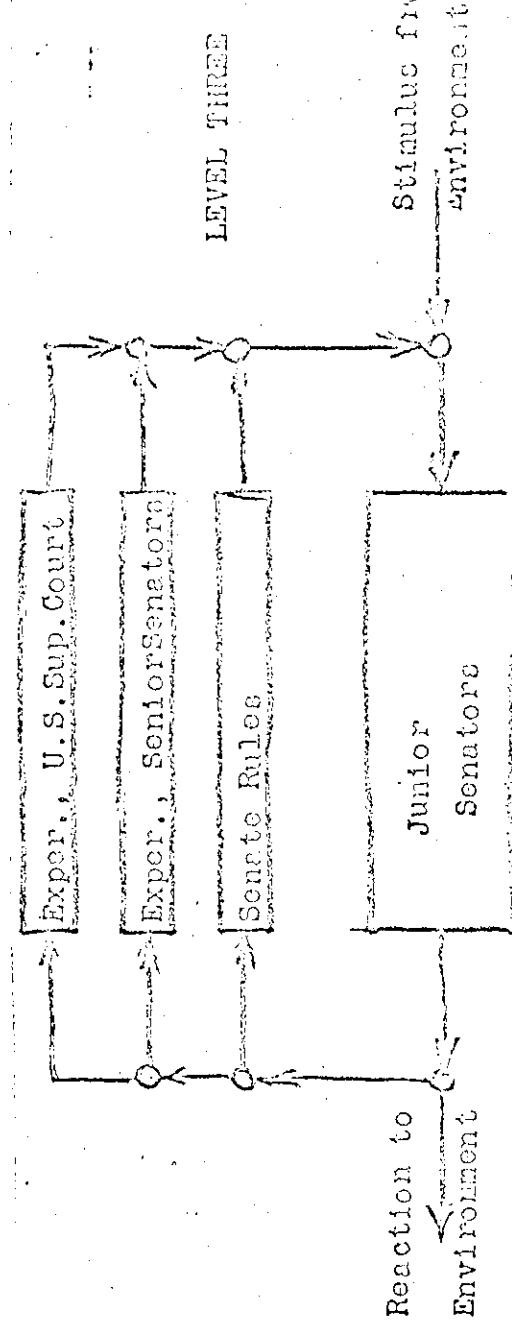
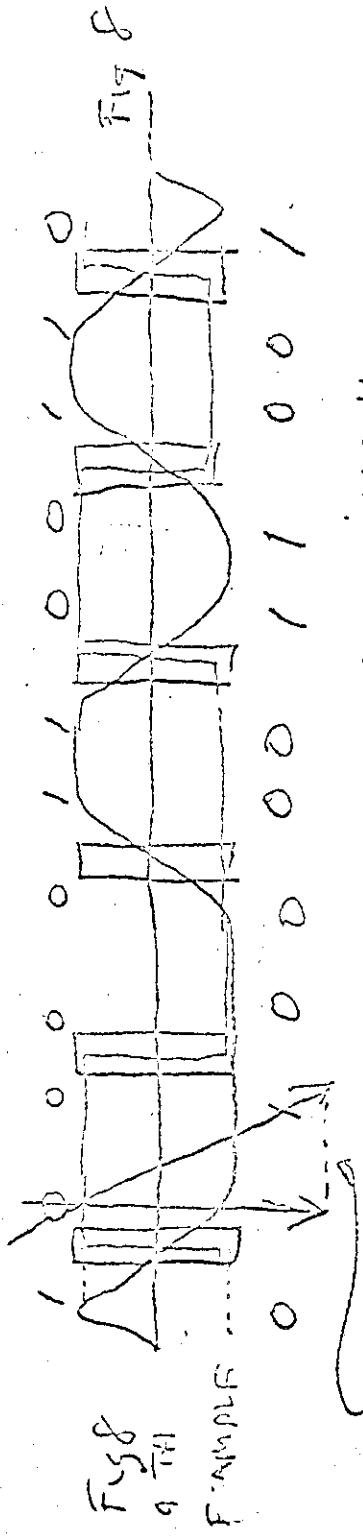


FIG. 5. Feedback Circuit of Staggered Terms in U.S. Senate.

CHARACTERISTICS OF ELECTRONIC BRAIN CONTROL (COMPLEXITY CIRCUITS)	PHILOSOPHICAL COMPRESSIVE CODING
* D. & K. Stanley-Jones (1965) <u>Kybernetics of Natural Systems</u>	REDUNDANCY SEMANTIC CODING
	COMM-FREE GENETIC CODES
	TELEGRAPH AND COMPRESSIVE CODING

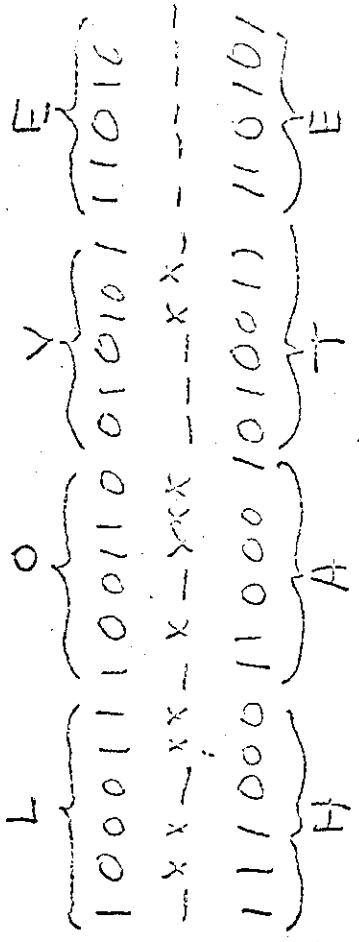
ACCEPT ON FORM: A PATH TOWARD A UNIVERSE
Fig. PRINCIPLE IN SCIENCE AND LIFE.

- 11 -



DEPENDENCE UPON TIMING OF CLOCK

WE HAVE	1 BIT	OUT OF	12	CORRECT
	1	6	8	
	BIT	BIT	BIT	



(X) ERRORS → $x - \bar{x} = x - \bar{y} + \bar{y} - \bar{x}$

~~Fig 7~~
Fig 7

Consider measurement of internal degree of "democracy". See SEPR 88-B for details.

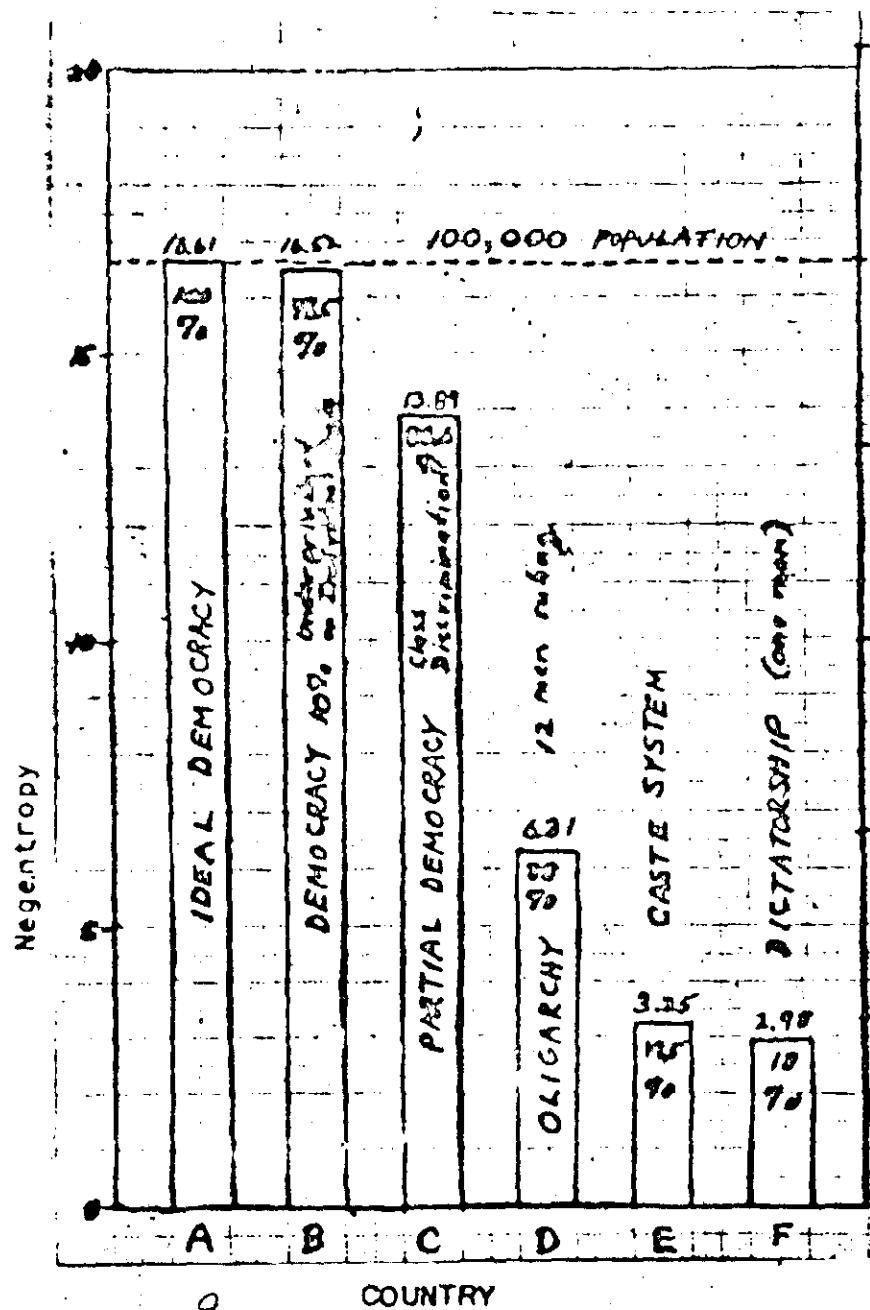


Fig. #. Comparison of the Negentropy of Six Hypothetical Countries.

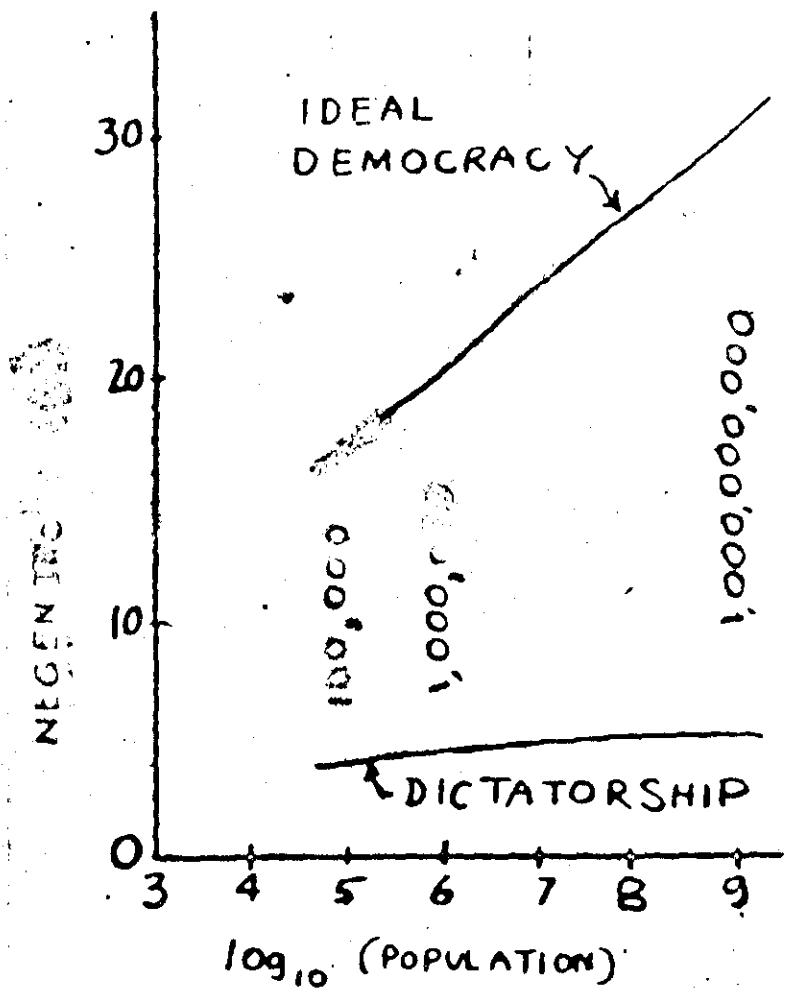


Fig. 12. Variation of Negentropy with Population for Ideal Democracy and for Dictatorship.

Consider dynamic justice of a political system.

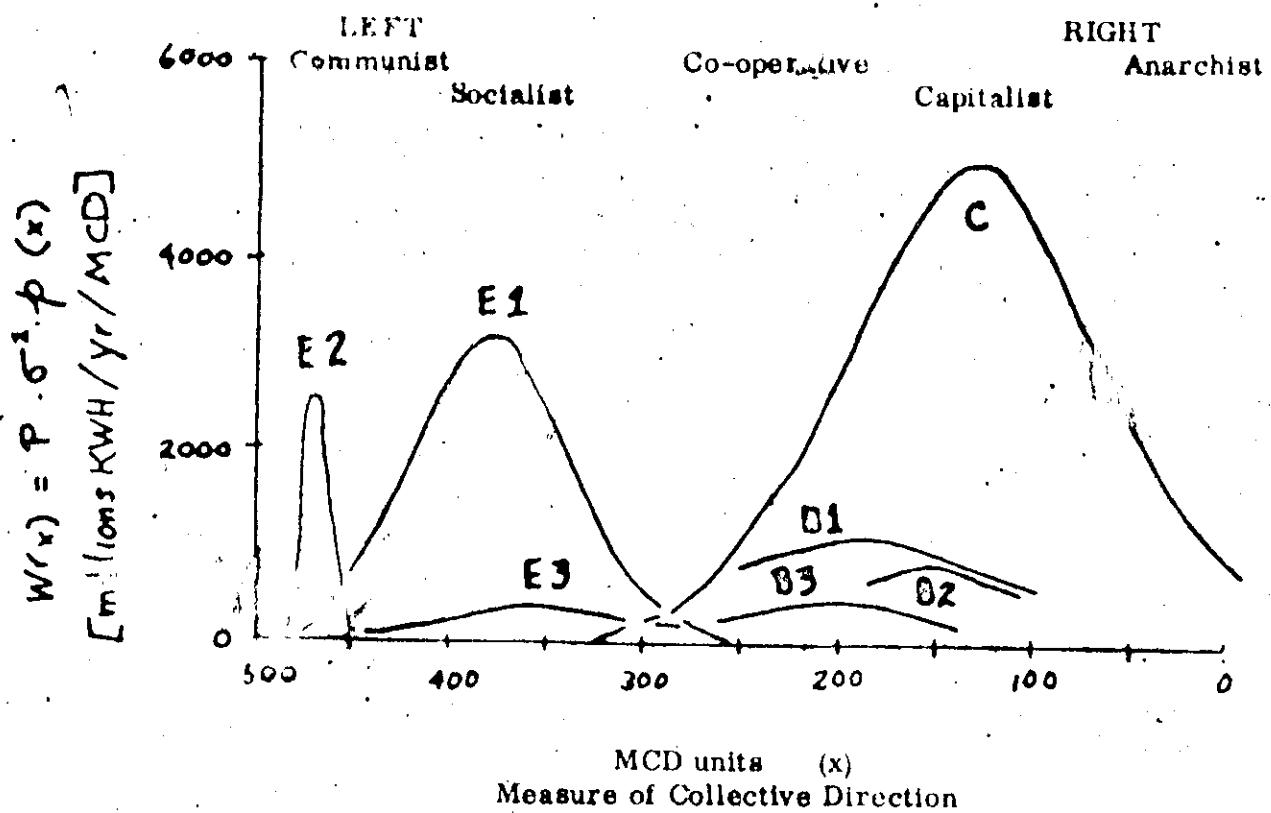


Fig. 15. Ideal Distribution Curves of Power versus Political Ideas for Some Hypothetical Countries.

Consider "preserving the tails" of probability distribution as essential to human freedom and development of creativity:

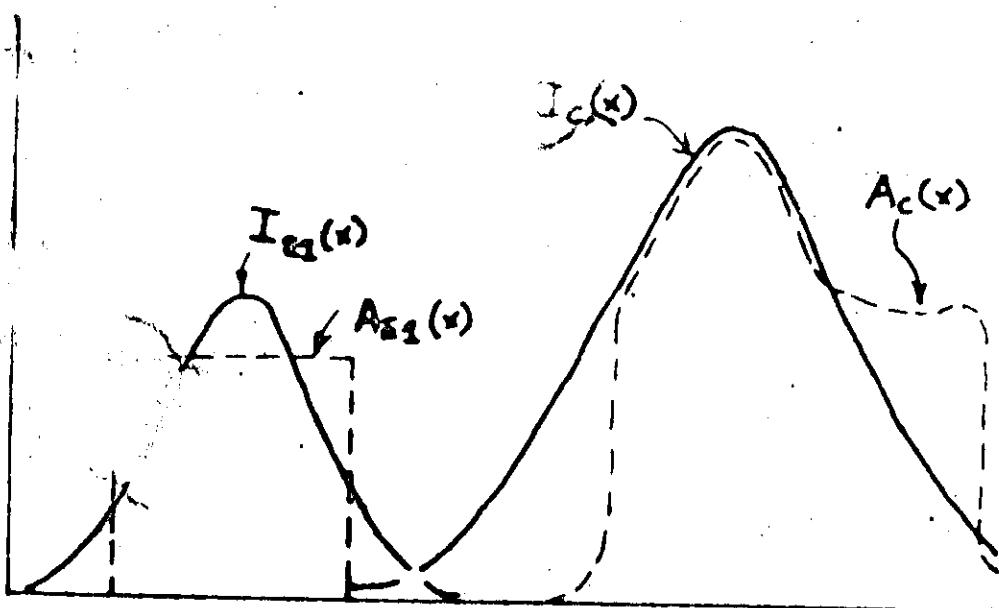


Fig. 14. Examples of Hypothetical Actual Power versus Political Ideas ($A(x)$ vs. x) Which Depart from Ideal Curves ($I(x)$ vs. x).

Testing of Hypotheses in respect to
Corresponding Era (Force, Power, or Communication)
A List of hypotheses (rows) and
criteria (columns).

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WICKED MAKES RIGHT

REVOLUTIONARY GUERRILLA WARFARE LIFE CYCLE OF CIVILIZATIONS ...

**MARXIST EVOLUTION
TOWARD SOCIALISM
STRUGGLE BETWEEN
CAPITALISM & COMMUNISM
ESCALATION OF POWER**

THE NUCLEAR WAR
STRATEGIES
ECONOMIC GROWTH
THEORY & INDUSTRIALISATION ..
TRAGIC DILEMMA
THEORY
WORLD LAW THROUGH
LEADING POWER

WORLD LAW THROUGH
COMMUNICATION
THERMODYNAMIC IMPERATIVE
=DISCRETE CHANNEL MODEL
THERMODYNAMIC IMPERATIVE
=CONTINUOUS CHANNEL MODEL
THERMODYNAMIC IMPERATIVE
=CYBERNETIC FEEDBACK
THERMODYNAMIC IMPERATIVE=NON-
PROBABILISTIC & 'FUZZY' SETS
PACIFIST ETHICAL ACTION

Allocation of scarce

- 1. Library Shelf Space
 - 2. Public Bulletin Boards
 - 3. Meeting Space in Center
 - 4. Availability of Computing Service

Measure of Democracy

- Monitoring of Economic
Development
Dynamical-Justice

Population Control (x)

Birth Control

Evaluation of Alternative Military Policies

**Conditions of
Disarmament**
Ethical
Principles
Political

**Susceptibility to Democratic
Public Understanding &
Usefulness in Developing
a Strategy**

The image displays a 4x4 grid of 16 blank ledger pages. Each page is organized into two main sections: a header and a body. The header section at the top contains four horizontal lines, with the top-most line being slightly taller than the others. The body section below it contains five horizontal lines. The entire grid is defined by thick black lines, creating a clear structure for each page. The pages are arranged in a simple, systematic layout.

Notes:

- (1) Discuss method of judgement of developing countries such as
Cuba
Chinese People's Republic
- (2) Also possible check on errors in socialist development such as J. Stalin's dictatorial procedures.
- (3) Consider Rosa Luxemburg's criticism of Lenin - and its translation into negentropy.
- (4) Henry Adams concept of entropic history.

SOCIO-ENGINEERING PROBLEMS REPORT NO. 56-A

Date: 9/12/65 10/8/65 10/17/65 4/24/66 1/29/67

Stage: Outline Talk Talk Part to Notes
Berkeley San Jose SEPR Collected
Unitarian Humanist 56-B

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