

A Working Paper Draft  
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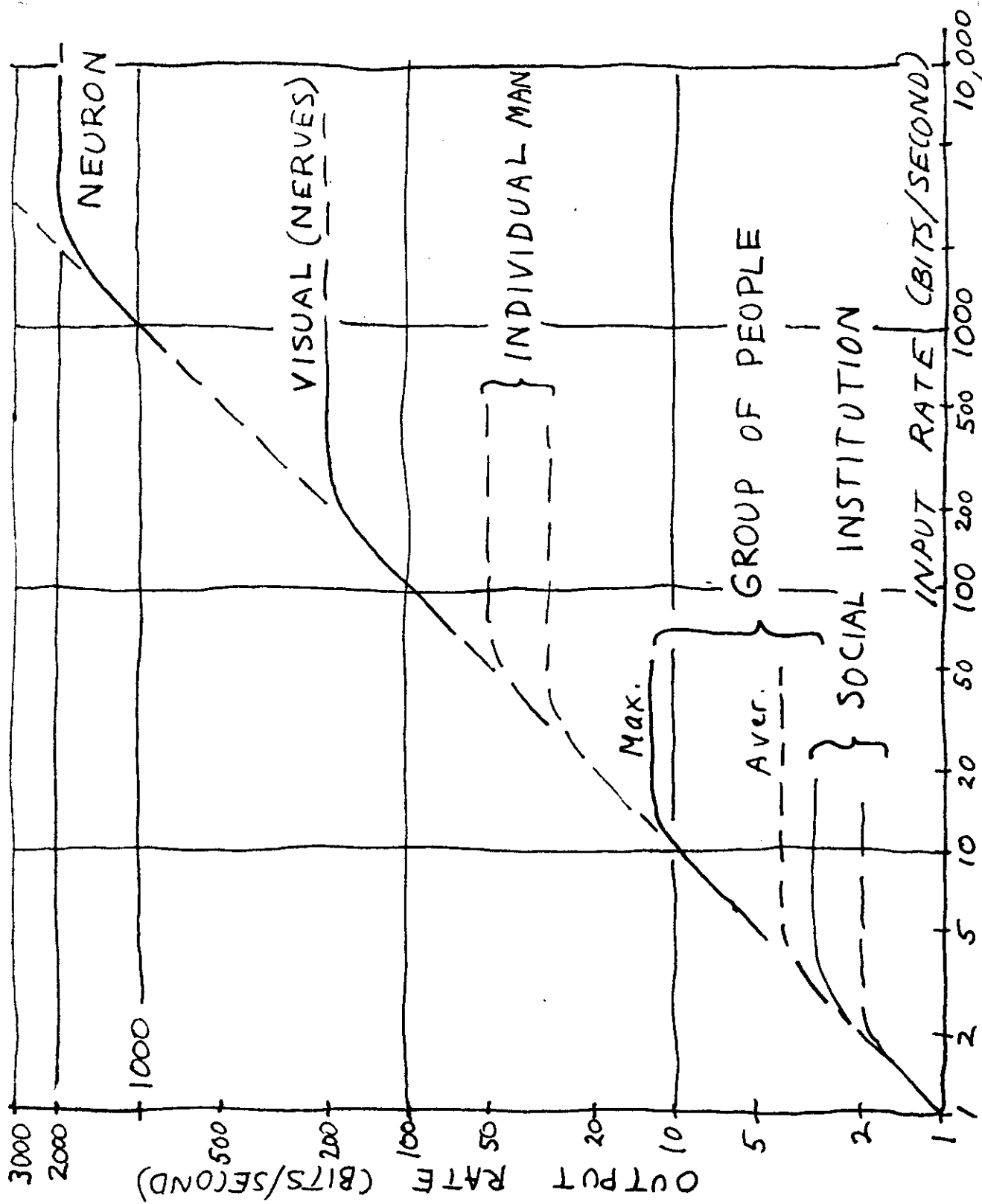
## SOCIO-ENGINEERING PROBLEMS NO. 83

"COMMUNICATION THEORY in the Cause of MAN,  
Part III: Information Theory & Engineering Sociology"

8. Channel Capacity
  - 24) Telephone Wire
  - 25) Different Speeds
  - 26) LOVE → HATE
  - 27) Line Channel Capacity
  - 28) Human Channel Capacity
  - 29) Neuron -- Social Institution
9. Ideology as a Coding Problem
  - 30) Ideology
10. Distribution of Negentropy in Political Organizations
  - 31) Entropy - Discrete
  - 32) Continuous Distribution
  - 33) Entropy of membership statistics
11. Balance of Obligations and Rights -- Organization and Freedom.

5-17-62

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## IDEOLOGY AS A CODING PROBLEM:

- (1) PEOPLE IN MODERN INDUSTRIAL SOCIETY ARE PUSHED BEYOND THEIR "CHANNEL CAPACITY."
- (2) EARLIER GENERATIONS FOUND CODING TECHNIQUES TO SIMPLIFY THEIR CONCEPT OF "NATURE."

(a) "LOST SYMBOLS" OF MIDDLE AGES.

(b) UNIFYING FORCE OF EARLY SCIENCE.

(c) SIMPLIFYING STRUCTURE OF "IDEOLOGIES":

(1) SOCIALISM

(2) MARXISM

(3) KORZYBSKI'S DREAM  $\equiv$  GENERAL SEMANTICS

(3) WHAT SYMBOLS OR CODING SYSTEM WILL BE USED IN THE NOOSPHERE?

CATEGORIES : CLASS

DISTANCE I ✓ II ✓

MASS ✓

ELECTRIC FORCE ✓

ENTROPY ? ? ?

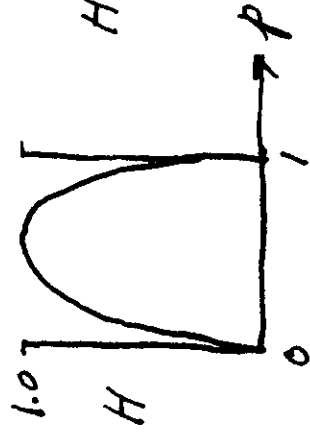
BEAUTY ✓

MELODY ✓

MAXIMIZING NEGATIVE ENTROPY AND EVOLUTION

CASE	PROBABILITIES				H
	$p_1$	$p_2$	$p_3$	$p_4$	
A	0	0	0	1	0
B	0	0	$\frac{1}{4}$	$\frac{3}{4}$	1.09
C	0	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	1.5
D	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	2.0

$$\text{ENTROPY} = \sum_{i=1}^m p_i \log_2 p_i$$



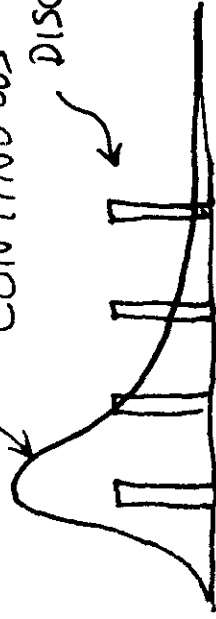
$$H = - \sum_{i=1}^2 p_i \log_2 p_i$$

CASE D:  $p_i = \frac{1}{m}$   
DISCRETE CASE

CONTINUOUS PROBABILITY DISTRIBUTION MAY BE  
 CLOSER REPRESENTATION OF SOCIAL ORDER.  
 PARTICULARLY WHERE BALANCE OF HUMAN NEEDS  
 MUST BE OBTAINED, SUCH AS:

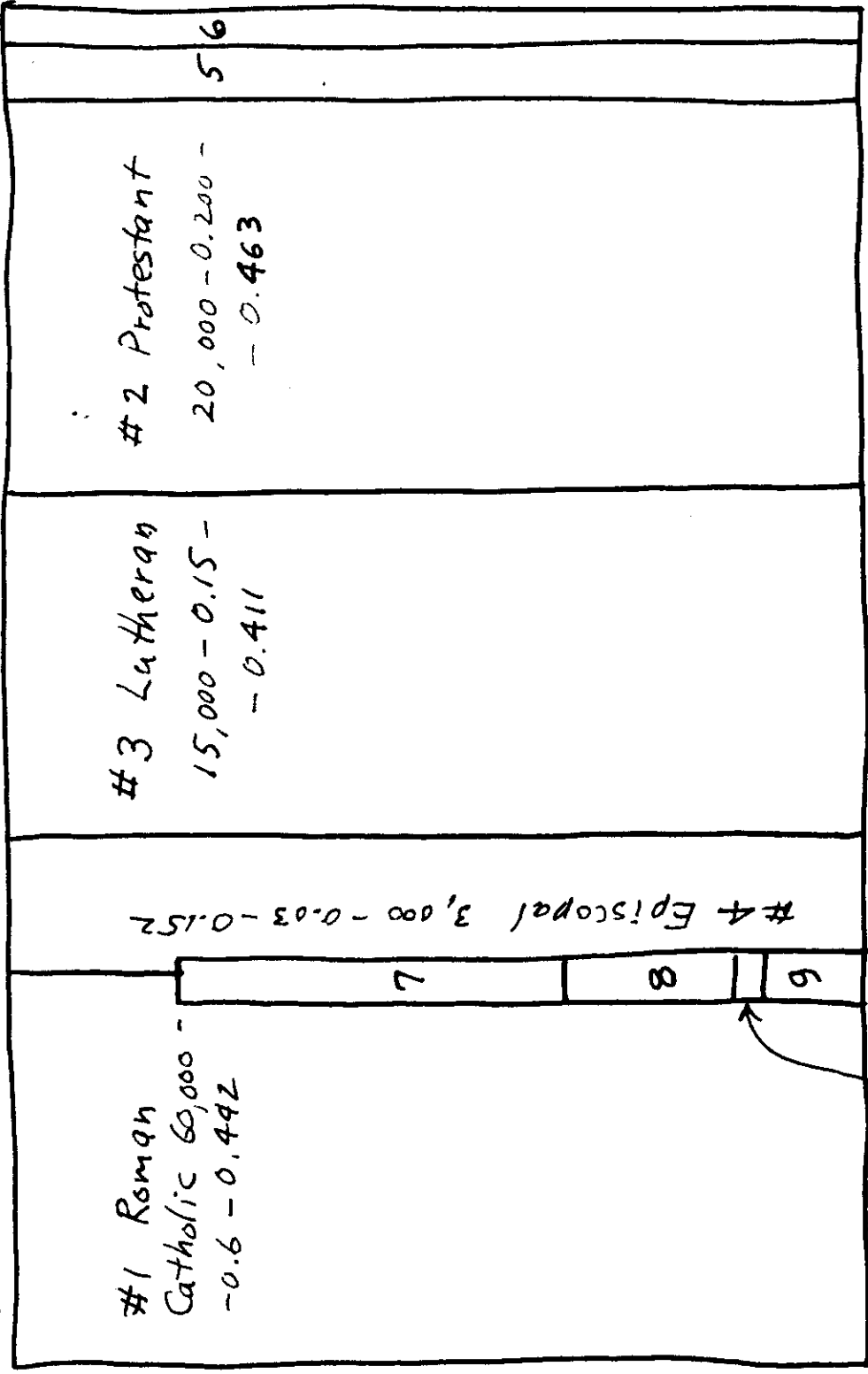
ORDER	LIBERTY	OBEDIANCE
RESPONSIBILITY	EQUALITY	HIERARCHISM
HONOR	PUNISHMENT	FREEDOM OF
SECURITY	RISK	OPINION
PRIVATE PROPERTY		TRUTH
COLLECTIVE PROPERTY		ROOTS
LOVE		

GAUSSIAN PROBABILITY CURVE FOR  
 CONTINUOUS CASE.  
 DISCRETE PROBABILITIES.



p1 p2 p3 p4

#7 Unitarian 230 - 0.0023 - 0.0202 #5 No Church 1,000 - 0.01 - 0.0665  
 #8 Jewish 100 - 0.001 - 0.00996 #6 Buddhist 600 - 0.006 - 0.0443

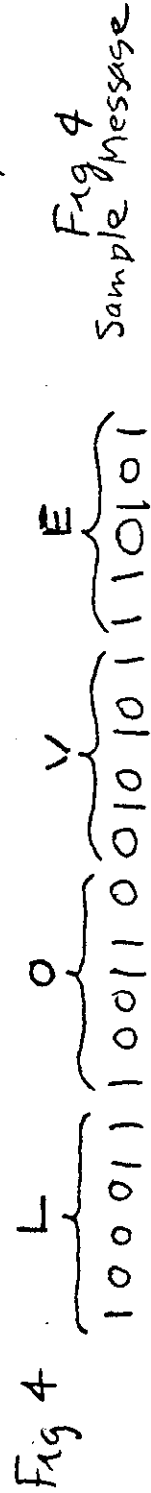
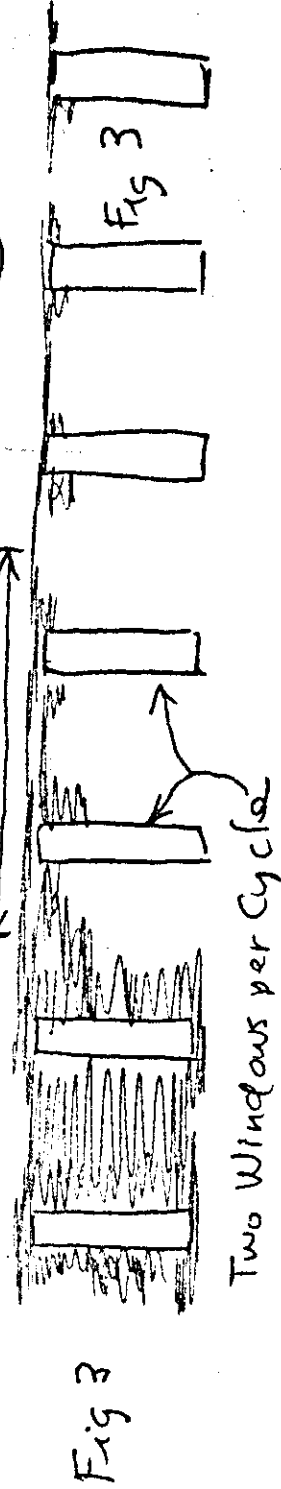
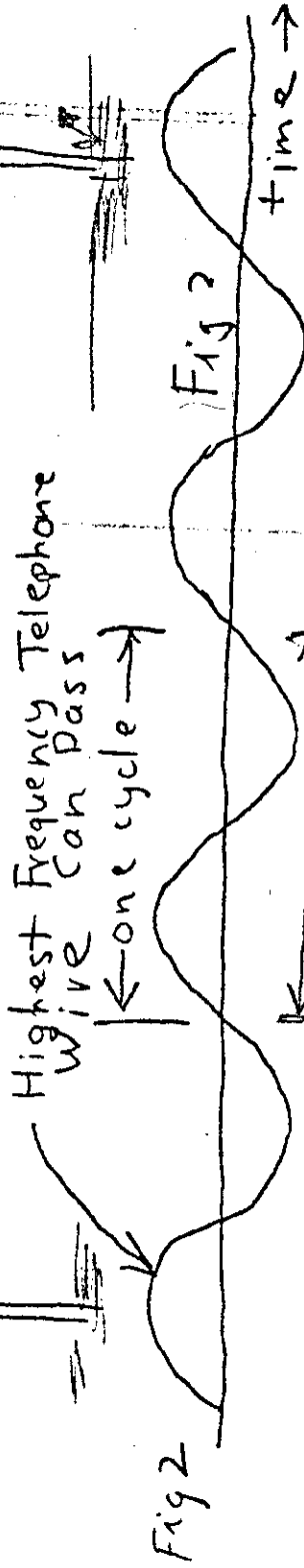
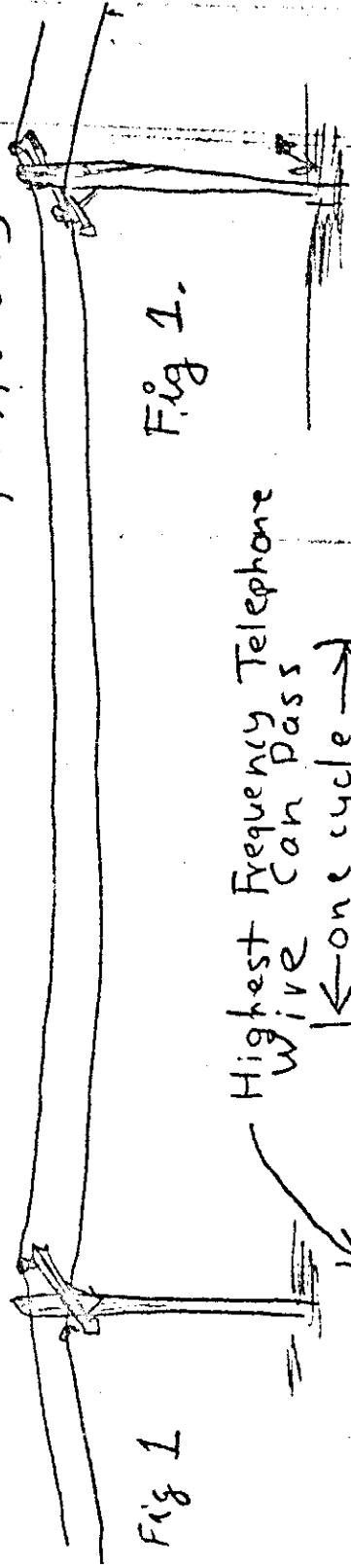


#10 Ethical Culture 10 - 0.0001 - 0.00133 H = 1.6167  
 #9 Eastern Orthodox Catholic 60 - 0.0006 - 0.0064

TELEPHONE WIRE

BINARY (YES-NO) CHANNEL CAPACITY

$$C \text{ (bits/sec)} = 2 \cdot B \text{ (bandwidth in cycles/second)}$$



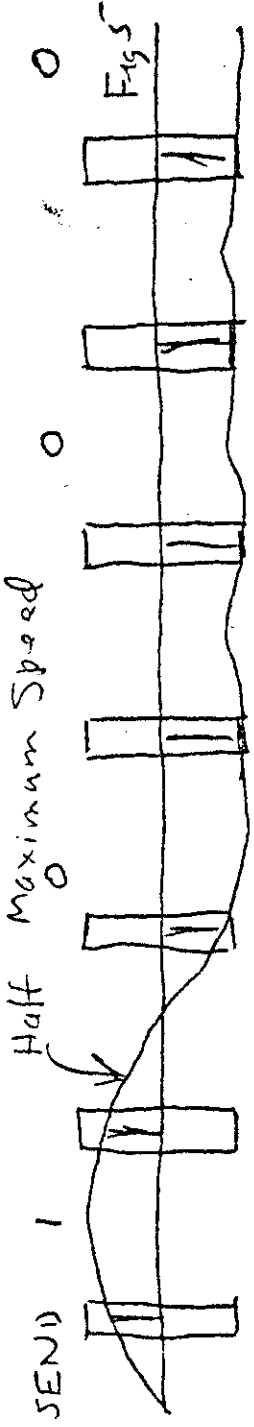


Fig 5  
1st  
EXAMPLE

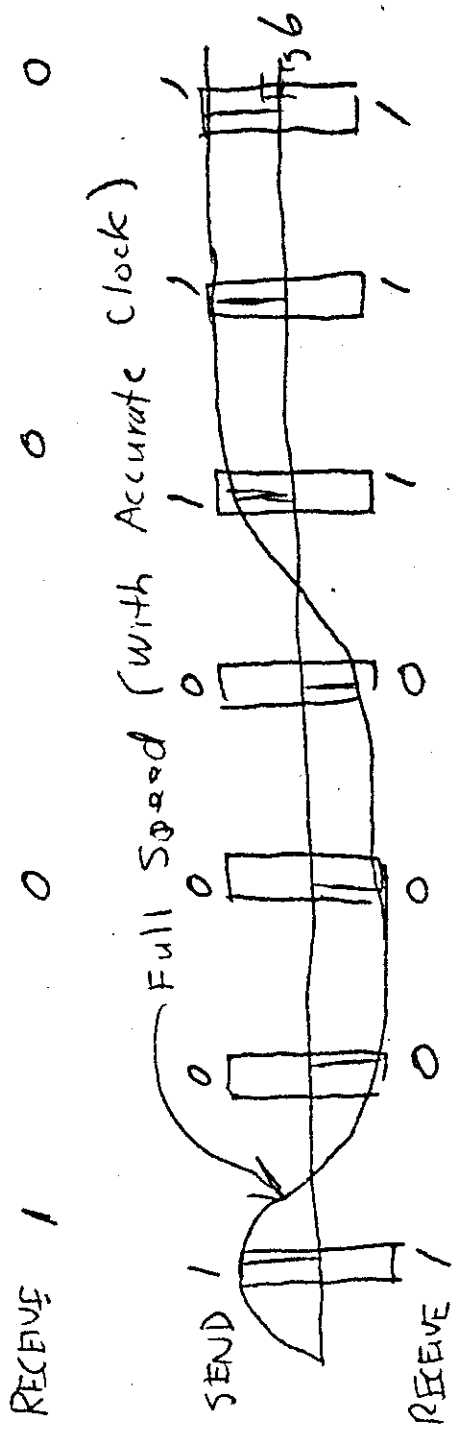


Fig 6  
2nd  
EXAMPLE

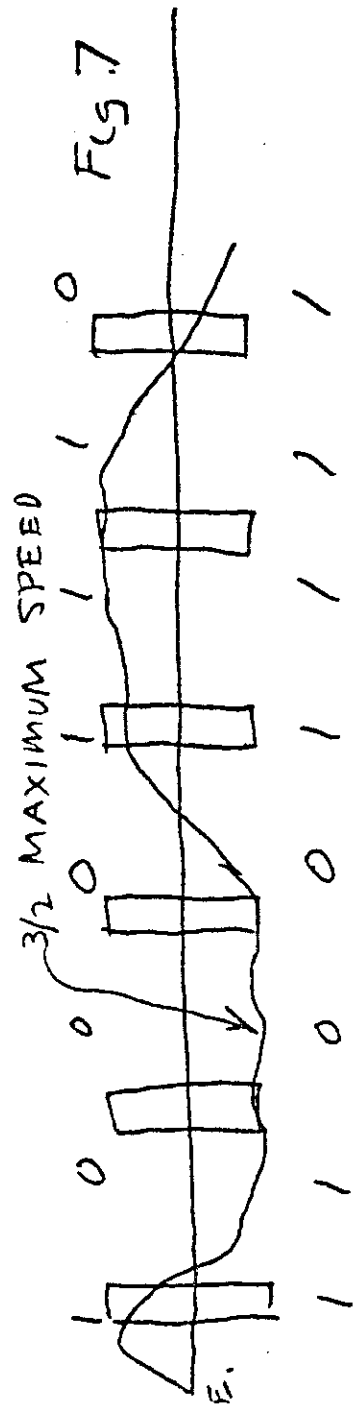


Fig 7  
3rd  
EXAMPLE



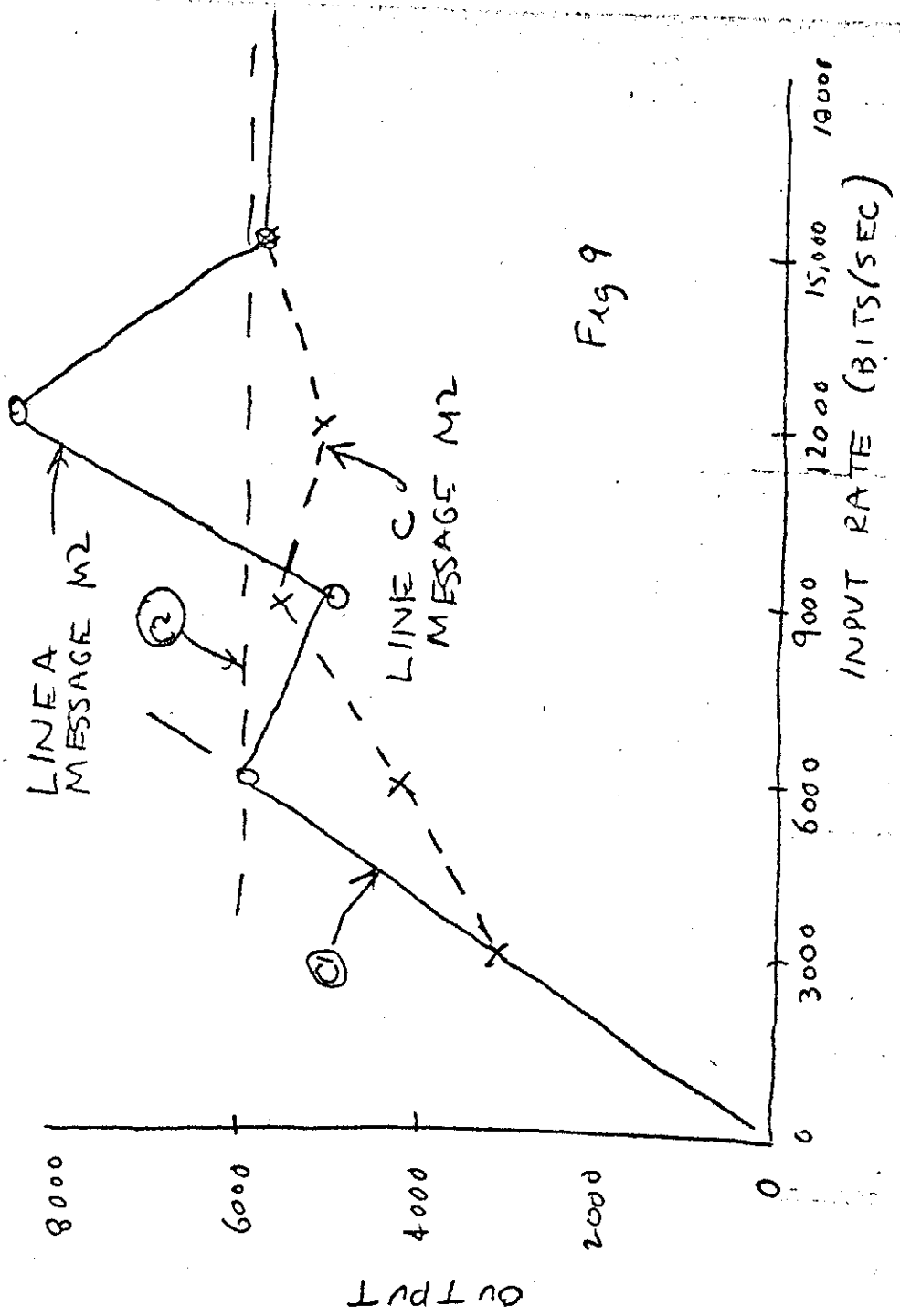


Fig 9

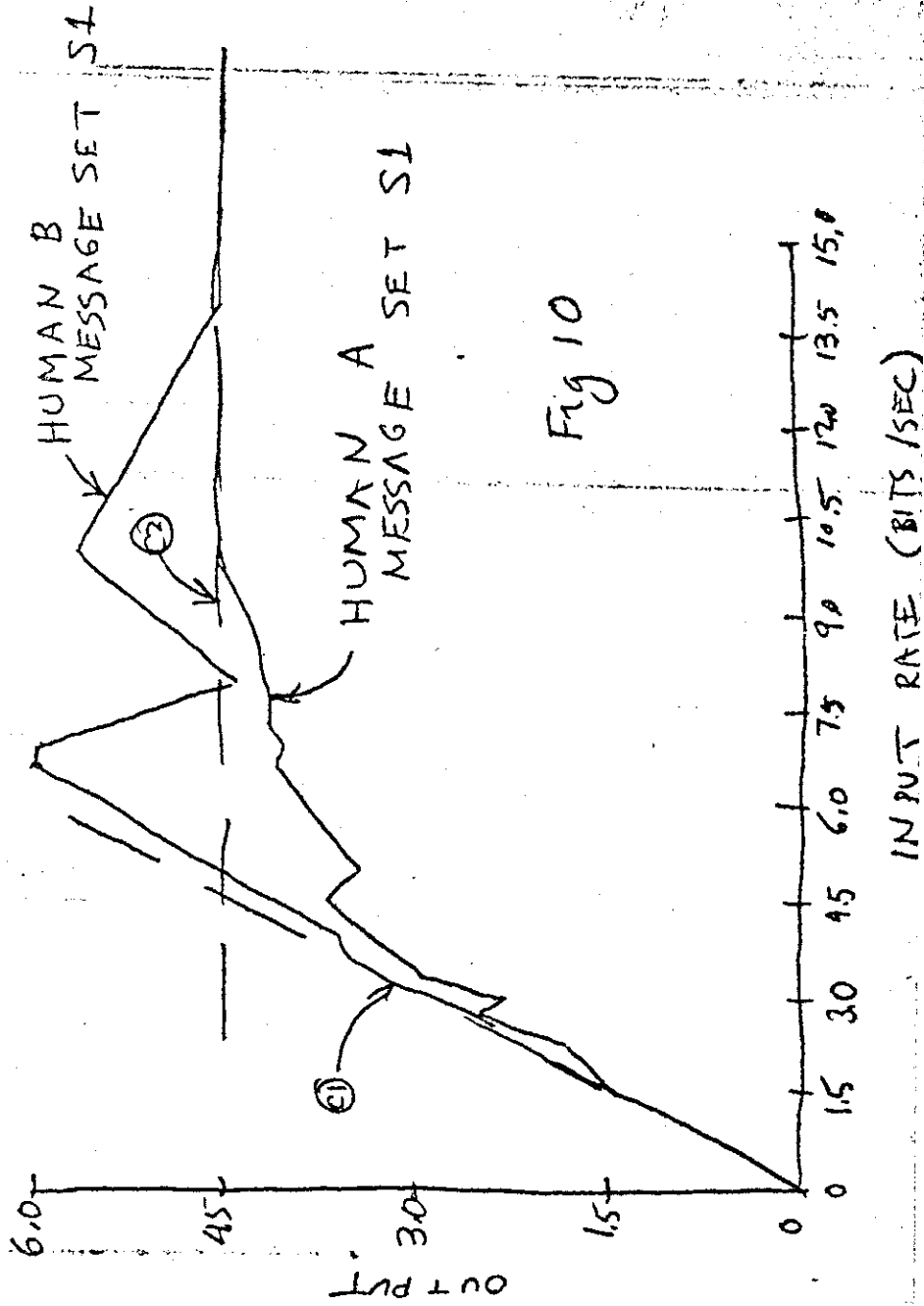


Fig 10

JAMES G. MILLER, AMER. JOUR. PSYCH/ATRY  
 116, FEB. 1960, P.P. 695-704.