Research of Anomalous Mental Phenomena
Proof-of-Principle and Protocols

by

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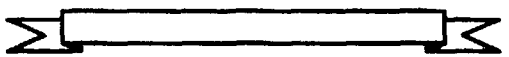
30 March 1993



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BRIEFING OBJECTIVE

- PROVIDE RETROSPECTIVE VIEW OF EVIDENCE FOR PROOF-OF-PRINCIPLE
- PROVIDE DETAILED PROTOCOL FOR REPLICATION

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BRIEFING OUTLINE — I

- DEFINITION OF TERMS
- SCHEMATIC PROTOCOL FOR A SINGLE TRIAL
  - — Three Examples of Data
- ANALYSIS
  - — Rank-order Tests
  - — Fuzzy Sets
- RETROSPECTIVE VIEW
  - — Statistical Criteria
  - — Literature Reviews

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BRIEFING OUTLINE — II

- REQUIREMENTS FOR REPLICATION
  - Power Analysis
  - Personnel Selection
  - Target Pool Selection
  - Trial Protocol
  - Analysis/Control
  - Criteria for "Success"
  - Estimated Person-Hours

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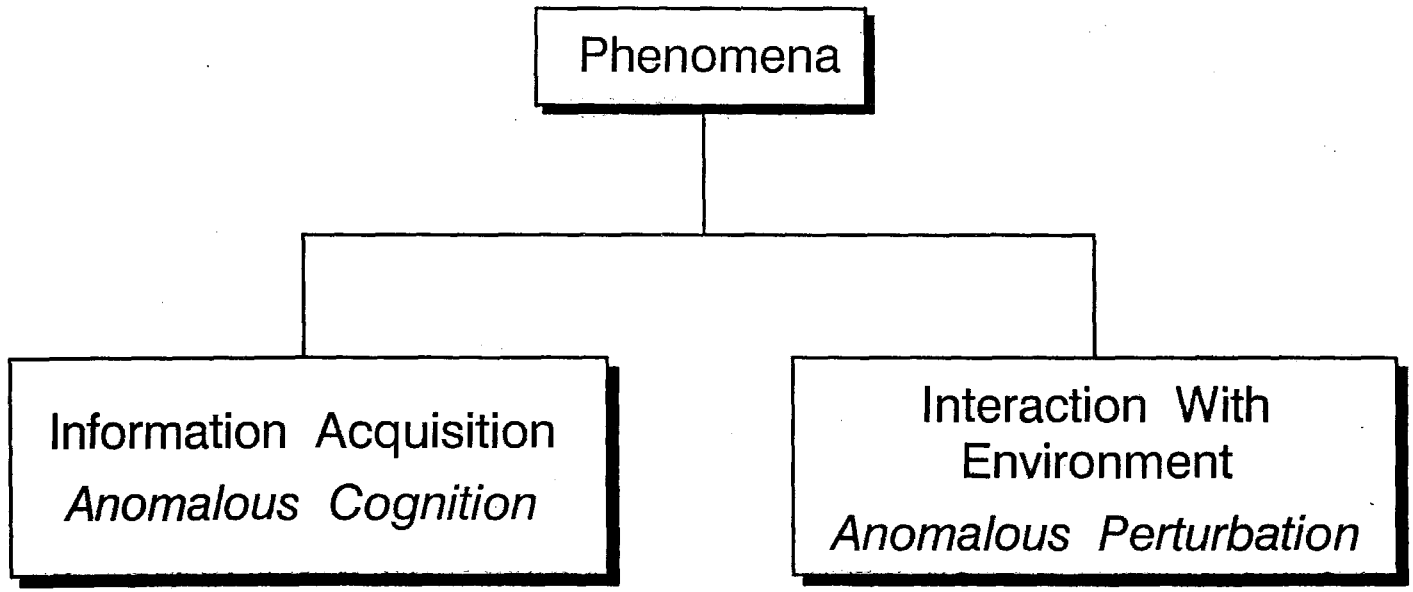
ANOMALOUS MENTAL PHENOMENA



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ANOMALOUS COGNITION — A DEFINITION

- ANOMALOUS COGNITION. A form of information transfer in which all known sensorial stimuli are absent. That is, some individuals are able to gain access, by an as yet unknown process, to information that is not available to the known sensorial channels.

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RESEARCH MATERIALS — SINGLE TRIAL

- TARGET
  - — Outdoor Scene (e.g., Golden Gate Bridge)
  - — Photographs (e.g., Paris)
  - — Physical Object (e.g., Feather)
  - — Geometric Shape (e.g., Star)
  - — Symbol (e.g., 7, H)
- RESPONSE
  - — Written/Drawn
  - — Audio/Video Tape
- ANALYSIS
  - — Fuzzy Sets
  - — Rank Order

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SINGLE–TRIAL SESSION PROTOCOL (Schematic)

TIME	EVENT
10:00	Monitor and Receiver are Sequestered
10:05	Assistant Randomly Selects One Photograph From a Set of 100
10:10	Session Begins
10:25	Session Ends
10:30	Raw Data is Copied and Secured: Target is Obtained
10:35	Response and Intended Target are Discussed with Receiver

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NOVICE RECEIVER (R177) — RESPONSE

target

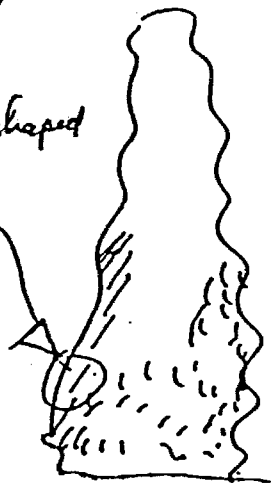
- Spherical
- smooth/rounded

break

target

- tall cone shaped
- fuzzy
- tree

Out and down @ broader at the bottom



break

end of session

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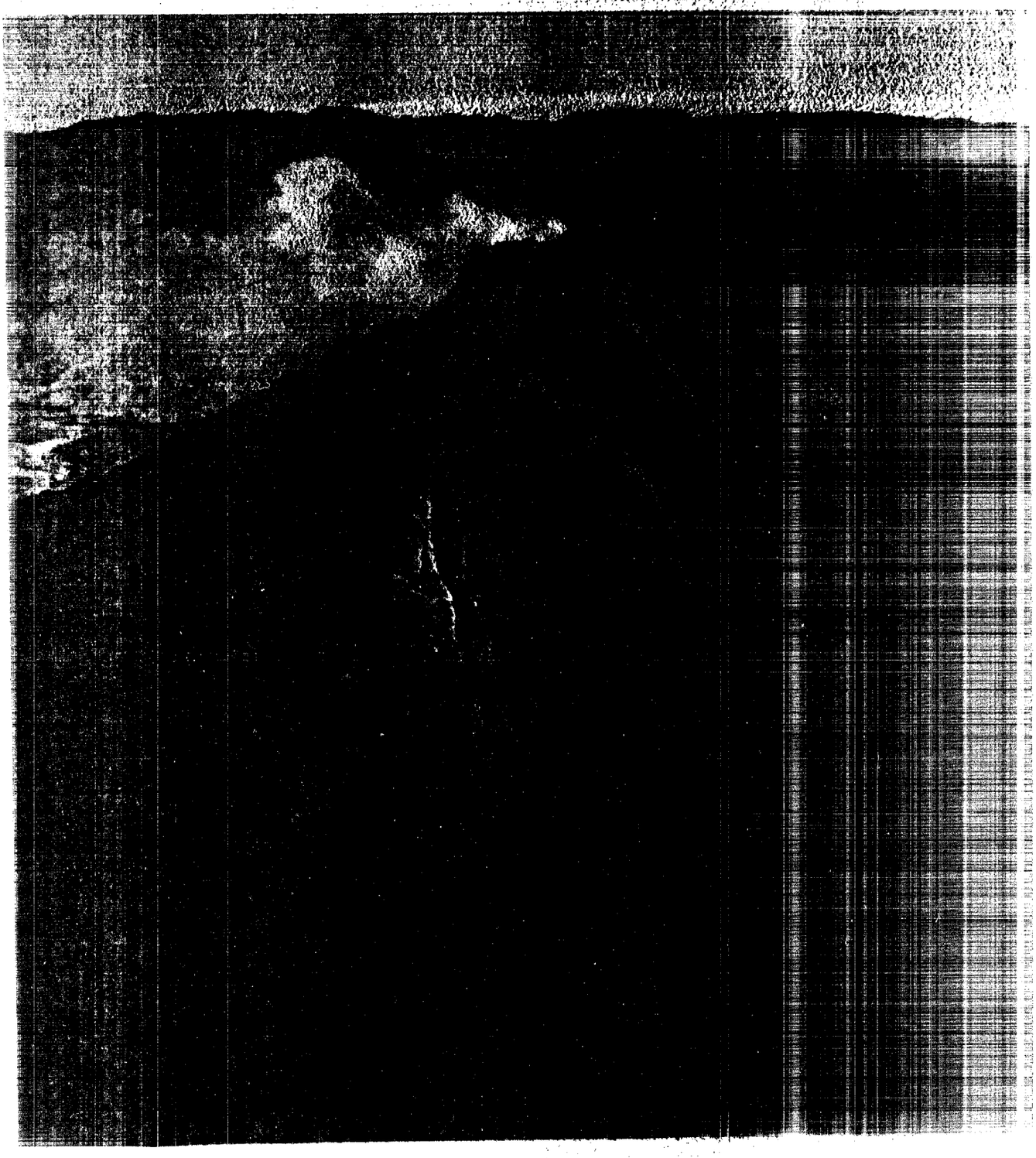

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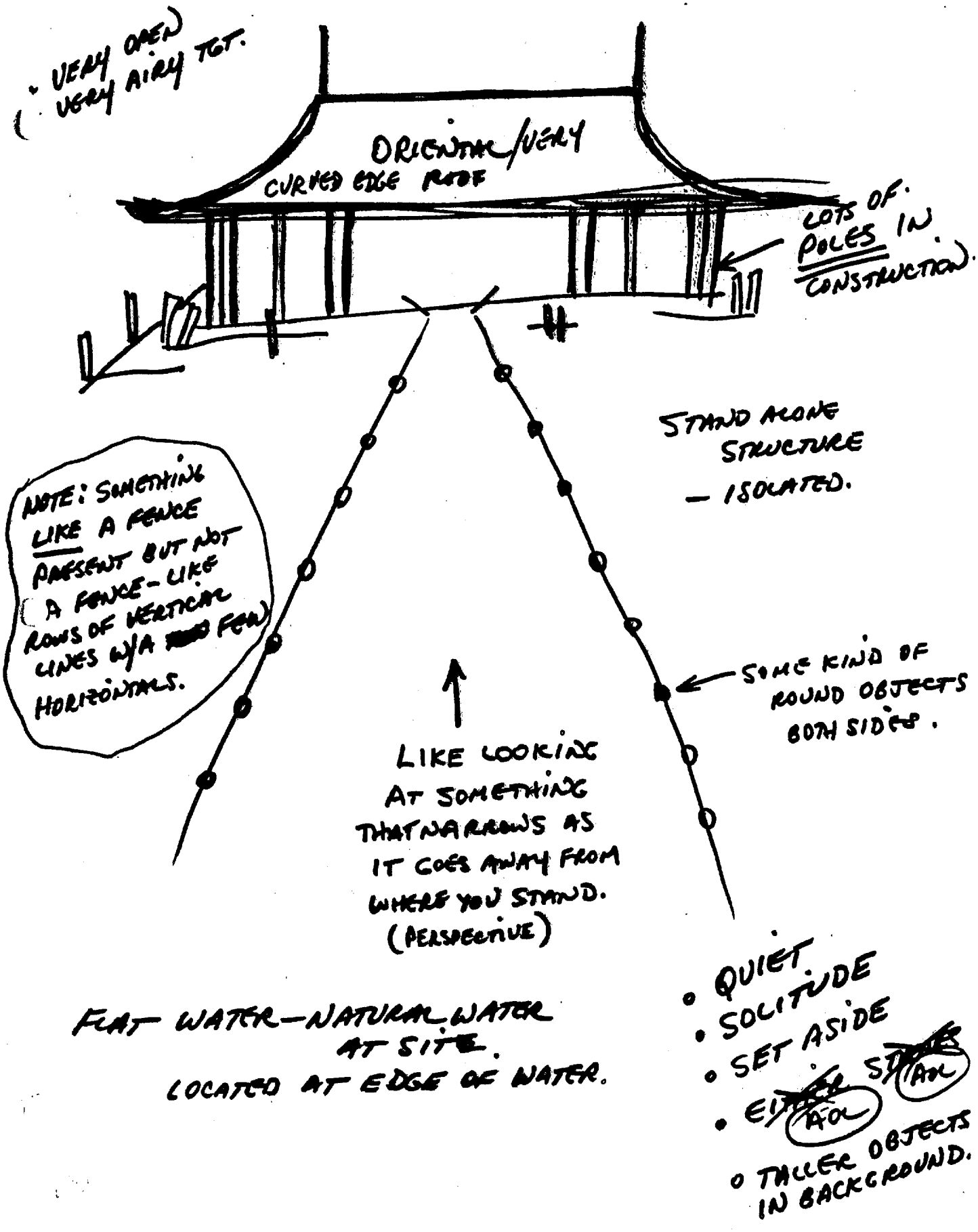

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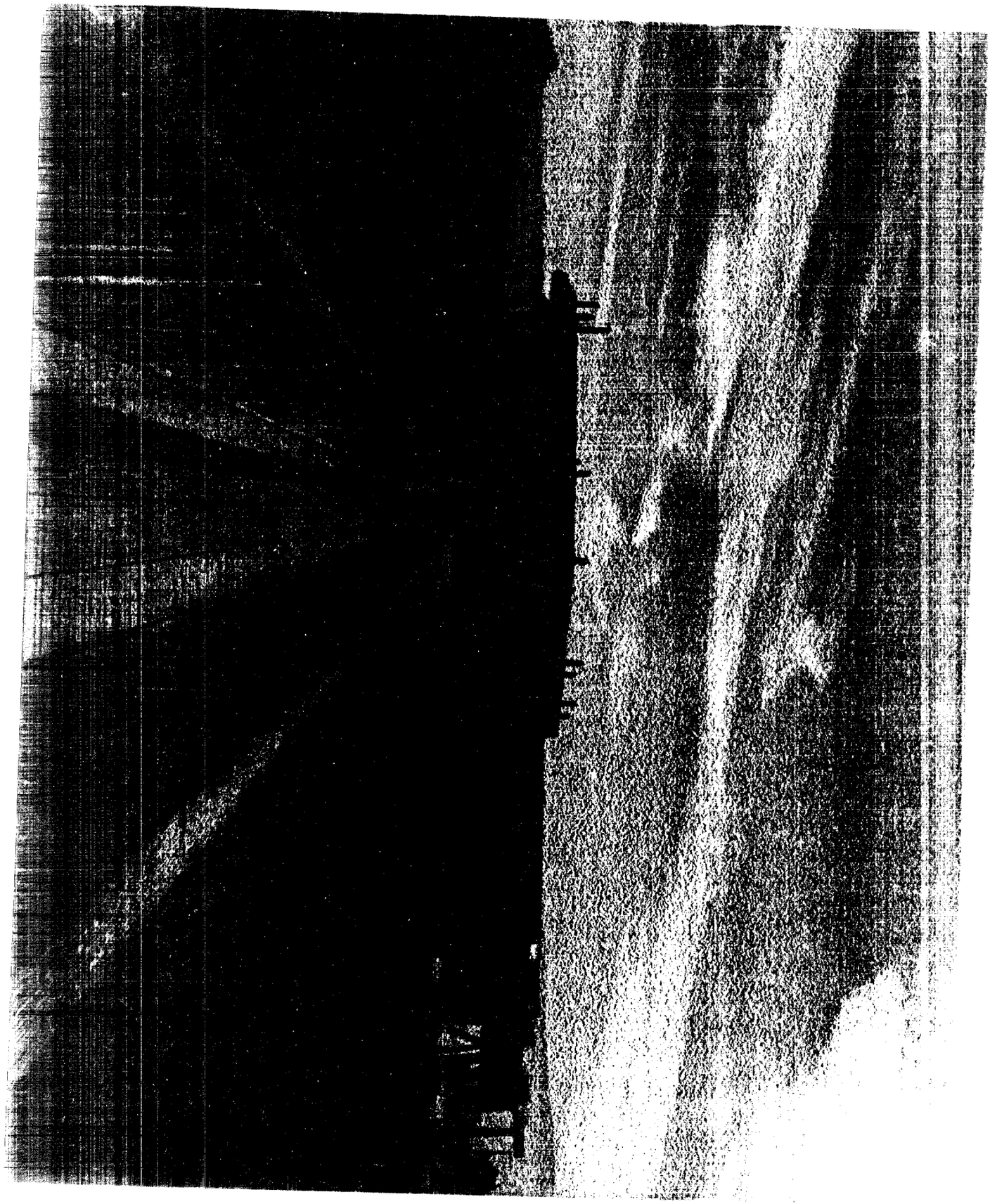

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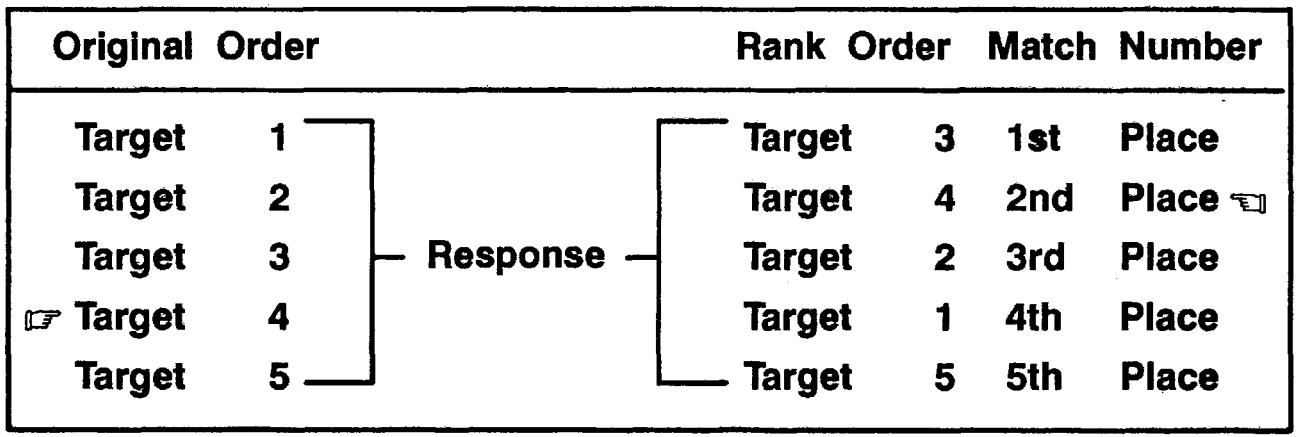
RANK-ORDER ANALYSIS OF A SINGLE AC RESPONSE

- THE TARGET WAS SELECTED *RANDOMLY* FROM 100
  - —20 Packs of 5 Targets Each — Pack Chosen First
  - —Given the Pack, the Target is Randomly Chosen
    - This particular pack contains the target and 4 non-targets (Decoys).
- ANALYST'S TASK
  - —Rank-order the 5 Photographs in the pack from the Best to the Worst Match to the Given Response



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FUZZY SET ANALYSIS OF A SINGLE AC RESPONSE

- 100 TARGETS PREVIOUSLY CODED AS FUZZY SETS OF VISUAL ELEMENTS
  - — Intended Target is Selected Randomly
- RESPONSE IS CODED AGAINST THE SAME UNIVERSAL SET
- COMPUTATIONS (i.e., Normalized Fuzzy Intersections)
  - — Accuracy: The Percent of the Target which is Described Correctly
  - — Reliability: The Percent of the Response which is Correct
  - — Figure-of-Merit (FM): Accuracy $\times$ Reliability
- FMs ARE COMPUTED FOR ALL 100 TARGETS AND ORDERED
- PROBABILITY VALUES ARE DETERMINED BY LOCATION OF THE INTENDED TARGET'S FM IN THE LIST

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RETROSPECTIVE: STATISTICAL CRITERIA — I

- CONSIDER THE FOLLOWING TWO EXPERIMENTS
  - — Coin Flips(1): n=500, Heads=275

$$Z = \frac{2\left(Heads - \frac{n}{2}\right)}{\sqrt{n}} = 2.24,\ p \leq 0.01$$

  - — Coin Flips(2): n=250, Heads=138

$$Z = 1.58,\ p \leq 0.06$$

- COMBINED RESULTS
  - — n=750, Heads=413

$$Z = 2.78,\ p \leq 0.003$$

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RETROSPECTIVE: STATISTICAL CRITERIA — II

- EFFECT SIZE (ES)
  - — Coin Flips(1): n=500, Heads=275, Z=2.24, $p \leq 0.01$

    $ES = \frac{Z}{\sqrt{n}} = 0.10$

  - — Coin Flips(2): n=250, Heads=138, Z=1.58, $p \leq 0.06$

    $ES = 0.10$

  - — Combined Results: n=750, Heads=413, Z=2.78, $p \leq 0.003$

    $ES = 0.10$

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LITERATURE REVIEWS (META-ANALYSIS)

- ANOMALOUS COGNITION — COMPLEX TARGETS
  - — H. E. Puthoff and R. Targ, *Proceedings of the IEEE, 1976*
    - o n=39, ES=1.13±0.16, Z=7.06, $p \leq 8.5 \times 10^{-13}$
  - — I. L. Child, *American Psychologist, 1985*
    - o n=83, ES=0.51±0.11, Z=4.61, $p \leq 2.0 \times 10^{-6}$
  - — D. J. Bem and C. Honorton, *Psychological Bulletin, 1993*
    J. M. Utts, *Statistical Sciences, 1991*
    - o n=355, ES=0.20±0.05, Z=3.73, $p \leq 9.6 \times 10^{-5}$
- ANOMALOUS COGNITION — SYMBOL TARGETS
  - — C. Honorton and D. C. Ferrari, *Journal of Parapsychology, 1989*
    - o $n \approx 2 \times 10^{6}$, ES=0.020±0.002, Z=10, $p \leq 8 \times 10^{-24}$

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