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SENSORY TECHNOLOGY ASSESSMENT (U)

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I OBJECTIVE

The purpose of this program is to provide a basis for assessing psychoenergetic processes as an advanced threat technology that could be developed by the USSR. This study is to determine the state of the art and to evaluate application feasibility of developments in this area.

II SUMMARY OF SIGNIFICANT ACTIVITIES

A. Long-Distance Communication of Binary Symbols

It has been difficult in the field of psychoenergetics to obtain reliability in the simple task of sending a message consisting of similar elements, such as Zener cards or binary digits. However, we instituted a procedure at the suggestion of consultant Swann that has been remarkably productive.

The experiment is one in the communication of binary symbols via psychoenergetic channels. The baseline is New York City - SRI Menlo Park.

To overcome the boredom factor generally associated with repeating target symbols, such as 0110101001..., the binary symbols used here as in the form of a sequence of word pairs (sun/moon, many/few ....), picture pairs (☼/☾, ❁/☻....), and word/picture pairs (star/☆, moon/☾ ....). The target pair is changed for each trial, and the particular element of the target pair (e.g., whether sun or moon in the sun/moon target pair) is determined by random number generator.

The protocol involves an SRI experimenter (H.P.) calling subject Il shortly before the experiment is to begin. To carry out the experiment, the SRI phone is set in a speaker phone cradle, beside which is a button-operated door chime, a random number generator (RNG function on a Texas Instruments SR-51 hand calculator), and tabulation sheets. The subject calls out one of the dichotomy pairs (e.g., sun/moon words). The experimenter then enters the RNG to obtain a two-digit random number (00-99), the last digit of which, being odd or even, is taken to represent 1 or 0, respectively. The particular pole of the dichotomy indicated is drawn from a vertical-slot file and displayed on a desk in front of the experimenter. At this point the chime is sounded and the subject makes a call, to which the experimenter responds verbally with the correct target which is then recorded on the tabulation sheet along with the subject's call. The subject then calls out another dichotomy and the procedure is repeated.

To date, the results are as follows. Altogether, 218 trials have been carried out, of which 61% (133) were hits (3.25 σ, $p = 5.8 \times 10^{-4}$, or odds of 1700:1). Of the three categories of target pairs (word pairs, picture pairs, word/picture pairs), all were independently significant where the latter yields the highest hit rate. In this category, 37 trials haye been carried out, of which 76% (28) were hits (3.13 σ, $p = 8.7 \times 10^{-4}$, or odds of 1150:1).

It appears, therefore, that the best procedure found to date for binary communication consists of a sequence of non-repeating concepts (sun, moon, star, outside, many, near, etc.), where for each the binary dichotomy (0,1) is word/picture.

B. Mini-Computer Automated Communications Experiment

As described in previous reports, we have initiated an automated communications experiment of the following type. Sender and receiver are each seated before a console that has a circular display of numbers 1 through 10. The two consoles are located in separate buildings. A button push at the sender's console initiates access to a random number generator in a mini-computer, which then illuminates one of the numbers on the sender's console, and turns on a "ready" light on the receiver's console. With the sender concentrating on the illuminated digit on his console, the receiver scans his unlit panel of numbers until he thinks he knows the answer, at which time he presses a button below the number of his choice. At that point the correct digit is illuminated on his panel to give him immediate feedback. The sequence is then repeated.

The mini-computer automatically records all data (trial number, target/response pair) and, at the end of a session, calculates and displays on video the cumulative hits, pattern of spatial displacements (how far around the circular display the receiver's choice was from the correct target), and pattern of temporal displacements (whether subject was ahead or behind in time with regard to the target sequence). All data are recorded on magnetic tape for later analysis.

Since the automated communications device has been operational, over the last two months we have carried out a number of sessions, both to familiarize ourselves with operation of the equipment and to find subjects capable of high scoring. Progress toward both goals is off to an excellent start.

To date 12 subjects have carried out a total of 375 trials. By chance alone we would expect 1 out of 10, or 37.5 hits; we have observed 52 direct hits, which has a probability of $p = 0.006$ (odds of 167:1), so overall we are getting significant instances of psychoenergetic communication.

A further breakdown of the above scoring is necessary, as some of the subjects are novices, while some were selected as having shown ESP ability in previous tests. Three subjects who had shown ability in earlier remote viewing experiments scored as follows: one has obtained 6 hits in 38 trials to date ($p = 0.17$, or odds of 5.9:1), which is encouraging; one has obtained 5 hits in 39 trials to date ($p = 0.35$, or odds of 2.9:1, as well as especially interesting displacement patterns, also encouraging; and one, to our surprise, has obtained only 4 hits in 52 trials, along with no other evidence (such as spatial or temporal displacement hits) of orientation to the test. Finally, the

the subject most extensively worked with to date has shown 26 hits in 160 trials ($p = 0.004$, or odds of 250:1). The results are therefore encouraging at this point, and we will continue to collect and analyze direct hits, as well as spatial and temporal displacements.

C. Abstract Targeting

One of the tasks of principal interest in this program is to define what is necessary for target acquisition (e.g., cooperative target person at site, names, maps, pictures, various coordinate systems, etc.). In two experiments last year we made tentative headway on this problem by examining the extent to which a subject in the laboratory could describe the remote location of a person not known to him. In those experiments the subject had only the driver's license of the outbound target individual. In both these trials, the subject gave excellent descriptions of the remote location, and in one case gave an accurate character sketch of the outbound person.

In an effort to quantify this apparent tracking ability, given only a photograph of an unknown person, we carried out a series of five trials in cooperation with an experimenter at the University of Chicago. The experimenter supplied us with a photograph of herself, and set out for a ten-day trip through the Midwest. On each of five days, our subject in Los Angeles made a tape recorded description of where he thought the person in the photo would be, one hour hence; that is, the experiment was of the precognitive remote viewing type. (Other laboratories in different parts of the country were attempting to track the outbound experimenter in present time.)

The five trials by our subject are to be blind matched by judges in Chicago, who are experienced in rank-order matching on the basis of other remote viewing experiments carried out by the Chicago group.

The outbound experimenter called to give us feedback as to her subjective assessment of the transcripts. She felt that three of the subject's descriptions of her activities would be matched as direct hits, with one of them being the most accurate remote viewing description she had ever seen. ("It is as though the subject was sitting in my lap the whole time.") The remaining two transcripts had matchable elements, but were of lesser quality. The formal judging will be completed during November, and will be reported next month.

D. Mini-Computer Based Random-Event Generator Experiment

As indicated in earlier monthly reports, a class of experiments that have been extensively reported in the psi literature* are those

*C. Honorton, "Replicability, Experimenter Influence and Parapsychology," paper presented to the annual meeting of the AAAS in Washington, D.C., 1978.

that involve alleged human/machine interaction with electronic random-event generators. In these experiments, digital electronic noise derived either from a thermal noise source or from the decay of a radioactive material is monitored while a subject attempts to alter the statistical properties of the noise distribution. The usual protocol involves providing visual and audio feedback signals, proportional to various statistical parameters, to a subject who is asked to concentrate upon the feedback signals and to alter them in a prescribed way. We have completed the design stage for a mini-computer based investigation of this phenomenon with the goal of constructing a psychoenergetic "switch."

With the aid of $15K additional funding from the sponsor, we were able to finalize the hardware specifications for the mini-computer portion of the random-event generator. A purchase order has been placed for a Digital Equipment LSI-11 packaged laboratory system which includes a sufficient number of input/output channels to monitor not only the random process in question, but also a number of environmental parameters. The mini-computer also includes sufficient software, disk storage and memory to be useful as a stand-alone developmental system. We expect delivery of special components within a few weeks so that construction of the random process interface can begin in expectation of the entire system delivery in January.

Since the hardware specifications have been finalized, we were able to begin software development of analysis techniques with the aid of our general purpose laboratory computer. One approach under consideration is sequential analysis, first developed by Wald.* By adjusting the parameters of the theory, this technique can be made to be very sensitive to small non-random perturbations in an otherwise random process. Using the computer's pseudo-random generator, we were able to model the theory with standard Monte Carlo techniques. We found that, if we are willing to extend the trial periods to increase the reliability, we could make a switch closure decision with a generator that has been biased by only 0.5% and a false alarm rate of one closure in 1000 trials, as observed by Monte Carlo modeling.

E. Grill Flame Meetings

On 13-14 September a meeting was held at SRI to discuss experiments to test tactical applications of the remote viewing phenomenon. Discussants included Dale Graff of FTD, WPAFB, OH; John W. Kramar and Col. Albert De Prospero of AMSAA, Aberdeen Proving Ground, MD; Marion Bryson, CDEC, Ft. Ord, CA; Major William Stoner, ACSI, Washington, DC; SRI personnel Harold E. Puthoff, Russell Targ, and consultants Edwin May, Charles Tart, and Ingo Swann.

*Abraham Wald, Sequential Analysis (Dover Publications, New York, 1973).

The tasks of interest to which psychoenergetic functioning might be applied were determined to be the following:

I SENSING

- A. Unit State
  1. Quiescent
  2. Preparation
  3. Movement
- B. Target Damage
  1. Massive Physical
  2. Significant Functional
  3. Little or None
- C. Access Codes
  1. Computers
  2. Control Systems

II LOCATING

- A. Military Materiel
  1. Combat Vehicles
  2. Indirect Fire Weapons
  3. Aircraft
  4. C^4 Systems
- B. Tactical Units
  1. Maneuver
  2. Fire Support
  3. Command
  4. Observation
  5. Support
- C. Strategic Units
  1. Bases
  2. Launchers
  3. Loaded Launchers
- D. Military Personnel
  1. Commanders
  2. Key Staff
  3. Other Personnel

III GENERAL

- A. Utility of Successful Points
- B. Protocols
- C. Screening Criteria
- D. Failure Patterns
- E. Other Applications

It was planned that SRI personnel will visit Ft. Ord in November for a firsthand view of possible experimental scenarios to determine the feasibility and priority associated with individual entrees in the task list.

On 19-20 October 1978, discussions were held at SRI with AMSAA representatives Samuel Phillips and Lynne S. Taylor, and BRL representative Evan H. Walker.

The two-day discussion focussed primarily on the protocols and results of AMSAA's remote viewing replication studies, with some discussion of physical models for the mechanisms. A number of points were clarified as to specifics of the SRI procedures.

In general, it appears from an analysis of AMSAA results that results there are similar to those obtained at SRI.

F. Additional Efforts

Although not specifically carried out for this project, by way of information we include the following items.

Jim - Tart is full-time at SRI now

Consultant Charles Tart delivered an Invited Address to the Division of Philosophical Psychology of the American Psychological Association, entitled "Information Processing Mechanisms and ESP, Trans-Temporal Inhibition." This is the second time he has been asked to deliver an Invited Address on ESP for the American Psychological Association, and represents an important change in attitudes in the scientific community. Professor Tart also prepared and delivered a second paper as part of a symposium on the nature of consciousness at the same meeting, "Trans-Personal Realities or Neurophysiological Illusions: Toward an Empirically Tested Dualism." This paper postulates a dualistic approach to the nature of consciousness, centering around the fact that paranormal phenomena seem to violate many currently accepted physical principles, and so may require the development of new scientific laws for adequate explanation. It sharpens the areas of apparent lack of fit between physics and paranormal phenomena in order to provoke further research.

The proceedings of two IEEE (Institute of Electrical and Electronics Engineers) conferences on psychoenergetic phenomena were prepared for publication as a book entitled MIND AT LARGE: Institute of Electrical and Electronics Engineers Symposia on the Nature of ESP, C. Tart, H.E. Puthoff, and R. Targ, editors. The chapter summaries for this book, to be published by Praeger Publishers in spring 1979, are attached as an appendix.

III PLANS FOR NEXT PERIOD

Resolution Experiments

In parallel with carrying forward the items already discussed, an additional resolution experiment is being initiated. In the past year's program, a series of experiments was carried out to determine the extent to which a subject could describe the contents of a metal container that was sealed and light tight. In these experiments significant results were obtained, with the subject in some cases describing objects that were only a few millimeters across.

To test further the resolution capabilities of remote viewing, a new experiment has been designed. For this experiment microdot targets have been photographically prepared from representational photos of ordinary objects or scenes. The basic design concept of the experiment consists of a comparison of results obtained with these microdot targets versus postcard-sized targets of similar content. Target pools for these experiments consist of twelve items each: six 35 mm transparencies with 1 mm x 1 mm images, and six 6 cm x 8 cm black and white photographs. Each of the twelve targets are sandwiched between stiff cardboard and placed in opaque envelopes such that the type of target (microdot or photo) is indistinguishable.

The experimental protocol requires that the subject in the laboratory describe the picture (microdot or photo) in an envelope chosen by random number generator, which will be in the possession of an outbound experimenter who is ignorant of the target. (This follows the protocol established in the sealed container experiment of last year's program.) At the close of each individual trial, the subject will be given feedback as to the target, by viewing the photograph, or, in the case of a slide, by examining the slide through a microscope. An experiment will consist of twelve such trials employing the six microdot and six photo targets randomly intermixed.

The results of the experiment will be judged separately for the slide and photo experiments. A judge will read the subject's descriptions generated in those experiments in which a slide was the target and then rank order the six transcripts, best to worst match, for each of the six slides in turn. The same will be done for the six photos and their descriptions. A comparison will then be made between the subject's success for the slides and the photos.

IV FINANCIAL STATUS

The expenditures are as shown in Figure 1. The program is on schedule and sufficient funds and subject commitments remain to meet the objectives of the program.

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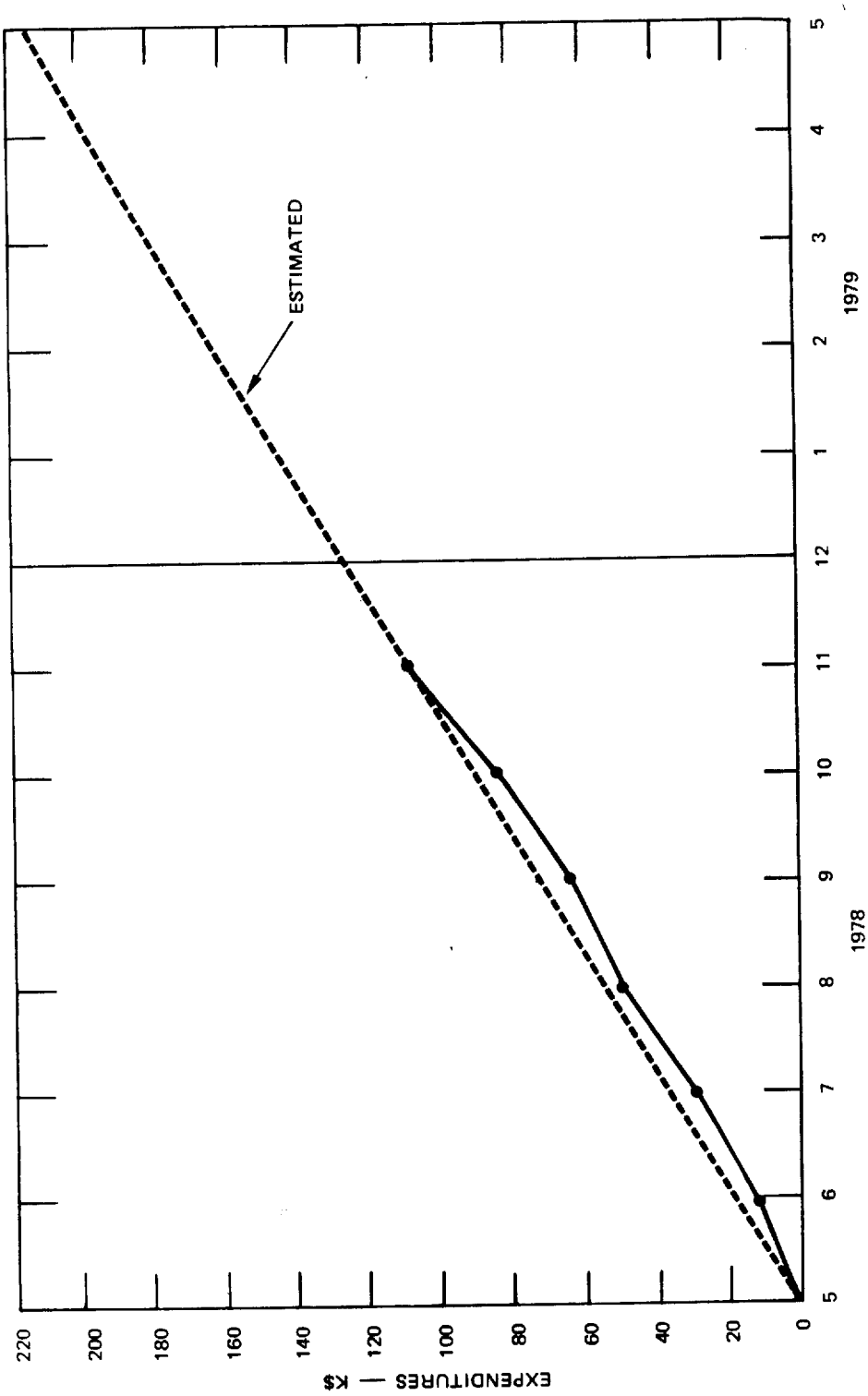

FIGURE 1 PROJECT EXPENDITURES (U)

APPENDIX

Chapter summaries for MIND AT LARGE: Institute of Electrical and Electronics Engineers Symposia on the Nature of ESP, C. Tart, H. Puthoff, and R. Targ, editors, Praeger Publishers, spring 1979.

1. Edgar Mitchell, A Look at the Exceptional. Astronaut Mitchell asks provocative questions about the social implications and our view of human potentials and giftedness in general posed by parapsychological phenomena. He proposes that gifted individuals of all types should be protected and treasured as a national asset.

2. H. Puthoff and R. Targ, A Perceptual Channel for Information Transfer over Kilometer Distances: Historical Perspective and Recent Research. For more than 100 years scientists have attempted to assess claims that individuals can sometimes describe remote situations in the absence of known, relevant sensory data. After reviewing historical data, the remote viewing experiments at Stanford Research Institute are described in detail, with photos and drawings illustrating the phenomenal accuracy that can sometimes be attained. Physical theories attempting to explain the phenomena are also discussed.

3. H. Puthoff, R. Targ, and E.C. May, Direct Perception of Remote Geographical Locations. An extension of the remote viewing research of the previous chapter to long distance studies and further specifications of the research methods, showing that distance is apparently not a barrier to paranormal functioning.

4. E. May, R. Targ, and H. Puthoff, Possible EEG Correlates to Remote Stimuli Under Conditions of Sensory Shielding. Presents three studies suggesting that some individual's brain waves can be affected by a flashing light even when that light is so distant and thoroughly shielded they cannot possibly see it.

5. E. Wortz et al., An Investigation of Soviet Psychical Research. Reviews what is apparently a very large scale research effort by the Soviets to develop not only physical explanations of parapsychological phenomena, but also practical uses.

6. C. Tart, Improving Real Time ESP by Suppressing the Future: Transtemporal Inhibition. Details the discovery that individuals successfully using telepathy to perceive real time targets are simultaneously and unknowingly using precognitive ESP to suppress their perception of future targets. This is interpreted as a form of contrast enhancement that makes ESP more efficient, and gives insights into the nature of ESP and the nature of time as well.

7. O. Costa de Beauregard, Quantum Paradoxes and Aristotle's Two-Fold Information Concept. Discusses ways in which parapsychological phenomena can be integrated into a wider view of reality stemming from quantum theory and modern physics.

8. J. Bisaha, Multiple Information Transfer Across Spacio-Temporal Boundaries via Non-Ordinary Channels of Communication. Extends the remote viewing procedure by having a group of subjects successfully describe where an experimenter will be 35 minutes in the future and having one subject in Chicago successfully describe the experimenter's randomly determined location 24 hours in the future as he traveled through the USSR.

9. M. Persinger, ELF Field Mediation in Spontaneous Psi Events: Direct Information Transfer or Conditioned Elicitation? Describes a theory of extremely low frequency electromagnetic radiation (ELF) acting as a carrier of information for apparently paranormal events happening in everyday life.

10. H. Schmidt, Evidence for Direct Interaction Between the Human Mind and External Quantum Processes. Presents a variety of experiments indicating that mental willing can affect the output of various electronic random number generators. The generators' output may be controlled by either quantum processes (radioactive decay) or noise sources.

11. I. Swann, Some Comments on the Subjective Nature of Psychic Research, The Subject-Experimenter Relationship and the Psychic Type of Personality. All parapsychological interactions with the physical world involve a human subject as an essential component. One of the world's most successful experimental psychics describes essential conditions for making parapsychological phenomena manifest in the laboratory.