Two Application-Oriented Experiments Employing a Submarine Involving a Novel Remote Viewing Protocol, One Testing the ELF Hypothesis

Stephan A. Schwartz*

ABSTRACT

This report covers two experiments, each involving two viewers in independent sessions. Both experiments test the hypothesis that there exists an information channel that has come to be known as Remote Viewing (RV). The hypothesis is affirmed by each experiment. This information access allows individuals to provide sense impressions concerning a target, to which they are blind by reason of time

---

* Author: *Stephan A. Schwartz, Senior Fellow, Philosophical Research Society/ Mobius Research Group.*
Presentation/Publication History: *Invited paper The Philosophical Research Society Conference on Extraordinary Human Functioning August 1977. Invited Paper. Annual Meetings of the Southwestern Anthropology Association/ the Association for Transpersonal Anthropology. March 1978. Updated into this form and invited paper and Proceedings American Society for Psychical Research, November 1979.*
Correspondence: *The Philosophical Research Society 3910 Los Feliz Boulevard, Los Angeles, California 90027*

or space. In the research reported here, there were three viewers, Hella Hammid, a woman fine arts photographer, Ingo Swan, a male artist, and Neddie Pena, a woman documentary camera operator. And there were two researchers: the author, and Edwin C. May of SRI. The four viewings in the two experiments also test a novel approach to Remote Viewing, developed by the author in 1972 but untested until this study; a protocol for Associational Remote Viewing (ARV). The trails of the first experiment are real-time viewings, with two viewers independent of one another in time, and involving separate targets. These trials were designed with two goals: a) to test the hypothesis that psi is a radio phenomenon centered in the ELF (3-300Hz) range of the electromagnetic spectrum; b) to test whether an independently verifiable message could be sent under conditions of extreme shielding using this anomalous source information. These trials were conducted from inside a research submersible whose communications equipment had been turned off, while it was at depth. The experimental results, p=0.028, suggest the ELF hypothesis is not a viable explanatory mechanism for the observed result, and that a message could be transmitted by associating a target with a command. Persinger's (1979) A-G-P Type I and II ELF explanatory models are discussed, and certain objections concerning transmission bit rate, shared memory, and locational difficulties are raised. The second set of trials are precognitive, done at different times and places, conducted by different researchers. Unbeknownst to the viewers, the targets were associated with the possible outcomes of a single future event, a six horse trotter race at Hollywood Park. The results, p=0.028, were

sufficient to predict the winner. It, thus, seems reasonable to say that while the information access is not electromagnetic, and remains anomalous in nature, it can nonetheless be used to for communications and decision augmentation. Because the Deep Quest experiments were the first of what will surely be a long line of experiments, the paper is chronologically ordered, and structured to be useful historically.

OVERVIEW AND BACKGROUND

Ever since the German researcher Johannes Berger followed up earlier work by Richard Caton (1875) and applied electrodes to the head of his son Klaus, the connection between psi and the brain's electromagnetic emissions has been debated. Indeed, the entire effort to measure the brain's rhythmic electrical discharges was begun because of a psi event centering on Berger himself -- an experience that caused him to change from astronomy to psychiatry in order to train himself to seek a physical explanation of ESP phenomena.

Since Berger's first measurement in Jena, Germany in 1924 (Berger, 1929,1940), unequivocally revealed the brain's electrical broadcasts, a variety of psi experiments have been successfully carried out using electromagnetically-shielded spaces, in an attempt to explore the psi-electromagnetic hypothesis. The question seemed to have been answered when, in 1959, it was reported that the U.S. Navy carried out a telepathy experiment between the submerged nuclear attack submarine Nautilus and the shore. This drew attention from Soviet researchers, particularly the Russian physiologist Leonid Leonidovich Vasiliev who, subsequently, carried out a series of experiments placing researchers and subjects in metal cabinets. In spite of separations as great as 1,700 kilometers, neither distance nor shielding against ultra-short, short, or medium range wavelengths seemed to affect the quality of the psychic responses, and

Vasiliev's results (1962, pp. 126-27) were often positive.

In 1971, while serving as the Special Assistant for Research and Analysis to the Chief of Naval Operations, the author became aware of the Soviet research the reason behind it, and began a search to obtain the actual report on the Nautilus experiment, first through official Navy research channels and then through other avenues. This proved oddly unproductive, and it finally became clear that the entire incident was a fabrication by a French journalist -- a story which had become canonized through repetition and was now widely believed. (Massadie, 1960)

This realization came with an enormous irony: The communications experiment aboard an American warship, Nautilus, had never taken place. Yet the belief that it had had stimulated scientists in the Soviet Union to begin government research in this area of extraordinary human functioning. This, in turn, had led the CIA to approach laser physicist Harold Puthoff to begin a similar classified program in the U.S.. Yet, in a final twist, the fundamental question remained unanswered: Was the area of human ability traditionally known as psychic, an electromagnetic phenomena? The Soviets has demonstrated that a submarine experiment had to be done, because only such an experiment could eliminate a part of the EM spectrum.

Vasiliev's careful research showed that if radio frequencies were involved -- as Soviet researchers particularly assumed they must be -- then ELF (extremely low frequency) would be the candidate.

(Kogan, 1967, 1968, Wortz et al., 1976) Whereas land-based shielded spaces very effectively block radio waves whose frequency is above several KHz (VLF 3000-30000 Hz), they are almost transparent to extremely low frequency (ELF 3-300 Hz). A brick house, for instance, is about 95 per cent transparent to ELF; a Faraday cage of 1mm iron wire with a mesh width of 30 mm is about 65 per cent transparent. (Ludwig, Mecke, & Seelewind, 1968). Only seawater could provide effective shielding. (See Graph One)

The ELF hypothesis seemed all the more plausible because research in the early 1960s had demonstrated that human subjects showed measurable physiological responses to ELF exposure (Kronig, 1962; Reiter, 1964), even when shielded by earthen bunkers. (Wever, 1968)

The next step for the Soviets was to conduct a submarine experiment of their own. Did it happen? According to one Soviet researcher, Pavel Naumov, a Russian experiment using rabbits in a submarine had been carried out in the mid-1960s. (Ostrander & Schroeder, 1970)

In early 1972, when the author discovered that the Nautilus experiment was a phantom, he tried to interest the Navy in actually carrying out a submarine experiment. Fear of adverse publicity and subsequent congressional controversy, should such an experiment ever surface in the media, more than issues of disbelief, made it impossible.

Fortuitously, the psi-radio debate came just as the Navy was trying to solve the problem of communicating with its missile submarines while they were on-station. As the most invulnerable part of the American Nuclear Deterrence Triad, the submarine communications issue had a very high priority, and substantial funds were made available to explore the issue. Completely apart from any parapsychological considerations, because of its ability to penetrate seawater, the service had also become interested in ELF and was then developing a program known as Sanguine -- a giant ELF submarine communications facility. In the course of planning this facility, the Navy had amassed considerable knowledge about seawater's shielding effect on ELF and, more importantly, exactly how much data could be transmitted in a given amount of time.

This research demonstrated that while ELF could penetrate seawater far deeper than any other form of radio wave, thus alleviating the problem of the submarines having to come closer to the surface -- where they could be more easily detected -- it required substantial power and extremely large broadcast facilities (in the order of square miles). The very long (300 to 1,000 km) wave form was also a substantial factor to be considered, and this was even truer of any Remote Viewing event, with its rich descriptive detail. In both instances, the central issue was that with ELF only a few bits of information could be transmitted in any functionally reasonable time. The maximum bit rate dB/dt is equal to somewhat less than half the frequency.

A single letter, given an alphabet of 26 symbols, requires 4.7 bits (since 2^4.7 = 26). So a five letter word needs around 24 bits. Actually somewhat less will do, since all letters do not have an equal probability of occurrence. It has been calculated that a single visual observation requires about 100 bits of data, and a simple geometric form about 60 bits (Franklin, 1976).

In practical terms, this data transmission restriction led the Navy, even with its unique planned facility, to settle for very terse messages consisting of short strings of numbers. Indeed, the restriction was sufficiently pressing that existing orders books are kept aboard the missile submarines so that a string could be correlated with a previously prepared directive, for example, "Number 37 means a particular target site. The same restrictions, in terms of broadcast facilities, power requirements, and wave-form that faced the Navy had a direct transfer to the discussion of psi-ELF connection.

How would it be possible in the span of a typical Remote Viewing session to get across the data rich observations routinely observed in Remote Viewing sessions? It involves far more data than could be transmitted by ELF.

In the West, the first researcher to really model this issue was the Canadian psychophysiologist Michael Persinger, who first addressed it in 1975. Persinger's best articulation appears in his 1979 paper, two years after the research in this report. Persinger developed two approaches. In the first model, which he called A-G-P Type 1 (A = agent/target, G = geophysical mediator, and P =

percipient/respondent), very long exposure to the ELF signal was required, as well as an unexplained mechanism allowing the agent/target to influence ELF waves with a precision that, while not theoretically impossible, seemed extremely improbable. (Persinger, 1979)

Persinger himself never felt this model was likely. The richness of sensory data produced in Deep Quest, for one thing, made it improbable. But assume that only partial information need be transmitted in any reasonable time?

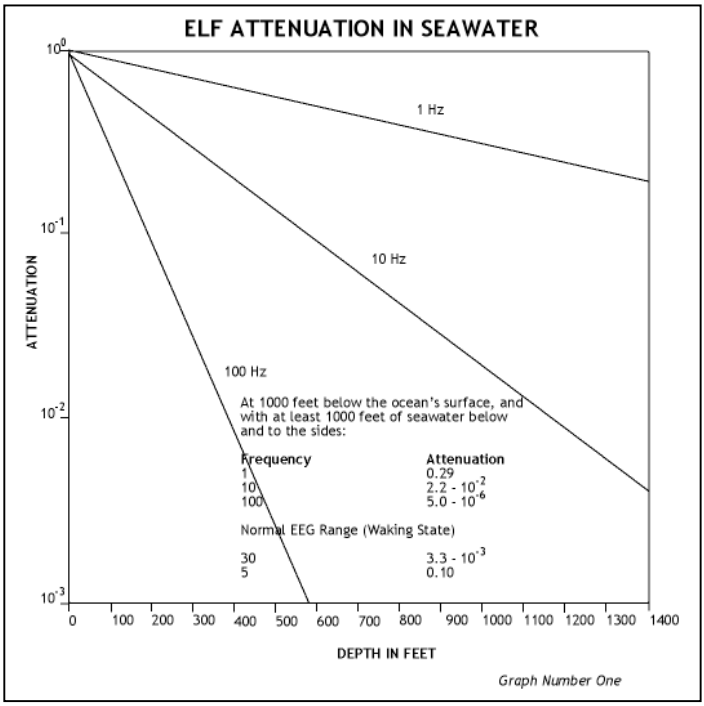
Persinger assumed that psychically, as with other stimuli, the mind is capable of constructing a complete picture from only partial information by "filling in the blanks" based on past observational experience. The difficulty is, of course, that Remote Viewing perceptions produced in Deep Quest included minor details and reports of target personnel carrying out actions that are unique to that given experience of the RV target -- actions that could not have been anticipated based on previous observational experience or logical deduction. Even more difficult was the problem of explaining how the agent/percipient (A/P) connection was locationally established. (Persinger, 1979) The inherent nonlocality of Remote Viewing events being one of their most striking attributes.

For this reason, Persinger developed a second model which he called A-G-P Type II (Persinger, 1979). In this model both A and P were influenced unconsciously by G, which they did not control, on the basis of previously shared experiences. For example, if two people had shared the same movie,

one might call the other to discuss it and be told "I was just thinking about you and the movie." This model still had the information transmission rate problem, but overcame the locational difficulty. However, it required a shared memory on the part of A and P. This was not the case in the Deep Quest submarine series.

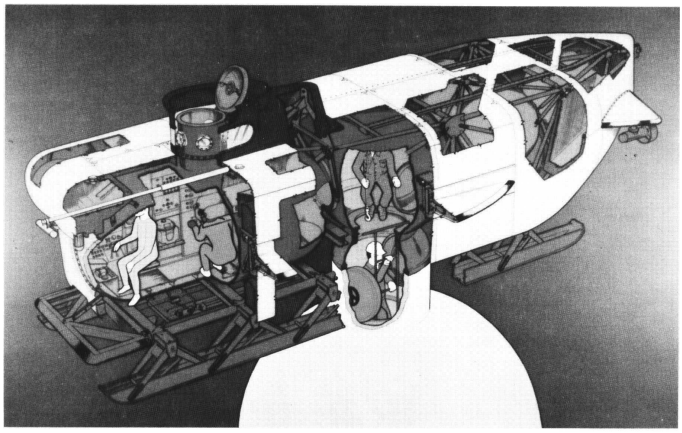
Apart from considerations of these two models, Persinger (1973) also focused discussion of ELF on what are known as Shumann waves/resonances (7-8 Hz) involving the earth's ionosphere. Persinger saw this as the most probable frequency to be associated with psi, since the Schumann waves have a wavelength of 38,462 km, essentially equal to the earth's circumference. The initial publication of Persinger's work in 1975 made the execution of a submarine experiment all the more necessary because the entire discussion was being carried out in the absence of experimentation under seawater shielding conditions that were the only way to settle the question. (See Graph One)

In 1976, after leaving government service, the author obtained the missing ingredient -- a submarine -- thanks to Don Keach (former Deputy



Director of Navy Labs) and Don Walsh (former Special Assistant to the Assistant Secretary of the Navy for Research and Development) with whom the experiment had been discussed some years earlier. They had remained intrigued, had retired from the Navy, and now headed The Institute for Marine and Coastal Studies of the University of Southern California. They offered the use, for 3 days, of a research submersible known as Taurus. I. (See Illustration One.) Manufactured by the International Hydrodynamics Company Ltd. (HYCO), the five-person deep ocean craft was currently undergoing sea-trials at the Institute's

Santa Catalina Island facility. In November 1976, planning began for what came to be known as Project Deep Quest. It used as a model the pre-World War II psi-communications studies conducted by the Polish ethnographer Stanislaw



SECTIONAL VIEW

SUBMERSIBLE TAURUS

Poniatowski, head of an interdisciplinary team that studied the psychic Stefan Ossowiecki (Ossowiecki, 1933; Poniatowski, 1939-41; Richet, n. d.)

As this work began, Harold E. Puthoff and Russell Targ published their seminal Remote-Viewing research. (Puthoff and Targ, 1976) Their success, under both shielded -- excepting ELF -- and unshielded conditions, buttressed the case for Remote Viewing, as well as providing a protocol well-suited to studying the ELF question. The author, also felt that this unique opportunity could also be used to test the idea that Remote Viewing was useful, and could facilitate practical work in three ways:

1.) Providing a reliable communications channel;
2.) Making it possible to select one outcome amongst several concerning an event that had not yet taken place;
3.) Locating, describing, and reconstructing the history of an archaeological site.[2]

A close reading of the Remote Sensing literature that covers almost a century, makes it clear that while remote perception might provide a communications link, sending linear structured text-like messages" per sa was the stuff of fiction. While all the senses report in Remote Viewing sessions, the perceptions universally have a wholistic non-linear quality. There are also various kinds of "noise" in the form of analytical and emotional overlays. However, it was known that one could reliably obtain the description of a target and such simple target image that was assigned a more complex message value, then perhaps this information access might be used for communications, and event prediction. Keach. Who is himself a submariner, and recognized deep ocean engineering expert, was also well-versed in the Navy's ELF activities because of his command role in the Navy's labs. the idea emerged that Deep Quest should explore such a specific communication.

---

[2] *Numbers one and two are covered by this paper, Number three is the subject of a separate paper. (Schwartz, 1978)*

It was possible through Deep Quest, while studying the validity of an ELF-psychic link, to also explore an associational referent. If a remote-viewing experiment could be carried out by a psychic while the submarine was suspended in the ocean, then the image received, like a transmitted command, could also stand for a number, as in the Navy's order book scheme -- thus suggesting a possible line of research addressing the headquarters to submarine-on-station communications problem.

Through a fortuitous series of events, as the author was preparing to carry out the Deep Quest series I met Edwin C. May, a low-energy nuclear physicist who had recently joined the SRI laboratory and, through him, I met Puthoff and Targ. May had independently been considering the ELF issue and, in our discussions, my idea of the Associated Remote Viewing became a central consideration. Because the SRI research team already had an established judging procedure in the literature (Puthoff & Targ, 1976), and because of unexpected difficulties involving the originally planned viewers the author asked two SRI viewers to do the on-site fieldwork, and invited May to conduct those sessions since they had an established working relationship.

EXPERIMENT ONE: REAL TIME ELF/ARV REMOTE VIEWING

Deep Quest had three major goals: (A) to explore the practical application of Remote Viewing in solving an archaeological problem using a consensual methodology with multiple psychics;

(B) to test in at least a preliminary way the hypothesis that the psychic dynamic was in essence an example of ELF communications; and, (C) to carry out an associated usage of the established SRI remote-viewing process as a means of communication.

Because Taurus had a 1,200-foot depth limit, the ELF portion of the experiment could not be definitive; to get sufficient shielding for that would require a submersible with at least a 6,000-foot depth limit. However, by placing the submarine at depth, as well as at a distance from the shore while the target was over 500 miles away, a highly suggestive, if preliminary, experiment could be carried out.

PROTOCOL: REAL TIME ELF/ARV REMOTE VIEWING

Between June 15 and 18, 1977, the Deep Quest series was carried out. The associational and ELF aspects of the research involved two separate remote viewings. The respondents were Ingo Swann and Hella Hammid; the interviewer on both occasions was May, a decision I made to make myself more objective to the data collection. The first trial involved Hammid and was conducted at 170 meters depth in 340 meters of water. At this depth in seawater, more than 20dB attenuation is affected at all frequencies greater than 10Hz, and this does not consider the steel hull of the pressure sphere wherein the experiments took place -- itself a kind of super Faraday cage. The second trial involving Swann was 43e at 78 meters, on the

bottom. The protocol for the experiment was as follows:

"A series of six potential messages to be sent was constructed in advance of the experiment. To each message was assigned a San Francisco Bay Area target location. To send a given message, a pair of experimenters comprising a target demarcation team went at a prearranged time to the site linked to the particular message and remained there for 15 minutes. During this period, a subject on board the submersible, monitored by an experimenter blind to the target pool, registered his impressions as to where the demarcation team was, 500 miles away, as per standard remote-viewing protocol. Following the remote-viewing trial, the subject then consulted a packet that contained the list of potential targets (seen for the first time at this point), made a choice as to which target of the set was viewed, and noted the associated message" (Targ & Puthoff, 8 May 1979, pp. 99n- 100n).

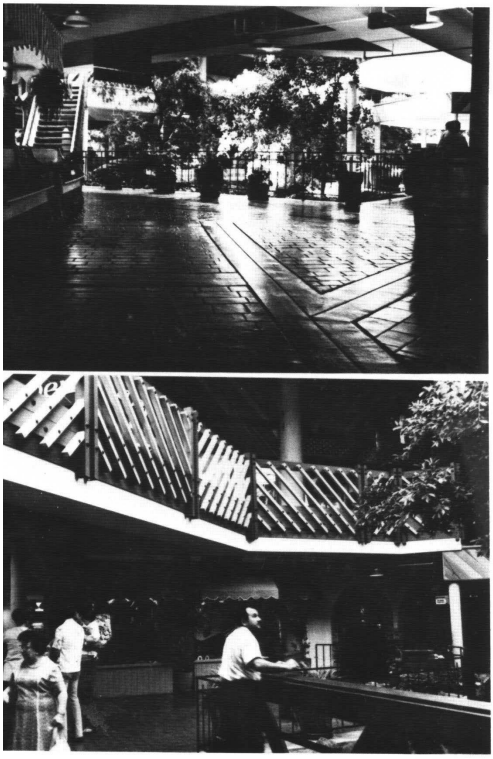
SUBMERSIBLE EXPERIMENT NUMBER 1: 170 m DEEP IN 340 m OF WATER. 16 July 1977. Target was a giant oak on a hilltop in Portola Valley, California. Subject's first words were: "A very tall looming object. A very, very, huge tall tree and a lot of space behind them. There almost feels like there is a drop-off or a palisade or a cliff behind them."

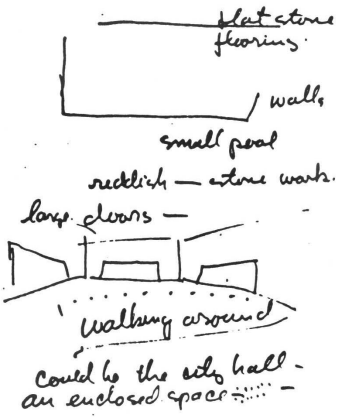
Illustration 2

Illustration 3

The results were first place matched (See illustrations Two and Three.) p = .028. Although there were only two trials, the richness of the perceptions, garnered in a time span of less than 10 minutes, under conditions in which an ELF signal would be greatly attenuated, while by no means conclusive, nonetheless suggest that ELF is not a factor in remote-viewing experiments.

With the success of Deep Quest (including locating and describing a previously unknown wreck on the seafloor), I decided to carry through the obvious next step in exploring ARV. If a remotely-viewed target site could, by association, stand for a message in real-time, could this same approach extract an accurate message from a future that had not yet





SUBMERSIBLE EXPERIMENT NUMBER 2: 78 m DEEP ON THE BOTTOM. Target was shopping mall in M View, California. Subject's drawing correctly identifies: "Flat stone flooring, walls, small pool, reddish stone large doors, walking around, an enclosed space."

occurred? The idea had first emerged in my discussions with May over how to conduct Deep Quest, but it was put aside because the future-seeing task was less pertinent then the real-time submarine communications challenge.

In the interim, between Deep Quest and the next ARV experiment, John Bisaha and Brenda Dunne had completed, but not yet published, a series of precognitive standard remote-viewings (Dunne & Bisaha, 1978). This research lent impetus to the logical next step in these preliminary ARV explo-

rations by demonstrating that precognitive RVs seemed to work as well as real-time experiments. Presumably then, precognitive ARVs should also enjoy success.

The task selected to explore this issue revolved around the outcome of a trotters horse race at Hollywood Park in the greater Los Angeles area. Horse racing was selected because it offered an event in the future that could reasonably be expected to take place, but whose outcome was, by definition, unknown.

Two teams were established for these experiments. Each team consisted of an interviewer, a respondent, and a monitor. Also involved were two independent target preparers (designated "A" and "B") and an independent assignment coordinator. Except for the target preparers, both knowing the target site names, beyond knowing the general tasks of the other personnel, all participants in the experiment were blind to the activities of the other participants.

Prior to the experiment, independent target preparer "A" selected six sites in the greater Los Angeles Area. Independent target preparer "B", physically separated from "A", was told the identity of the sites and prepared slips of paper naming each site in the target pool. Each preparer independently placed the target names individually in identical unmarked, thick white envelopes, which were then sealed. These envelopes were then turned over to the independent assignment coordinator, and remained in his/her control. Independent target preparer "A" developed a descriptor list for each target and put a

complete set of these lists into two envelopes, which were then sealed.

On 10 September 1977 two respondents, Hella Hammid and Neddie Pena (a novice respondent, whose first psychic experiment had been Deep Quest) each carried out their independent viewings. Each was first asked to agree that by 4:00 p.m. in the afternoon, on the 11th of September, they would be at a site in Los Angeles. They were told that this site would be selected on the morning of the 11th, based on which horse won the sixth race run at Hollywood Park that evening -- the 10th.

May conducted the interview with Hammid, and I conducted the interview with Pena. The two teams were at different locations in Los Angeles County. After the remote-viewings, the coordinator visited May and I, and we were each given a sealed envelope containing the target descriptors for each of the six targets. These were then opened and rank ordered with the transcript of the perception interview for goodness-of-fit. After the judging, the monitors called the target assignment coordinator, who had by then returned to his home, announcing that each team's judging was complete. After both teams had called in, the independent assignment coordinator rolled a die to assign the sealed envelopes containing the target site names a number between 1 and 6 -- one number to each envelope. These numbers corresponded to the number of one of the six horses running in the sixth race. (As agreed, there was no betting. The horse race was used simply because it provided a random event outside of the researcher's control that had enough emotional interest to assure the highest probability

of a good quality response.) The actual answer, of course, could not be known until after the race, then approximately five hours into the future.

In accordance with the protocol, the psychics each independently did their remote-viewing, and these responses were then blind-judged against the target pool. After the viewing and the assignment of the association between horse and site, the described target was first-choice matched under blind conditions by myself for Pena and May for Hammid. In both instances, the Japanese garden at the Huntington Gardens near Pasadena, California was selected.

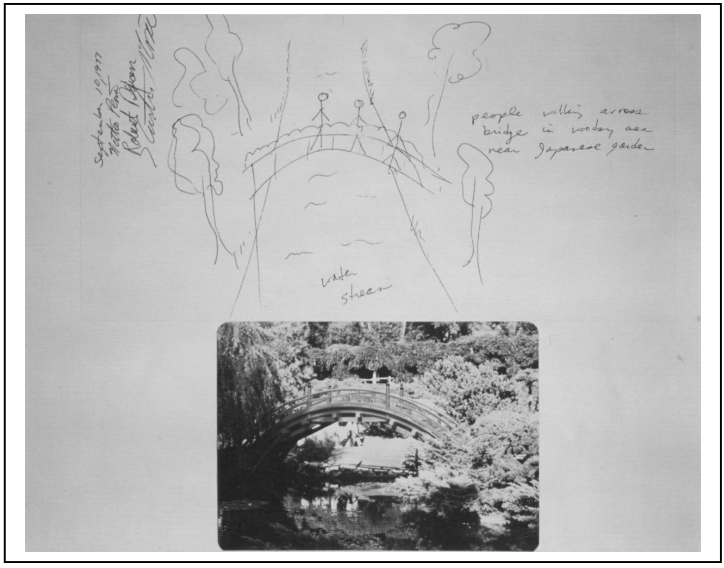
RESULTS: PRECOGNITIVE ARV REMOTE VIEWING

That evening the horse assigned to the Huntington Gardens site did, in fact, win its race. (See Illustrations Four and Five.) $p = .028$, although a stacking effect consideration could be argued and, in any case, the experiment is of interest more for its conceptual than its statistical value.

Many questions still remain, but perhaps the most pressing is to close another door on the ELF issue by carrying out a second submarine experiment, both at greater depth in deeper water and precognitively. If, as seems likely, this experiment is also successful, another evaluation of the ELF hypotheses will be required, particularly inasmuch as Wortz et al. (1976) have presented a possible ELF explanation of precognition, involving a dual time wave interpretation and the fact that ELF waves

circle the earth in about 0.13 to 0.2 seconds per revolution with little attenuation, and that certain waves "may even keep circling the globe for a day before they lose most of their information content, if they possess any" (Wortz, et al., 1976). A combination of much greater depth, a longer series of trials, and a several day precognitive time lapse, would be the suggested approach to address this theoretical model from a position of actual field research.

In terms of Persinger's (1979) A-G-P Type 1 model, it is hard to explain how localization could have occurred when the number and names of the agents were unknown until the experiment took place, and the target site was randomly selected from the target pool. The A-G-P Type 2 model also presents difficulties because there was no shared experience to draw on, and the time and place of the event were consciously dictated by the protocol and not the



geophysical mediating agency. However, the question remains an open one.

It must, of course, be borne in mind that this short run of experiments does not constitute any significant statistical evidence for the existence of psi. However, within the context of replication rates of better than 50 per cent being reported in remote-viewing studies, it now seems appropriate to present this series of experiments. They were a tentative first step towards understanding a basic dynamic of psychic functioning, as well as suggesting some of the possible approaches for both future theoretical and application oriented explorations.

The Deep Quest Series also illustrates two points to which the author is deeply committed. Parapsychology is nothing if it is not the study of human consciousness. No one discipline can hope to address all the issues surrounding the psi enigma -- by the very nature of the specialized training that today's scientists must undergo. Deep Quest's success involved researchers from deep ocean engineering, physics, and parapsychology, and drew on research in electrical engineering, and deep ocean engineering. In addition to this interdisciplinary approach, there was also a strong benefit obtained in having several laboratories participate, each bringing its special strengths and insights.

In the ELF and ARV aspects alone, researchers from four organizations took part: Mobius, the Institute of Marine and Coastal Studies of the University of Southern California, SRI

International, and HYCO Ltd. of Canada. The archaeological portions of the experiment involved several additional disciplines and institutions. If we are to successfully explore our full limits of our human capacities it is unlikely we will do this with anything less than such combined efforts.

REFERENCES

Berger, J. ("Hans") PSYCHE (Gustav Fischer:Jena. 1940).

---------- "Uber das Elektrenkephalogramm des Menschen," ARCHIV FUER PSYCHIATRIE UND NERVENKRANKHEITEN, vol. 87, 1929, pp. 527-570.

Caton, R., "Electric Currents of the Brain" BRITISH MEDICAL JOURNAL, vol. 2, 28 August 1875, p. 278.

Dunne, B.J. & Bisaha, J.P., "Multiple Channels in Precognitive Remote- Viewing", in W. G. Roll (Ed.) RESEARCH IN PARAPSYCHOLOGY Scarecrow:Metauchen, 1978, pp. 146-151.

Franklin, W., "Metal Fractures Using Scanning Electronic Microscopy and the Theory of Teleneural Interactions,"in THE GELLER PAPERS, ed. Charles Panati (Houghton Mifflin:New York, 1976), pp. 83-106.

Kogan, I., "Telepathy, Hypotheses and Observations," RADIO ENGINEERING, vol. 22, Jan 1967, pp. 141-144.

---------- "Information Theory Analysis of Telepathic Communications Experiments," RADIO ENGINEERING, vol. 23, March 1968, pp. 122-130.

Konig, H.L., "Ueber den Einfluss Besonders Niederfrequenter Elektrischer Vorgaenge in der Atmosphare auf die Umwelt," **ZEITSCHRIFT FUER ANGEWANDTE BAEDER UND KLIMAHEILKUNDE, 1962, vol. 9, pp. 481-501.

Ludwig, W., Mecke, R., and Seelewind, H., "Elektroklimatologie," ARCHIV METEOROLOGIE GEOPHYSIK UND BIOKLIMATOLOGIE. Serie B, 1968, pp. 237-250.

Messadie, G., "Du Nautilus," SCIENCE ET VIE, no. 509, Feb. 1960.

Ossowiecki, S., SWIAT MEGO DUCHA i WIZJE PRZYSZLOSCI (Warsaw:NP, 1933 trans. Andrew Nowina-Sapinski for Schwartz 1976.

Ostrander, S. & Schroeder, L., Englewood Cliffs, NJ, Prentice-Hall, Inc. 1970.

Persinger, M. A., "Geophysical Models for Parapsychological Experiences," PSYCHOENERGETIC SYSTEMS, vol. 1, 1975 pp. 63-74.

Persinger, M. A. "ELF Field Meditation in Spontaneous Psi Events: Direct Information Transfer or Conditioned Elicitation?", C. T. Tart,

H. E. Puthoff, & R. Targ, Eds., MIND-AT-LARGE, New York, Praeger, 1979, pp. 191-204.

Persinger, M.A., Ludwig, H.W. and Ossenkopp,K.P., "Psychophysiological Effects of Extremely Low Frequency Electromagnetic Fields: A Review," PERCEPTUAL AND MOTOR SKILLS, vol. 36, 1973, pp. 1131-1159.

Poniatowski, S., PARAPSYCHOLOGICAL PROBING OF PREHISTORICAL CULTURES: EXPERIENCES WITH STEFAN OSSOWIECKI <1939-1941> unpublished due to Nazi confiscation, trans. by Andrew Nowina-Sapinksi for Schwartz, 1975-76.

Puthoff, H.E. and Targ, R., "A Perceptual Channel for Information Transfer Over Kilometre Distances: Historical Perspective and Recent Research," PROCEEDINGS OF THE IEEE, vol. 64, March 1976, pp. 329-354.

Reiter, R., "Atmospheric Electricity and Natural Radioactivity," in MEDICAL CLIMATOLOGY, ed. by S.H. Licht, (Waverly:New York, 1964) pp. 280-316.

Richet, C., NOTRE SIXIEME SENS, (Editions Montaigne:Paris, n.d.).

Schwartz, S. A., Deep Quest: An Experiment in Deep Ocean Psychic Archaeology and Distant Viewing. Invited Paper. Annual Meetings of the Southwestern Anthropology Association/ the Association for Transpersonal Anthropology. March 1978.

Targ, R., Puthoff, H. E., & May, E. C., "Direct Perception of Remote Geographical Locations", in MIND AT LARGE, C. T. Tart, H. E. Puthoff, & R. Targ, Eds., New York, Praeger,1979, pp. 78-106.

Vasiliev, L.L., Experiments in Mental Suggestion, Institute for the Study of Mental Images: Hampshire, Eng. 1963, p. 126-127.

Wever, R., "Gesetzmaessigkeiten der circadianen Periodik des Menschen, geprueft and der Wirkung eines schwachen eletrischen Wechselfeldes," PFLUEGERS ARCHIV, vol. 302, 1968, pp. 97-122.

Wortz, E.C., et. al., "Novel Biophysical Information Transfer Mechanisms NBIT, , Jan 14, 1976, Document 76-13197, Airesearch Manufacturing Company.

ACKNOWLEDGEMENTS

The author wishes to thanks Harold E. Puthoff, Russell Targ, and Ed May all of whom, at the time, were with SRI; Al Witcombe and the crew of Taurus , as well as the management of HYCO Ltd. who manufactured the submersible; Trammell Crow who provided financial support; and, particularly, Dr. Don Walsh, and Mr. Don Keach, at the time respectively the Director and Deputy Director of the Institute for Marine and Coastal Studies of the University of California.