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PARANORMAL PHENOMENA -- BRIEFING ON A NET ASSESSMENT STUDY

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PREFACE

This Working Note is one of a series that summarizes formal Rand briefings on selected net assessment studies. The briefings, prepared in response to requests by the Director, Defense Advanced Research Projects Agency, deal with several scientific and technical activities where substantial disparities exist between the respective U.S. and USSR research programs.*

This briefing on paranormal phenomena is based on a net assessment study of the field that took into account Soviet and U.S. literature, institutions, personnel, and technology, and it includes a comparative analysis of both U.S. and USSR efforts. For the briefing, the results were condensed and principal emphasis was placed on the USSR portion of the effort.

* For a discussion of the topics surveyed and a summary of the results of the comparative net assessments, see WN-8017-ARPA, Net Assessments of Selected U.S./USSR Scientific Research Activities--Overview, December 1972.

AUTHORS' FOREWORD

The range of sources available for this study was somewhat restricted, primarily by time limitations but also by the need to exercise circumspection owing to the sensitive nature of Rand's involvement. The U.S. and other Western literature on paranormal phenomena comprises a sizable library, including many books and a half-dozen specialized journals. Since not all of these could be surveyed in depth in the time available, conclusions with regard to the U.S. literature were based upon a sampling of standard works on the subject, supplemented by a more detailed examination of the statistical aspects of experimental studies. The survey of the U.S. level of effort relied upon an analysis of ten years worth of abstracts appearing in the parapsychology section of Psychological Abstracts; more material was gathered here than could be included in the briefing itself.

The Soviet literature on parapsychology presented a different problem, as some of it was obtained only with difficulty and after lengthy delays, and in addition much of it remains untranslated. Some of the conclusions with regard to Soviet efforts are thus necessarily based upon a somewhat impressionistic sampling of the available literature, some selective translation, and some not always reliable and frequently imprecise reports of Western visitors to the Soviet Union. Also examined was some classified intelligence material, none of which, however, appears explicitly in the briefing. A conscientious attempt was made to exclude information based upon speculation or upon unverified or dubious reports.

Unfortunately, most of the literature on paranormal phenomena is produced by "true believers" and is aimed at a somewhat credulous audience. On the other hand, few who approach the subject with skepticism have taken the pains to examine the available literature in detail; the incredulous are inclined to dismiss the matter out of hand. As we point out in the

briefing, opinion regarding the occurrence of paranormal phenomena tends to be polarized into uncritical acceptance or total rejection, and it seemed wiser for our purposes to avoid this issue by reporting on the character and level of effort of investigation in the United States and the Soviet Union rather than to attempt a technical assessment of the plausibility of all of the reported results. However, there remains a serious need for such an analysis, conducted on a coordinated, multidisciplinary basis by qualified professionals. If nothing else, it would greatly facilitate any future net assessment.

ACKNOWLEDGMENTS

The authors would like to express their thanks to all members of the project, especially to those who gave generously of their personal time. Much of the survey of Western literature was done by Carolyn Huber, Doris Dugas, and Majorie Rapp. The statistical aspects of the experimental work were examined by one of the authors (Juncosa) and by G. W. Haggstrom. Valuable advice on the shaping of the briefing was provided by Brownlee Haydon and Milt Weiner, who also made substantive contributions to the project. As consultant, F. J. Krieger of Research and Development Associates provided some Soviet material and some valuable translations. Lilita Dzirkals also translated some Russian material. Marjorie Behrens provided indispensable services with her search of the Soviet literature, and Barbara Quint assisted in the survey of Western literature. Robert Reinstedt furnished much useful information and advice, and Herbert Goldhamer lent his experience in some of the larger issues raised by the project. Finally, Nancy Nimitz made essential contributions to the analysis of Soviet institutional arrangements, policy, and budgetary considerations.

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1. THE NATURE OF PARANORMAL PHENOMENA

CLASSIFICATION OF PHENOMENA

A useful way to begin a discussion of so-called paranormal phenomena is to attempt to place these phenomena within a broader universe of discourse. Figure 1 shows a matrix we devised for this purpose. The rows of the matrix classify phenomena^{*} in terms of whether their occurrence has been conclusively verified; the columns classify them in terms of whether they do, or do not, appear to violate a known law of nature. In these terms, the upper left quadrant of the matrix represents the domain of "normal science"; that is, of phenomena whose occurrence has been verified and explained within the theoretical context of established science. The lower left quadrant represents phenomena whose occurrence, although it has not been conclusively verified, would not violate physical laws.^{**}

The upper right quadrant, on the other hand, comprises a class of phenomena that are more troublesome but also more interesting from the point of view of the working scientist. Although the existence of these phenomena is verified, they nevertheless appear to violate one or more physical laws. Unless it turns out that their violation of a physical law is illusory, they can be absorbed into the body of normal science only by the modification or rejection of established laws, or by the formulation of a new law. This may be described as the nontrivial route to normal science, in the sense that it produces an alteration of our picture of the world and may lead to the discovery of new phenomena and new relations among them.

^{*} The term "phenomenon" is used loosely here to mean simply any event, observed or conjectured.

^{**} As the examples given have in fact been inferred from various established physical theories, it is not surprising that they are consistent with those theories. We leave it to the reader to search for more exotic examples that do not have this property.

① CLASSIFICATION OF PHENOMENA

	NO VIOLATION PHYSICAL LAWS	APPEAR TO VIOLATE PHYSICAL LAWS
VERIFIED	NORMAL SCIENCE	QUASARS
UNVERIFIED	ANTIMATTER REGIONS, GRAVITY WAVES, QUARKS	PARANORMAL PHENOMENA

Finally, there are the phenomena in the lower right quadrant, those that are both unverified and incompatible with physical law. It is our opinion that paranormal phenomena fall into this category, a circumstance that accounts for their controversial status. As they remain unverified, the scientist is less troubled by their apparent violation of natural law, and more inclined to reject or ignore them. The same status, on the other hand, affords almost unlimited room for speculation on the nature and implications of such phenomena, and thus tends to appeal to those who, for one reason or another, are hostile toward science.

TAXONOMY

The phenomena described as "paranormal" comprise a broad and heterogeneous spectrum of human experience. The history of efforts at their systematic investigation suggests that the specific kinds of phenomena regarded as "paranormal" during any given period are subject to social influences

similar to those that determine the rise and decline of public and scientific interest in other areas of human behavior. However, although the popularity of specific types of paranormal phenomena may wax and wane, there is sufficient historical continuity to justify grouping them under a single rubric, even though membership in this category may be regarded as fluid over time. (It should be noted that aspects of certain phenomena, such as Yoga, eventually move into the region of normal science.)

In this briefing, our major concern is with paranormal phenomena that meet two criteria: (1) They have potential military applications in the foreseeable future, and (2) they are subject to experimental investigation. With these qualifications in mind, then, we turn to Figure 2, which outlines the types of phenomena that are the object of modern experimental investigation. The term "paranormal phenomena" seems preferable to other associated terms such as "parapsychology" (although they are used synonymously here) or "psychic research" because it carries fewer overtones of the occult, and thus less emotional charge.

② TAXONOMY

● PARANORMAL PHENOMENA

EXTRASENSORY PERCEPTION

- Telepathy
- Clairvoyance
- Precognition

PSYCHOKINESIS

● RELATED PHENOMENA

Under paranormal phenomena, then, we have extrasensory perception, which comprises the following:

- Telepathy, or the reception of information or behavioral influences from another mind in the apparent absence of physical communication.
- Clairvoyance, or the perception of physical objects or events under conditions that preclude the reception of known physical signals.
- Precognition, or the perception of events that have not yet occurred.

In addition, as distinct from perceptual phenomena, we have psychokinesis, or the ability to influence an object's physical behavior under conditions that preclude the transmission of known forms of energy.*

There are other related phenomena that are, although in some cases not strictly paranormal, peripherally related. These include acupuncture, Kirlian photography, various forms of voluntary control of the autonomic nervous system, faith healing, dowsing, and dermo-optics. We shall have further comments on some of these.

* It should be pointed out that there is still considerable interest, in some circles, in more "traditional" paranormal phenomena such as spiritualism, reincarnation, out-of-body experiences, apparitions, and poltergeists. We felt, however, that we were justified in excluding these, since they do not appear to satisfy one or the other of our criteria.

II. POSSIBLE MILITARY APPLICATIONS

Figure 3 lists some possible areas of military applications of paranormal phenomena:

Long- and Short-Distance Information Transfer. For a variety of reasons, including apparent violations of some basic principles of communication theory, the probability of long-distance telepathic communication being confirmed as a real phenomenon appears rather low; however, these considerations may not apply with equal force to the possibility of short-range information transfer by telepathic means (of the order of a few meters). It should be noted, though, that long-distance telepathic phenomena occupy a paramount place in modern experimental research, but that their confirmation and theoretical explanation would require a modification of known laws of physics.

3) POSSIBLE MILITARY APPLICATIONS OF PARANORMAL PHENOMENA

- LONG- AND SHORT-DISTANCE INFORMATION TRANSFER
- EQUIPMENT CONTROL
- SYSTEM DAMAGE
- MAN-MACHINE INTERACTIONS
- BODY CONTROL AND HEALING (in Military Situations)

Equipment Control and System Damage. It would not be conceptually difficult, for example, to imagine the utility of psychokinesis (if feasible) in disrupting the electrical systems associated with an ICBM's guidance program.

Man-Machine Interactions. These entail an application of both telepathy and psychokinesis to produce a quasi-symbiotic relationship between man and, say, computing equipment on a much more intimate basis than is presently feasible.

Body Control and Healing. One may envision an application of both autogenic phenomena (voluntary control of the autonomic nervous system) and what is traditionally known as "faith healing" to battlefield injuries. There is, in fact, some evidence that certain individuals may accelerate organic healing processes through various psychosomatic effects. The ability to resist normally intolerable conditions, such as torture or brainwashing in captivity, might be another application of these phenomena.

III. DIFFERENCES BETWEEN SOVIET AND U.S. RESEARCH

One finding that emerged from the study was some important dissimilarities in the conduct of paranormal research in the Soviet Union and in the United States. Figure 4 shows some of these contrasting characteristics.

④ DIFFERENCES BETWEEN SOVIET AND U.S. RESEARCH

<u>SOVIET</u>	<u>UNITED STATES</u>
1. Experimental subjects especially selected and/or trained.	1. Subjects usually not screened.
2. Theory used as guide to experimentation.	2. Little attempt to link theory to experiments.
3. Emphasis on measuring physical and physiological concomitants.	3. Beginning to track Soviet research.
4. Interest in technology for detection and/or enhancement.	4. Some comparable technology available; application just beginning.
5. Interdisciplinary research involving natural scientists.	5. Few natural scientists.
6. Vague and popular accounts of experiments. Technical publication of "related problems" of bioenergetics.	6. Open publication of experimental results, many books.
7. No dedicated journals.	7. Several journals.

Experimental Subjects

From the beginning, Soviet researchers have tended to concentrate on experimental subjects that appear to display outstanding abilities. It is clear, however, that the Russians also believe that subjects can be trained for certain kinds of skills, notably telepathy and psychokinesis. (Filmed performances of two of their outstanding psychokinetic subjects are currently circulating in the West.) By contrast, U.S. researchers tend to be less

discriminating in their choice of subjects, and many published results are based on the performance of unscreened and untrained volunteers. It should be noted, though, that when an apparently outstanding subject does appear in the United States, he often undergoes intensive investigation (in almost every case, however, these alleged abilities undergo the so-called "decline effect"). On the other hand, the results of attempts to train subjects in paranormal skills in the U.S. are uniformly negative.

Theory and Experiment

If there is an explanation, other than the null hypothesis, for the lack of progress in theoretical understanding of paranormal phenomena in the United States, it may lie in the apparent compartmentalization of theorizing and experimentation. Although there is a plethora of different sorts of theories circulating in parapsychology circles, many of them based upon the latest speculations in the more exotic regions of particle physics, there appears to be little concern with formulating a theory that is testable under reasonably simple laboratory conditions. There is a tendency for labor to be divided between abstruse speculation and laboratory experimentation. By contrast, the Soviet investigators (perhaps because of the ideological imperatives of dialectical materialism) seem much more concerned to provide materialistic explanations of paranormal phenomena that are experimentally testable. Thus one senses in the Soviet Union a continuing interaction between theory and experiment, with theory being used as a guide to the detection and recording of paranormal effects.

Measurement

The emphasis on measuring physical and physiological concomitants of paranormal phenomena in the Soviet Union, as alluded to above, has led Soviet investigators to develop a number of different mechanical devices to detect and/or enhance associated effects. Some of these are described

below. However, some U.S. researchers are beginning to explore some of the technologies employed by the Russians. Judging from communications by the Soviets, it is clear that there is nothing especially technologically advanced in the Soviet devices; rather they have chosen to apply available technology to the measurement of paranormal phenomena.

Interdisciplinary Approach

Another contrast is the tendency of the Soviet investigators to have training in the "hard" sciences such as physics, biophysics, or engineering, and to function as interdisciplinary teams. The large majority of U.S. workers, on the other hand, appear to be trained in psychology or, in a few cases, the medical sciences; some of them are scientific amateurs. (The best-known American parapsychologist was trained as a botanist.) These differences may also account for the tendency of American investigators to avoid technological approaches to measurement.

Publication

There are several alternative explanations of Soviet aversion to publishing detailed accounts of experimental work. It should be noted, however, that there are no Soviet journals dedicated to the publication of information on parapsychology, and that official skepticism may force Soviet investigators to seek more popular, and thus less formal, outlets for publicity regarding their work. With the exception of the topic of "bioenergetics" (to be described in more detail), most Soviet writing about paranormal phenomena does in fact appear in the popular media, a circumstance that has apparently caused Soviet officials to entertain second thoughts about the ideological wisdom of popularizing a topic tainted with "bourgeois idealism." (We shall say more about this in discussing Soviet publications.) In the United States, on the other hand, in addition to a virtual flood of popular magazine articles and numerous books of widely varying quality, there are a

number of specialized periodicals such as the Journal of Parapsychology and Journal of the American Society for Psychical Research. Whether this discrepancy has hindered Soviet investigators in the exchange of essential information is problematical; experience would suggest otherwise.

IV. SOVIET RESEARCH IN PARAPSYCHOLOGY

AREAS OF SOVIET INVESTIGATION

Figure 5 shows a number of paranormal phenomena reportedly investigated in the Soviet Union. The range covers virtually the entire spectrum described by our taxonomy, with the possible exception of clairvoyance,* and includes a number of "related phenomena" to be discussed under "Bioenergetic Phenomena."

5 AREAS OF SOVIET INVESTIGATION

TELEPATHY

- LONG-DISTANCE
- HYPNOSIS
 - Induction
 - Enhancement
 - Commands
- UNDERWATER (Submarine)
- TWINS

PRECOGNITION

- ASTRONAUT TRAINING

PSYCHOKINESIS

- VOLUNTARY DISPLACEMENT OF OBJECTS

DERMO-OPTICS

- DERMAL SENSING OF VISUAL INFORMATION

TECHNOLOGY

- SERGEYEV DETECTOR (EEG)
- ELECTROAURAGRAM (GULYAEV)
- KIRLIAN PHOTOGRAPHY
- PAVLITA GENERATOR

* During the 1960s a Czech investigator, Milan Ryzl, conducted a series of well-publicized double-blind clairvoyance experiments with an outstanding subject in Prague. Ryzl's subsequent defection to the West in 1967 has provided some reports on the alleged interest of the Soviet military and secret police in applications of paranormal phenomena. Since we have not yet obtained access to certain classified channels, we have been unable to examine the pertinent intelligence information; thus we have omitted discussion of Ryzl's allegations.

Telepathy

Telepathy is one of the subjects accorded a good deal of scientific and public attention in Soviet parapsychology circles. Soviet research in telepathy dates from the early 1920s, shortly after the revolution, when a program was established at the Institute for Brain Research at the University of Leningrad under the direction of V. M. Bechterev, later succeeded by L. L. Vasiliev.

The direction of recent Soviet research on telepathy reflects the earlier investigations, especially in an emphasis on the incorporation of various hypnotic techniques. During the 1960s the Soviet press reported on a number of long-distance telepathy experiments conducted between several Soviet cities, the last of which, conducted under the somewhat skeptical sponsorship of Literaturaya Gazeta, yielded negative results. Others of these experiments were reported to be highly successful, at least by Western standards. In addition, there are unverified reports, by both Western visitors and (in private conversation) by Soviet scientists, of additional telepathic-type experiments conducted aboard a submarine* and between twins.

Precognition

Regarding precognition, we found only one (unverified) report, by a Soviet investigator, that a program was being planned to train astronauts to "foresee and to avoid accidents in space." It was clear from the context that he was referring to precognitive processes.

* The alleged submarine experiments entailed separating from their mother a freshly born litter of rabbits, which were then taken to sea aboard a submarine. The mother was then connected to an EEG recorder, and as the infants aboard the submarine were sacrificed, the mother's EEG is claimed to have spiked at each death.

Psychokinesis

Psychokinesis is another phenomenon currently receiving much attention from Soviet parapsychology researchers. As in other areas, the Soviets tend to use psychokinetic subjects that have allegedly demonstrated outstanding abilities. At least two of these subjects, Nelya Kulagina (or Ninel Mihailova) and Alla Vinogradova, both females, are presently undergoing intensive investigation. They have also been observed by Western visitors, and some of their filmed performances are currently circulating in the United States. They appear to psychokinetically displace various small objects such as compass needles, light metal cigar containers, wrist watches, and wooden kitchen matches, some of which are placed inside a transparent plastic housing. The weight of objects reported thus displaced range up to several tens of grams. The Soviets have monitored various electrical fields and EEG patterns associated with these activities, as well as a number of the subjects' physiological states and vital signs.* Although Kulagina has been denounced in the Soviet press as a fraud and was reported imprisoned for black-market dealings, her alleged psychokinetic abilities continue to be the subject of great interest in Soviet parapsychology circles.

Dermo-Optics

The phenomenon of dermo-optics, the alleged sensing of visual information through tactile skin receptors, was the object of a flurry of public attention during the early 1960s. Following the publicity accorded one of the early experimental subjects, Rosa Kuleshova, and the certification of her abilities by several groups of scientific examiners, persons demonstrating dermo-optic abilities (mostly children) began to appear in provincial villages

* These and other phenomena are described in more detail in William A. Tiller, "The A.R.E. Visit to Russia," A.R.E. Journal, Vol. 7, No. 2 (March 1972).

all over the Soviet Union. Like Kuleshova, they claimed the ability to read printed texts or to identify colors with skin surfaces while blindfolded. Although public interest has since declined, theorizing about dermo-optics continues in the Soviet Union. A careful examination of the experimental conditions described, however, suggests considerable latitude for the possibility of fraud.*

Technology

One area of paranormal phenomena in which Soviet investigators appear to have gained the initiative over their Western counterparts is in the development of various technologies for the detection and recording of associated physiological states and physical effects.

Sergeyev Detector. Named after a Soviet scientist, this device has been reported to detect fields associated with electroencephalographic activity at distances of the order of five meters. No comparable device has been reported in the West.

Electroauragram. Devised by P. Gulyayev, the electroauragram can allegedly detect electrical fields produced by the hearts of frogs and of human subjects at a distance of several centimeters. Although not explicitly associated with paranormal phenomena, a similar device capable of detecting small magnetic fields produced by various physiological processes has been available for several years in the United States.**

Kirlian Photography. Although recently brought to public attention by the work of the Kirlians in the Soviet Union, this photographic technique

* Martin Gardner, "Dermo-optical Perception: A Peek Down the Nose," Science, Vol. 151 (11 February 1956), pp. 654-657.

** David Cohen, "Magnetic Fields Around the Torso: Production by Electrical Activity of the Human Heart," Science, Vol. 156 (7 February 1967), pp. 652-654, and "Magnetoencephalography: Evidence of Magnetic Fields Produced by Alpha-Rhythm Currents," Science, Vol. 161 (23 August 1968), pp. 784-786.

has a somewhat sporadic history dating back to the end of the last century. In general, Kirlian photography is produced by means of a high-frequency electrical field ranging from 75 kilohertz to several megahertz. Pulse duration and voltage may also range widely, but amperage is obviously very small for working with human subjects.

One of the simplest Soviet Kirlian devices consists of a condenser system formed by two plates (electrodes) covered with a dielectric. The object to be photographed is placed between the plates -- rather like a sandwich -- and a high-frequency voltage, ranging from 10,000 volts to 300,000 volts, is then applied across the plates. The photographic images of objects -- organic and inorganic -- thus produced are indeed striking, especially the colored ones, but vary greatly in appearance, depending on a large number of parameters, both electrical and subject related. Some Soviets believe that the properties of Kirlian photographs are related to the behavior of a biological plasma (in the case of human subjects and plants), which is discussed under "Bioenergetic Phenomena." Physicists tend to interpret the phenomenon as a corona discharge. Whatever their origin, Kirlian effects with a human subject appear to be associated with his emotional state, and the Soviets are using them as a tool to investigate, among other things, paranormal phenomena.

Pavlita Generators. Developed by a Czech inventor, R. Pavlita, the Pavlita generators are a family of devices that are claimed to be able to focus and direct the psychokinetic energies of human subjects. They are fabricated of various heavy metals and have been displayed in a variety of geometrical configurations. Their internal structure of mechanism, if any, is unknown. Although several Western visitors have viewed these devices and witnessed demonstrations, reliable accounts of experiments or technical details of their construction are unavailable, so far as we can determine.

Bioenergetic Phenomena

Although the term "bioenergetics" was introduced by the biochemist A. Szent-Gyorgyi some years ago to describe various energetic processes associated with metabolic functions, the term has been adapted by Soviet parapsychologists to cover a more extensive and less orthodox range of biological phenomena. Figure 6 shows a number of these phenomena that the Soviets appear to include under the rubric of "bioenergetics." The subject is of more than passing interest, as Soviet parapsychologists are apparently concentrating most of their present theorizing with regard to paranormal phenomena in this area.

⑥ BIOENERGETIC PHENOMENA

- PSYCHOKINESIS
- TELEPATHY (?)
- KIRLIAN EFFECTS
- BIOPHYSICAL EFFECT (DOWSING)
- DERMO-OPTICS ("TACTILE VISION")
- ACUPUNCTURE

Major symposia on problems of bioenergetics were held at Kazakh State University at Alma-Ata in Soviet Kazakhstan in 1969, 1970, and 1971. Proceedings of the first of these have been published and subsequently

translated into English.* They constitute something of a scientific oddity. Most of the papers in the volume appear to be abstracted or truncated to some extent, and the narrative line often breaks off at a crucial point. It is clear, however, that despite the absence of any explicit references to paranormal phenomena, several of the papers describe experimental and theoretical work pertaining to such subjects as psychokinesis and telepathy. The rationale for experimental work described in other papers of the volume, such as those dealing with the physiological effects of various colored lights on animal organs, remains obscure. Judging by the proceedings of the Alma-Ata symposium and other translated Soviet papers on bioenergetics, the Russians appear to be attempting to pull together in some cohesive fashion a variety of biological phenomena, some well known and some more speculative, to explain a number of paranormal phenomena. Theorizing appears to center around the concept of a "bioplasma," a plasma-like state of matter in the human body that, under certain conditions, is capable of emitting charged coherent radiation beyond the body surface in the form of electrons and possibly protons. Current Soviet theorizing is in a fluid state, however, and there are several competing theories.

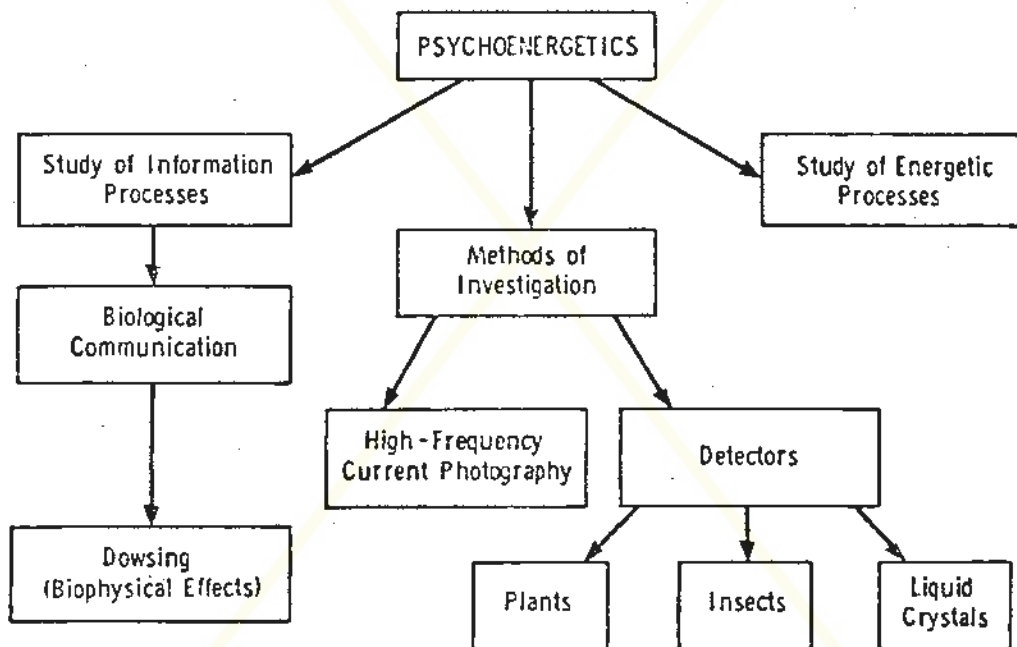
It is our impression that Soviet parapsychologists are attempting to explain alleged paranormal phenomena in the context of theories having a considerably greater degree of specificity and, as observed earlier, with more regard for the interaction between theory and experiment than are their Western counterparts.

* B. A. Dombrovsky, G. A. Sergeyev, B. M. Inyushin, Bioenergetics Questions (Material of the Scientific Methodological Seminar in Alma-Ata), Southern California Society for Psychical Research, Beverly Hills, California, 1972. This volume is listed in a Soviet bibliography of parapsychology as "one of the milestones" of Soviet efforts in that field.

ORGANIZATION OF SOVIET ACTIVITY

Figure 7 shows a schematic of the Soviet's view of their current activities in parapsychology, as disclosed to an American visitor.* The figure appears in our source without comment, and some of the taxonomy appears to conflict with our own impressions. "Psychoenergetics" is a Soviet term for "parapsychology"; "study of energetic processes" probably refers to psychokinesis, and "biological communication" is the Soviet term for telepathy.

⑦ ORGANIZATION OF SOVIET ACTIVITY



SOVIET PUBLICATIONS

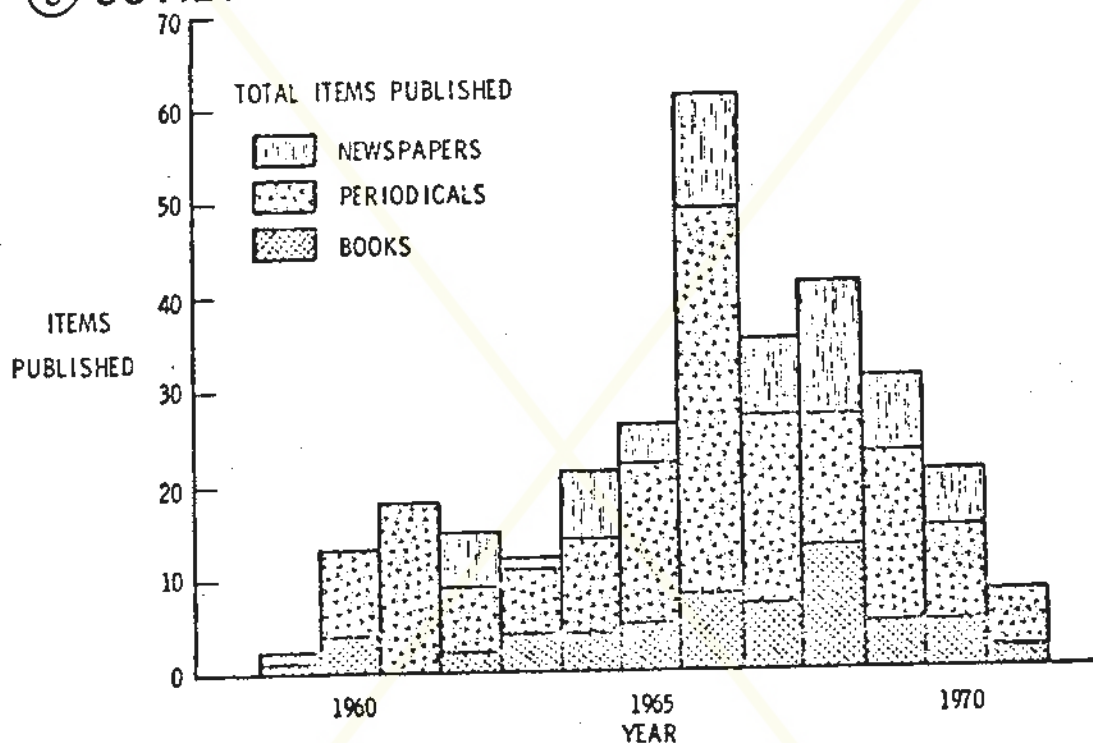
Figure 8 is based upon a bibliography compiled by a Soviet parapsychologist.** A number of the items cited are of dubious relevance to

* Tiller, *op. cit.*

** E. K. Naumov and L. V. Vilenskaya, Soviet Bibliography on Parapsychology (Psychoenergetics) and Related Subjects, Moscow, 1971 (JPRS 55557, 28 March 1972).

parapsychology per se (such as fire-walking), and several hostile articles, turned up by Rand's own literature search, are excluded. However, keeping these caveats in mind, the graph probably represents with reasonable accuracy the relative volume of Soviet publications by year, though the absolute level may be somewhat inflated.

⑧ SOVIET PUBLICATIONS BY YEAR, 1959-1971



Source: Bibliography on Parapsychology (Psychoenergetics and related subjects), USSR, Moscow, 1972

Two features of the figure are of interest: First, both research and public discussion in the field of parapsychology were resumed in the Soviet Union during the late 1950s after a long hiatus beginning in 1939. The stimulus for these events was the publication of two articles in French popular magazines describing some alleged ship-to-shore long-distance telepathy experiments, reportedly highly successful, conducted aboard the U.S. nuclear submarine Nautilus. The U.S. Government has consistently

denied these stories, a position substantiated by our confidential sources. In 1963 an American popular magazine published an article exposing the Nautilus story as a fabrication; the article was subsequently excerpted in the Soviet press. However, doubts seem to linger in Soviet parapsychology circles, since American visitors are still subjected to Soviet questioning about "the Nautilus experiments." (It is perhaps prudent to keep this episode in mind when considering the propriety of a real U.S. Government-sponsored program of research in parapsychology; if, that is, one is concerned about the effects of such a program on corresponding Soviet funding levels.) We note, then, a fairly steady rise in Soviet publications through the middle 1960s, with an apparent decline since about 1968.

This brings us to the second interesting feature of the figure. Though the rather complex sequence of events is not detailed here, there was a fairly strong move by Soviet officialdom in the summer of 1968 both to discredit the subject of parapsychology and to discourage publication of sensationalized accounts of research. There is apparent concern that such accounts, besides encouraging the ideological spectre of "bourgeois idealism" in the public mind, may open the door to the even greater danger of religious speculation. As one Soviet publicist wrote at the time, "If there is telepathy there is soul, if there is soul there is religion." At the same time, however, it was made clear to Soviet scientists that research in parapsychology is not forbidden. (And, in fact, there is abundant evidence that it is continuing, some of it possibly government funded.) Moreover, considering the violent (not to say libelous) nature of some of the public attacks on parapsychology in 1968, it is curious that the publication rate has not dropped to zero. We have no explanation, except to suggest that Soviet authorities may not regard parapsychology as an area ideologically critical enough to warrant total suppression in the public media.

V. PARANORMAL RESEARCH CENTERS IN THE
SOVIET UNION AND THE UNITED STATES

SOVIET EFFORTS

Figure 9 shows verified centers of paranormal research in the Soviet Union. Although up to 20 additional research groups have been reported by Western visitors, we have not been able to corroborate their existence through the open literature. One can, however, note a number of additional branches of the Popov Society, the best-known of which is headed by I. M. Kogan in Moscow. (In the next section the official status and funding of these efforts is discussed.)

⑨ SOVIET EFFORTS *

<u>INSTITUTION</u>	<u>AREA(S) OF INTEREST</u>	<u>PRINCIPAL INVESTIGATOR(S)</u>
MOSCOW		
• BIOINFORMATION SECTION, POPOV SOCIETY (1965)**	LONG-DISTANCE TELEPATHY, EMF THEORY, TELEPATHY/ HYPNOSIS	I.M. KOGAN, Y.I. KAMENSKY
• DEPARTMENT OF TECHNICAL PARAPSYCHOLOGY (1967)	LONG-DISTANCE TELEPATHY, EEG RECORDING, PRECOGNITION TRAINING, UNDERWATER TELEPATHY, P.K., COORDINATION OF EFFORT	E.K. NAUMOV, G.A. SERGEYEV
LENINGRAD		
• LABORATORY OF PHYSIOLOGICAL CYBERNETICS, LENINGRAD U. (1961)	TELEPATHY BETWEEN TWINS, TELEPATHY/HYPNOSIS, P.K., AURAGRAM	P. GULYAYEV
ALMA-ATA		
KAZAKH STATE U.	BIOENERGETICS	V.M. INYUSHIN STAFF: 6-7
OTHERS (7)		
• Data incomplete		
• Other branches reported in Leningrad, Novosibirsk, Odessa, Zaporozhye, Taganrog		

It is our impression -- considering the scarcity of manpower data -- that the overall level of visible effort in Soviet parapsychology is roughly equal to that in the United States, and perhaps somewhat lower. It may be described as moderate in intensity, in the sense that it falls somewhere between a minimal effort and a large-scale, government-funded program.

The two most important Soviet research groups appear to be Naumov's in Moscow and Inyushin's in Alma-Ata. E. K. Naumov is apparently charged with coordinating research efforts throughout the country; he wears several hats: researcher, publicist, and contact point for Western visitors. He is dedicated to his field, an enthusiast, and, according to one informant, "harassed" by his superiors. It is not known to whom he is directly responsible. One Western visitor was told by Naumov that a new Institute for Psychology, attached to the Soviet Academy of Sciences, will be opened "soon" to study the controllability of psychokinetic phenomena. If true, this implies a greater degree of official recognition of the respectability of paranormal research than it has so far been accorded.

V. M. Inyushin's laboratory at Kazakh State University is the center of bioenergetics research. He works closely with the Kirlians (husband and wife), and a good deal of the work at Kazakh State is associated with Kirlian effects.*

SPECIALTIES OF U.S. GROUPS

Although this net assessment emphasizes Soviet research in parapsychology, we also conducted a survey of present U.S. efforts. This consisted of a sampling of some key works, both American and British, and an analysis of

* The fraternity of psychic researchers, in both the Soviet Union and the United States, is closely knit. We cannot resist one example: Victor Adamenko, a Soviet physicist involved in paranormal research, is married to Alla Vinogradova, one of the leading Soviet psychokinetic performers. As a child, Adamenko lived next door to the Kirlians.

U.S. journal publications over the past ten years, the latter by surveying abstracts appearing in the "Parapsychology" section of Psychological Abstracts. In addition, we took a more detailed look at the statistical aspects of experimental parapsychology. Only a brief summary of this effort is reported here.

As a rough estimate, something like 80 to 90 percent of U.S. research in the time period surveyed (1960-1972) consists of experiments in which subjects attempt to guess the symbols appearing on special cards (the standard "Zener" deck) under various subjective and ambient conditions. Although many of the published reports claim statistically significant results, a broader analysis (not presented here) of the statistical techniques used suggests that the positive results reported may represent statistical artifacts rather than real effects. Moreover, the most ambitious and careful attempt to verify the occurrence of telepathic phenomena, recently conducted by the Air Force Cambridge Research Laboratories using computerized recording techniques, failed to produce results significantly above chance expectation.* There are, of course, alternative explanations for the unimpressive nature of the experimental literature. It may turn out, for example, that we are dealing with an extremely marginal phenomenon, or one that does not lend itself well to the statistical type of experiment (as the Soviet investigators believe).

In any event, assuming that paranormal phenomena are real, U.S. investigators lack even the beginning of an adequate theoretical approach. What we find instead is a proliferation of more or less poorly developed explanatory concepts, in no case formulated precisely enough to permit experimental testing. As noted, Soviet research presents a somewhat different picture. Within the past few years some U.S. investigators, and

* William R. Smith et al., Testing for Extrasensory Perception with a Machine, AFCRL-63-141, May 1963, Air Force Cambridge Research Laboratories, Office of Aerospace Research, United States Air Force, L. G. Hanscom Field, Massachusetts.

especially those who have visited the Soviet Union, have begun to attempt to replicate some Soviet equipment, particularly Kirlian apparatus, and to explore some of the Soviets' theoretical constructs.

Figure 10 shows some of the major U.S. research groups and their specialties. These institutions were selected on the basis of the volume of their published experimental work, and thus they do not necessarily represent the full range of U.S. research. Kirlian effects, for example, are being explored at both UCLA and Stanford, and numerous organizations of various sizes are investigating other types of paranormal phenomena. One of the oldest and best known of these is the American Society for Psychical Research. Some remarks on the funding of research in the United States will be found in the next section.

10) SPECIALTIES OF U.S. GROUPS

DUKE UNIVERSITY/ERNM

- CLAIRVOYANCE AND PRECOGNITION
- PSYCHOKINESIS

UNIVERSITY OF VIRGINIA

- SENSITIVE SUBJECTS
- EEG MONITORING

MAIMONIDES MEDICAL CENTER, N.Y.

- TELEPATHY IN DREAMS
- HYPNOSIS
- EEG MONITORING

CITY COLLEGE OF N.Y.

- EFFECTS OF PERSONALITY TRAITS
- HYPNOSIS

ST. JOSEPH'S COLLEGE, PHILADELPHIA

- PERSONALITY/ATTITUDE
- EMOTIONAL STATE
- DERMO-OPTICS

U.C.L.A.

- LONG-DISTANCE TELEPATHY
- PERSONALITY/ATTITUDE

UNIVERSITY OF PITTSBURG

- EMOTIONAL STATE

VI. U.S. AND SOVIET RESEARCH FUNDING

No official figures on the budgeting, if any, of parapsychology research are published in the Soviet Union. Unofficial and unverified estimates by Western visitors range from 12 to 20 million rubles per year (13 to 21 million dollars) to zero. One Western visitor was told by a Soviet parapsychology researcher that he "had not received even one kopek in support of (his) work." However, some informed comments on the reported funding range are possible. In 1968, the average outlay per employee for all of Soviet R&D was 2,700 rubles. Given the 12 to 20 million rubles cited, this level of funding would support some four to seven thousand full-time personnel (scientists and support persons) employed in parapsychology research. If, as some Americans have reported, there are 20 such "centers" in the Soviet Union, this would imply an average staff of two or three hundred employees per center. Needless to say, no Western visitors have reported a visible research effort anywhere near that large, providing prima facie evidence that the figure of 12 to 20 million rubles is, if anything, grossly inflated.

There are, on the other hand, more reliable reports that both Naumov's and Inyushin's work is funded by the Soviet government, the latter "to an unlimited extent."

For the remainder of the visible research efforts, evidence suggests that most of it is conducted on a private, leisure-time basis, using available laboratory equipment after working hours. There are a large number of voluntary professional societies in the Soviet Union, with a total of 4.7 million members. The Popov Society is one such. They hold conferences, conduct seminars, publish scientific journals, and organize leisure-time laboratories, institutes, or design organizations. They are typically dependent for shelter on the hospitality of a more formal entity

such as a university. The reported budget for the activities of all such societies in 1967 was 23.8 million rubles.

In summary, one may speculate that the Soviet government is tolerating a certain level of leisure-time activity in parapsychology and funding certain key efforts on a high-risk basis.

There are certain similarities between research funding of parapsychology in the Soviet Union and in the United States, in the sense that in both countries much of the research appears to proceed without institutionalized monetary support. A good deal of work in the United States is also conducted on an unofficial, leisure-time basis, using available laboratory space and equipment (often in a university). In this country, however, the researchers' pocket money is often augmented by grants from various parapsychology foundations, private donations, and bequests. Indeed, judging from journal reports, grantsmanship is not unknown in the parapsychology community. As a rough estimate, several hundred thousand dollars a year appear to be channeled into parapsychology research from one source or another.

VII. GENERAL CONCLUSIONS OF THE STUDY

The final figure, Figure 11, recapitulates the research findings of the study. By way of summary, we would like to emphasize that (1) Soviet research is much more oriented toward biological and physical investigation of paranormal phenomena than is U.S. research, which is dominated by psychologists; (2) although visible U.S. and Soviet levels of effort appear roughly equal, over forty years of research in the United States have failed to significantly advance our understanding of paranormal phenomena; (3) if paranormal phenomena exist, the thrust of Soviet research appears more likely to lead to explanation, control, and application than is U.S. research; and (4) there remains a serious need for detailed analytical studies of some of these phenomena by specialists in various scientific disciplines to determine their plausibility, their amenability to experimental investigation, and their potential for applications.

① GENERAL CONCLUSIONS OF THE STUDY

- OVER FORTY YEARS OF RESEARCH IN THE UNITED STATES HAVE FAILED TO SIGNIFICANTLY ADVANCE OUR UNDERSTANDING OF PARANORMAL PHENOMENA
- IN SEVERAL AREAS, U.S. RESEARCH IS BEGINNING TO TRACK SOVIET RESEARCH
- THERE IS MUCH SOVIET INTEREST IN U.S. WORK, ESPECIALLY IN POSSIBLE MILITARY-ORIENTED RESEARCH
- VISIBLE U.S. AND SOVIET LEVELS OF EFFORT APPEAR ROUGHLY EQUAL
- THERE IS SOME EVIDENCE OF SOVIET GOVERNMENT FUNDING OF CERTAIN AREAS OF RESEARCH
- PUBLISHED INFORMATION ON SOVIET EXPERIMENTAL DESIGN AND ANALYSIS TENDS TO BE VAGUE AND INCOMPLETE
- SOVIET RESEARCH IS MUCH MORE ORIENTED TOWARD BIOLOGICAL AND PHYSICAL THEORIZING THAN IS U.S. RESEARCH
- IF PARANORMAL PHENOMENA DO EXIST, THE THRUST OF SOVIET RESEARCH APPEARS MORE LIKELY TO LEAD TO EXPLANATION, CONTROL, AND APPLICATION THAN IS U.S. RESEARCH