Report

OVERVIEW OF CURRENT PARAPSYCHOLOGY RESEARCH IN THE FORMER SOVIET UNION

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ABSTRACT

This paper provides an in-depth discussion of research of anomalous mental phenomena (AMP) in the former Soviet Union. The authors spent approximately two months in Russia during 1992 and 1993, interacting with researchers in Moscow and Novosibirsk. The authors primarily discuss experiments in anomalous perturbation (often referred to as psychokinesis—PK and bio-PK) which have been the main focus of AMP research programs in the Soviet Union. In particular, the authors discuss the methodologies and results of experimental attempts by human operators to affect the following inanimate and animate target systems: (1) microcalorimeters, (2) electric noise generators, (3) cellular cultures, (4) plant seeds, (5) plant biopotentials, (6) frequency of impulses emitted by an electricity-generating fish, (7) eating behavior of mice, (8) person's reaction time, and (9) parameters of human EEG.

KEYWORDS: parapsychology, distant influence, bio-PK, biological systems, EEG

INTRODUCTION

In this paper, we present some of our observations of anomalous mental phenomena (AMP) research in the former Soviet Union resulting from our trip to Moscow in September/October of 1992 and to Moscow and Novosibirsk in May of 1993. A modified version of this paper was recently presented at the 36th Annual Convention of the Parapsychological Association in Toronto, Canada.[1] The purpose of our paper is to provide a narrative overview of the Russian research. Despite a few exceptions, the material we have is insufficient to provide: (1) a comprehensive assessment of the experimental details, or (2) a formal meta-analysis of classes of studies (e.g., all the bio-PK investigations). As we are now beginning to work with our Russian colleagues, we will provide the important additional analyses later, when the data are available.

AMP research programs in the Soviet Union have primarily focused on experimental studies in "distant influence" on animate and inanimate systems, i.e., psychokinesis (PK) and bio-PK. There have been numerous attempts at PK experimentation with such purportedly gifted individuals as Nina Kulagina,[2] extensive studies of mental influence on various physical systems,[3-6] plant growth,[7,8] and plant biopotentials,[9,10] and nuclear magnetic resonance (NMR) measurements of plant seeds before and after ostensible bio-PK influence.[11,12] Following this trend as observed in available Russian literature, we focus our paper on the analysis of PK and bio-PK studies.

"DISTANT INFLUENCE" ON PHYSICAL SYSTEMS

"Distant Influence" on Microcalorimeter

Since early 1980s, Prof. Georgy K. Gurtovoy (Chief of the Laboratory on Applying Isotopes in Ophthalmology at the Research Institute of Ophthalmology and President of the International Academy of Human Potential in Moscow) and physicist Alexander Parkhomov[4,5,13,14] have engaged in studies of "mental influence" on physical systems like microcalorimeters and electric noise generators.

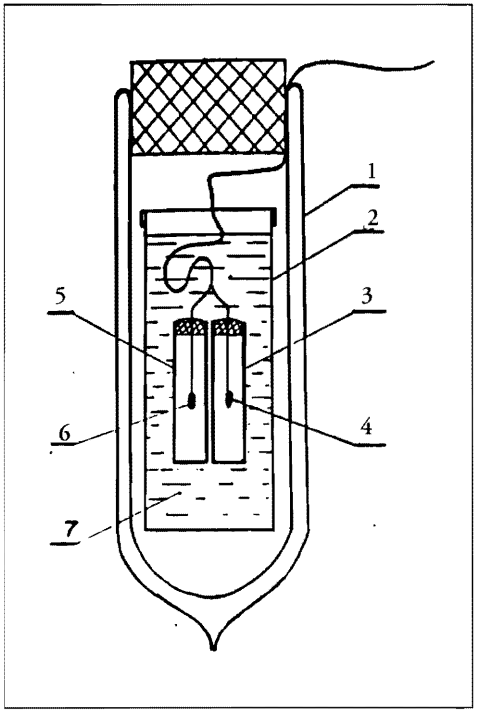

Figure 1. Design of the screened microcalorimeter. 1—Dewar Flask, 2—glass, 3 and 5—shells, 4—thermistor, 6—temperature stable resistor, 7—melting ice.

The set-up of one of the microcalorimeter devices used in the experiments is shown in Figure 1. The system is reportedly sensitive to changes in temperature of up to 10^{-5}°C. It is extremely well shielded from the environment. The operators (i.e., individuals who attempt to influence the target system) were located from 0.5 to 20 km from the device; some long-distance tests (Moscow to Novosibirsk and Moscow to Sofia) were also conducted. The task of the operator was to change the temperature relative to the control periods. Changes in temperature observed in these tests were of the order of 2×10^{-3}°C—a change of over 10 mV on the output of the recording device was considered a "hit" (Figure 2). In the experiment between Moscow and Novosibirsk (at a distance of about 4,000 km), out of eight trials, six "hits" were recorded, ($\leq 2.8 \times 10^{-4}$, Poisson's distribution). In nine control trials during this experiment, there was one "hit," ($p = 0.111$). In another long-distance experiment, between Moscow and Sofia, there were 13 trials with 8 "hits." We compute a p-value of 1.1×10^{-4}, assuming the previously stated background rate. Within Moscow (distances of up to 20 km), out of 18 trials, 12 "hits" were recorded ($p \leq 5.5 \times 10^{-5}$). The tests seem to be carefully designed, and there seem to be no obvious artifacts that might provide an explanation to these results. Using the method of adding p-values,[15] we compute a combined p-value of 1.5×10^{-11} for the three studies. We emphasize that our calculations may be based on an incorrect background assumption. Nonetheless, the results appear quite statistically robust.

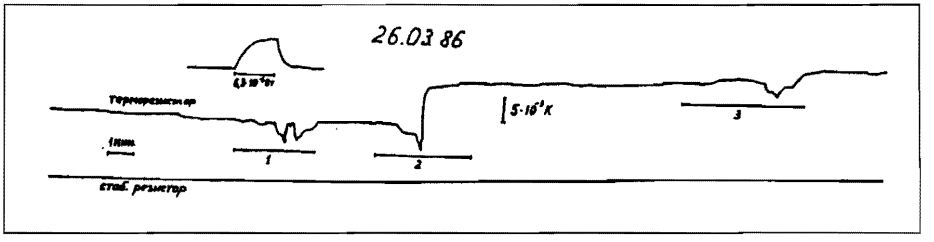

Figure 2. Fragment of a record of signals obtained during tests with the operator Alan V. Chumak. 1—establishing "contact" with the detector, 2—first distant mental "effect," aimed at raising the temperature. The distance between the operator and the detector is 0.5 m, 3—second "effect," aimed at cooling. The operator is in an adjacent room at a distance of about 3 m from the detector. At upper left is the result of turning on the electric heater.

"Distant Influence" on Electric Noise Generators

Gurtovoy and Parkhomov[4,5] conducted another series of experiments involving infra-low frequency electric noise generators (e.g., bipolar and enhancement-mode MOS-transistors, microcircuits, and polycrystal semiconductors).[16] A noise signal was amplified and filtered with a bandwidth of less than 0.1 Hz. The generator, amplifier, and power source were located inside a shielded enclosure. During test periods, they observed an "ordering effect" (i.e., the appearance in the background of an unordered noise signal of periodic pulsations) with a period of several seconds to hundreds of seconds, and the subsequent "dissolving" of them within the noise signal (Figure 3). Other effects observed included the occurrence of gradually diminishing pulsations of tens of seconds to a few seconds; the reduction of the amplitude of the noise (Figure 3); or a strong growth of amplitude of the noise during the effect period (Figure 4).

Usually, during the test, two or three generators were working at the same time. It is claimed, although there was the lack of a correlation of the signals in the usual sense, that it was possible to observe in different channels the simultaneous (or with a small shift in time) appearance of pockets of periodic pulsations with a different period; sometimes there was also a simultaneous reduction of the noise level. At least one example is mentioned when an operator simultaneously affected both the microcalorimeter and electric noise generator (Figure 5).

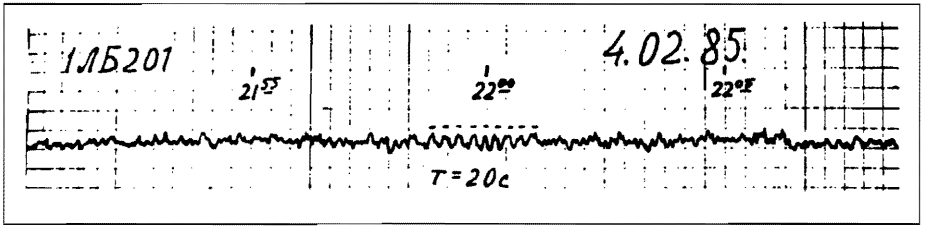

Figure 3. Example of a record of the signal which contains a long pocket of oscillations within a period of 20 sec. The noise generator is a 1LB201 microcircuit.

The most important question is: what is the probability of these "ordered" segments appearing by chance? Gurtovoy and Parkhomov do not give a definite answer to this question, thus making evaluation of this study more difficult. On the other hand, the "ordering" influence of the mind was hypothesized in other experiments, such as the attempted influence on background radioactivity conducted by Dean Radin,[17] who concluded that consciousness essentially "injects order" into random systems (p. 148).

An Independent Replication of the Tests of "Mental Influence" on Electric Noise Generators

Two other researchers in Moscow, Kornilov and Rayevsky,[6] undertook an independent replication of the study of an operator's influence on infra-low frequency electric noise generators. In the pilot test series, semiconductor

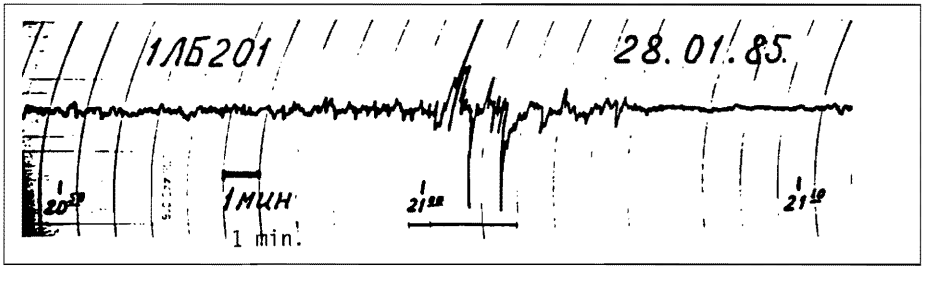

Figure 4. Amplitude growth of the noise signal at the time of the "effect" of the operator P. The noise source is a 1LB201 microcircuit (MOS transistors). The time of the "effect" is noted by the horizontal line.

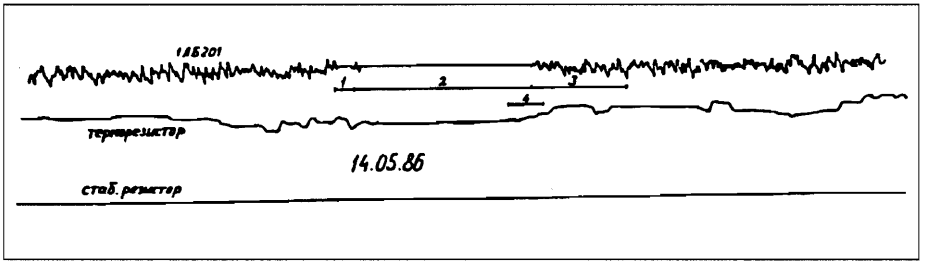

Figure 5. Suppression of the noise of a microcircuit 1LB201 and fluctuations of the microcalorimeter signal during a test with the operator Valery V. Avdeyev. 1—establishing of "contact" with the detector; 2—first "effect" (the operator enters into the state of "complete calm"), 3—second "effect" (strong excitement), 4—an attempt of the operator M. Nikolayev from an adjacent room to mentally stimulate V.V. Avdeyev.

generators of flicker noise (bipolar transistors, insulated-gate field-effect transistors—IGFETs, photoresistors) were placed in a brass beaker which, in turn, was placed in a Dewar flask. Amplifiers of the channels had independent power sources with precision micropower voltage regulators. Reliable screening and thermostabilization of both the sensors and the amplifiers was provided. During experiments, an operator was located at a distance of 0.5 to 3 meters from the Dewar flask. In some trials, the operator was in a separate room from the apparatus.

In more than 50 pilot tests with different operators, in only two tests were anomalous changes of flicker-noise amplitude observed. According to Kornilov and Rayevsky, the probability that these fluctuations of noise amplitude occurred by chance is close to 10^{-6}. The researchers noted that in the process of operators' influence, instances of "orderliness" of noise fluctuations described in the study by Gurtovoy and Parkhomov[4,5] were repeatedly observed. However, they do not consider these peculiarities of the transistors' behavior during the operators' influence to be positive effects, because the mechanism of calculating the probability of obtaining such events by chance is fairly subjective. According to Gurtovoy, however, an almost "flat" line shown in Figure 5 was never observed during the background periods.

In 1993, Rayevsky and Kornilov conducted a study of an operator's effect on quartz resonators. The quartz sensors were extremely well shielded (i.e., the device did not respond to such power noise factors as an electric arc or an

electric heater with 1 kW power from a distance of 0.5 meters). Yet, in these tests with a single operator, the researchers observed a change on the order of 100 standard deviations from control runs. These changes do not occur regularly; however, they do occur often enough to indicate an anomaly. To understand the origin of the anomaly much further work is required. In such cases, it is very important to re-examine possible sources of subtle artifacts, because the statistics of "rare" events are not well understood. Reports of the study will be available at a later date.

"DISTANT INFLUENCE" ON BIOLOGICAL SYSTEMS

INTRODUCTION

In this section, we discuss studies conducted by several individuals we met while in Russia: the above-mentioned Dr. Georgy K. Gurtovoy and Alexander G. Parkhomov, Dr. Sergei V. Speransky of the Institute of Hygiene in Novosibirsk and Leonid M. Porvin of the Center for Research of Bioinformational Unity of Systems in Zelenograd, Moscow region,[18] Dr. Tatyana Krendeleva and her associates of Moscow State University;[19,20] Dr. Elvira V. Morozova,[7,8] of the Russian Agricultural Academy in Moscow, as well as the experiments of psychiatrist Dr. Dmitri G. Mirza and biophysicist Dr. Yuri S. Dolin in Moscow. A broad range of biological target systems, from tissue cultures to plants, animals, and humans, were used in these experiments. For some studies, we provide more detailed descriptions than for others, depending on the amount of information at our disposal and the availability of the original sources to other researchers. If the original is a hard-to-find publication in the Russian language, or we describe the studies from pre-publication copies of manuscripts, or we base our discussion on personal interaction with the researchers, we attempt to address the methodologies and obtained results in a greater length.

BIO-PK EXPERIMENTS WITH CELLULAR CULTURES

Biologists Dr. Tatyana Krendeleva and Sergei I. Pogosyan and their associates at the Division of Biophysics, Department of Biology, Moscow State University,

conducted several studies on the effects of operators on animate and inanimate systems[19,20] In one study, the operator (Igor B. Verbitsky) attempted to increase the chemiluminescence response of peritoneal neutrophils of mice after the introduction of latex, a standard cell activity promoter. Neutrophils are cells which take part in providing immune homeostasis of the body. The activity of cells was estimated from the magnitude of parameter K = (A-F)/F, were F = the cells' chemiluminescence level in the absence of latex, and A = the cells' maximum chemiluminescence level after the introduction of latex. For 18 tests, $F_{test}/F_{control}$ = 61.5% ± 11.8% and $K_{test}/K_{control}$ = 186.1% ± 23.9%. In other words, in test trials, the base level of chemiluminescence decreased approximately by 40%, as compared to the control; while the effectiveness of the cells' chemiluminescence stimulation by latex increased by about 80%. Thus, according to Krendeleva and her associates, the operator's effect apparently increases capability of the cells to respond to a standard stimulator, latex, by an increase in their production of active forms of oxygen. The results look suggestive of bio-PK effects, but our lack of knowledge of details of the experiment and possible sources of artifacts pre- cludes definite conclusions. Additional studies conducted by Dr. Krendeleva and her associates will be summarized in a later section.

Bio-PK Effect on Electrical Properties of Plants

A group of researchers in Moscow, headed by biophysicist Dr. Yuri S. Dolin, has been conducting numerous experiments in which electrophysiological activity of 7 to 15-day-old cucumber plants was the chosen target.[9,10,21] The plant and measuring equipment were placed into a grounded metal chamber. The operator, while in another room at a distance of no less than 4 meters from the plant, attempted to affect the plant by either mentally stimulating or inhibiting the plant's physiological response to an external stimulus. The external stimulus involved a change in the illumination conditions, i.e., the plant was exposed to darkness for 3 minutes. The result of each trial was calculated as the ratio between the test (or control) peak area and calibration (pre-trial) peak area of the plant's bioelectrical response. In test trials, the operator stated in advance what kind of effect was being attempted during a particular trial, i.e., stimulation or inhibition. There were a total 124 trials; of these, 91 were control trials and 33 test trials. Using Kolmogorov-Smirnov

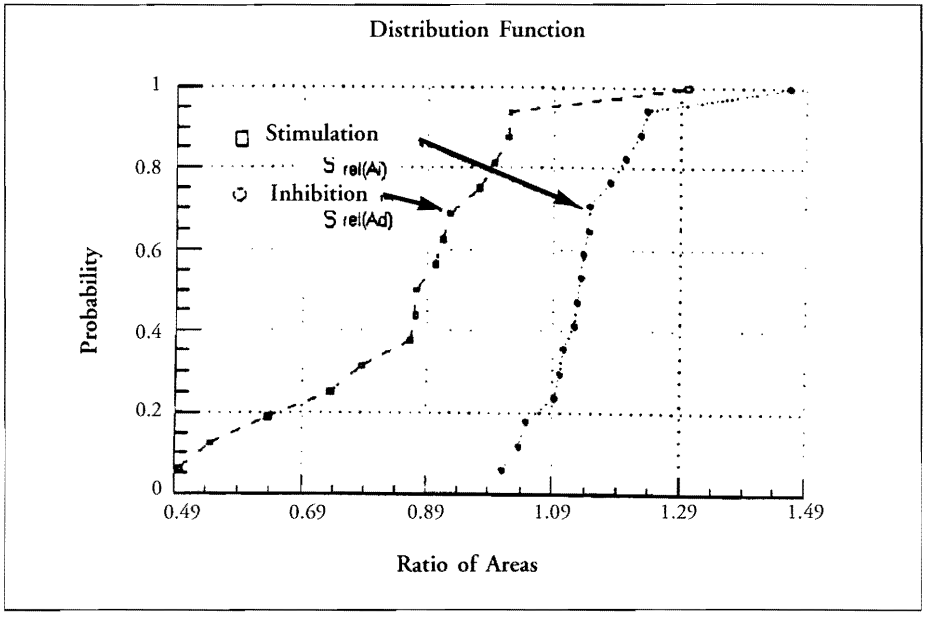

Figure 6. Results of the tests on "distant influence" of plant biopotentials: stimulation vs. inhibition trials.

statistics, Dolin reported a significant difference between stimulation and inhibition test trials, with $p < 0.01$ (Figure 6).

In another test series, the researchers obtained statistically significant results when an operator attempted a purposeful effect on one of the two plants, located at a distance of 40 cm from each other. In these tests, only inhibition of the plant's bioelectric activity was intended. There were 41 test trials and 41 control trials. The data were subjected to analysis by using several nonparametric statistics. The results are presented in Table I and Figure 7.

"Distant Influence" on Electricity-Generating Fish

Gurtovoy and Parkhomov[4,5] attempted a bio-PK study in which they monitored the electric response of electricity-generating fish (*Gnathonemus*

Table I
Results of Statistical Analysis of the Tests with Two Plants

	Statistics		
	Signs	Wilcoxon	Kolmogorov-Smirnov
p	0.019	0.007	0.032

Petersii) to operators' attempts to "slow down" the fish. This was a replication of a earlier study by Protasov and his associates[22] conducted in the late 1970s at the Research Institute of Evolutionary Morphology and Clinical Ecology in Moscow and published in a major Soviet scientific journal. The dependent variable in these tests was the time interval between the electric pulses emitted by the fish. In the preliminary series (screening) with unselected subjects, six out of 31 trials were successful (i.e., a success is defined as greater than 3 standard deviations), $p < 3 \times 10^{-12}$. In the subsequent formal experiment, eight subjects performed 25 trials, 21 being successful, $p < 3 \times 10^{-18}$. In these tests, operators started working at random moments of time. The tests were conducted with the purpose of "calming down" the fish; thus, the shifts that occurred were in the direction of an increase in the pulse intervals. At the same time, as Gurtovoy and Parkhomov pointed out, it is known that the electric fish primarily responds to changes in its environment (e.g., a change of temperature, lighting, magnetic field or to sound) with a decrease in the pulse intervals. Still, although the controls as described by Gurtovoy and Parkhomov[4,5] seem to be adequate, we believe more caution is necessary in working with biological systems that are highly reactive to changes in their environment.

"Distant Influence" on the Eating Behavior of White Mice

Dr. Sergei V. Speransky, whom one of us (LV) has known for over 20 years, holds a Ph.D. in Biology and is a specialist in toxicology with a long-term interest in parapsychology. As a biologist, he has always been interested in

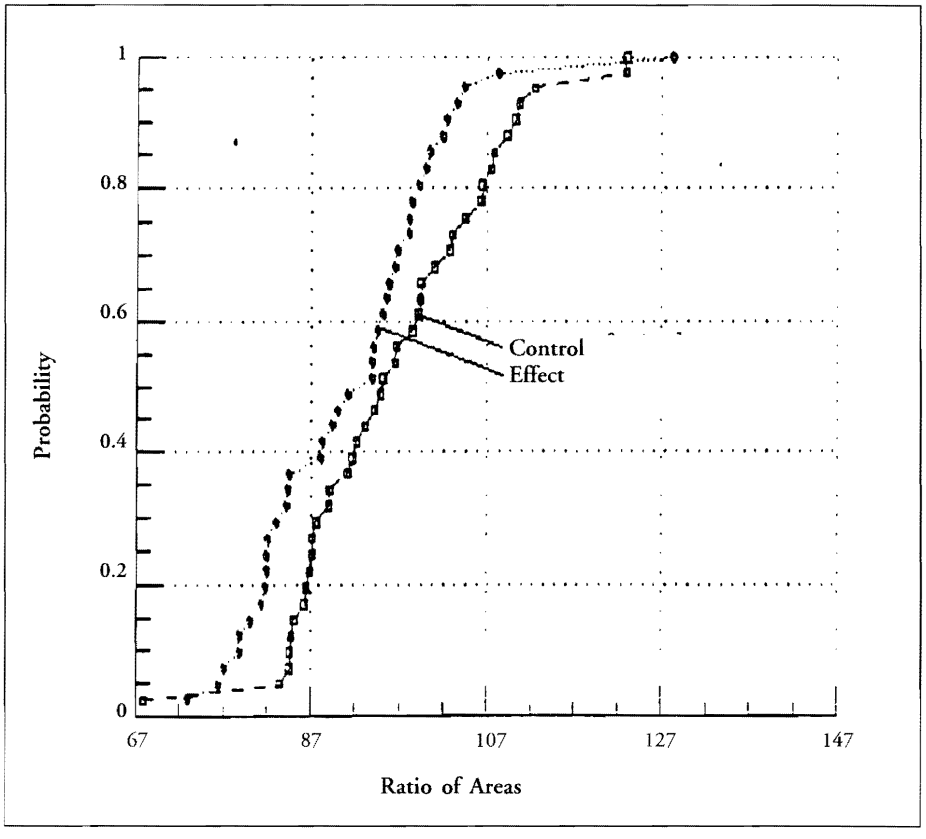

Figure 7. Results of the tests with two plants: Operaor's effect vs. control.

studying ESP in animals and using animals as biological detectors of human "distant influence." In the 1970s, he conducted tests on "anomalous" communication between two groups of white mice.[23,24]

The current study that Speransky shared with us during our trip was conducted in collaboration with Leonid M. Porvin, a specialist in electronic engineering, who, according to Speransky, developed a "technology" for achieving altered states of consciousness conducive to "distant influence."[18] In these tests, Porvin was in Moscow, and five target and five control mice subgroups (13 mice in each, 260 in total) were in Novosibirsk, a distance of 1,700 miles. The

subgroups belonged to one "social group" (52 mice), i.e., mice which were kept together for a week or more to reduce the "experimental noise." Photographs of each subgroup (the mice looked completely "identical," at least to a non-biologist) were sent to Porvin. In each trial, both mice groups were first starved for 18 hours to make them more sensitive to external effects. Then the mice were provided with sufficient amounts of food and water. Meanwhile, Porvin randomly chose a target picture from each pair of the subgroups and attempted to either increase or decrease the rate of weight gain by the mice according to a random protocol. The test was conducted in double blind conditions. The dependent variable was the difference between the weight gain by the subgroup of the mice whose increased weight gain was attempted and the subgroup whose weight Porvin attempted to decrease. The results, according to the statistics employed by Speransky were significant: there were 70 analysis trials, $t = 6.26$, $df = 69$, $p < 2 \times 10^{-10}$.

Mental Influence on Grey Mice Exposed to Lethal Doses of Ionizing Radiation

Many research groups in Russia are interested in exploring the efficacy of mental healing, both in biological experiments and clinical studies. Dr. Dmitry G. Mirza, head of the Research Division of the National Center for Traditional Folk Medicine, and his associate V. I. Kartsev conducted three experimental series on bio-PK (healing) influence on grey mice exposed to lethal doses of ionizing radiation.[25] The mice were subjected to 850, 900, and 915 rad from a Cs^{137} source in the first, second, and third series, respectively. All the mice for each series (i.e., the test and control groups) were irradiated simultaneously with the 30 rad/min dose. There were 10 mice in each test and 10 in each control group (with one exception in the second series where one test group contained nine mice). In the first series, the operators (healers) worked with animals 15 minutes after their irradiation; in the second series, the bio-PK effect was used preventively, i.e., 15-20 minutes before the irradiation; in the third series, a combination of preventive and post-irradiation effects were used. The dependent variable was the survival rate of mice after the irradiation.

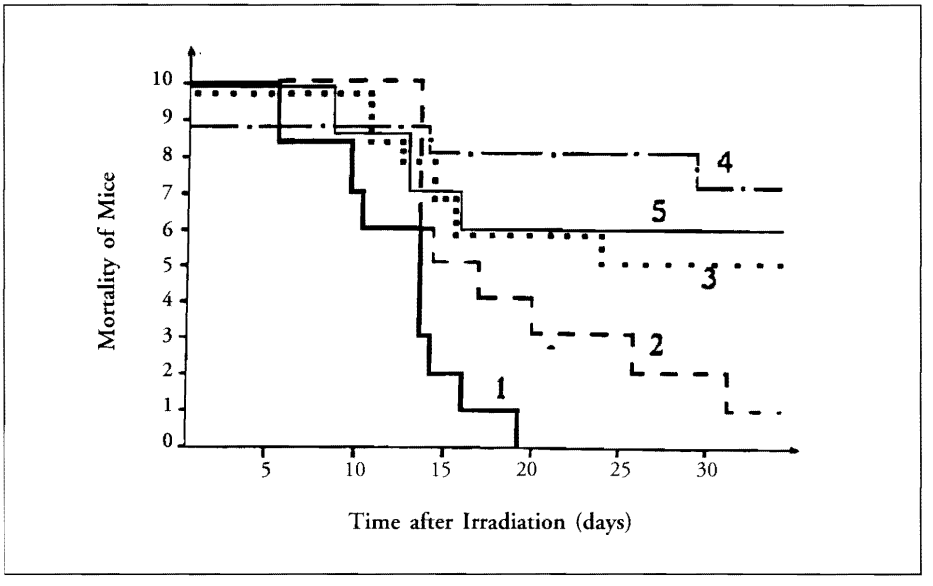

Figure 8. The mortality rate of mice after gamma-irradiation of 900 rad in control and with attempted preventive bio-Pk effect. (1) control; (2) operator N. G. Balashov; (3) O. G. Borisoglebskaya; (4) M. B. Fatkin (long-distance); (5) N.I. Pokazeyev.

The results of the second and third series are most interesting. There were four experimental and four control groups in the second series that was conducted beginning August 13, 1991. For controls, the mortality was 100%, i.e., all 40 mice died without a single one surviving the 19th day after the irradiation. In the test groups, in 19 days, the mortality was 90%, 50%, 40%, and 22% respectively (the last was in the group of nine mice) (Figure 8). While other operators worked at relatively small distances (meters from the mice), the operator who turned out to be the most successful affected mice located in Moscow from the town of Yalta in the Crimea, at a distance of about 800 miles. In January 1993, 15 mice from 39 in the test group were still alive as compared to zero in the control group. In the third series, nine out of 10 animals in one test subgroup and all 10 in another subgroup survived, as compared to three mice in the control group. The researchers in Moscow plan to replicate the experiment.

"Mental Interference" into Another Person's Thinking Process

Anatoly Arlashin of the Bioinformation Laboratory at the A. S. Popov Society for Radio Engineering, Electronics, and Communications in Moscow conducted an experiment in which trained sensitives were asked to "interfere" at a distance into another (sensory-isolated) person's mental process. Forty-four college students (average age 21 years) were invited to participate as subjects. They knew neither the focus of the laboratory's activities, nor the real purpose of the test. Each subject was asked to solve six mathematical problems which consisted in multiplying a two-digit number by another two-digit number without the help of pen and paper, with closed eyes. Problems 4, 5, and 6 consisted of multiplying the same numbers as problems 1, 2, and 3, but because the numbers were reversed, the subjects did not notice that these subsets were identical (this, however, may be a drawback of the experiment). The mental "interference" group consisted of sensitives trained in mental imagery techniques. Prior to the beginning of the test, each subject was invited to come to the room where the "interference" group was located. The subjects were led to believe that this was done in order to ask them some formal questions, but actually it was done to give the members of the "interference" group the opportunity to see the subjects they would be asked to affect mentally. In attempting the "interference," the sensitives imagined mentally "bombarding" the subject when he was engaged in a mental calculation task, by a continuous stream of numbers as well as "sending" the subjects emotions of panic, uncertainty, and a lack of self-confidence. During the test, the "interference" group and the subject were located in different rooms, with another room located between the two.

Before the actual test, each subject was asked to solve an additional math problem to "enter" the working mode. Unknowingly to the subjects, they were divided into four groups: (1) a group subjected to "mental interference" when they were solving the first three (1-3) problems; (2) a group subjected to "mental interference" when they were solving the last three (4-6) problems; (3) a group subjected to "mental interference" when they were solving problems 2, 4, 6; and (4) a control group not subjected to "mental interference" at any time.

The results were as follows: when "mental interference" was used when the subjects were working on problems 1-3, there was a statistically significant increase

in the time spent by the subjects to solve the problems (42.7%, $p < 0.001$). The "interference" of two experienced sensitives, Karl Nikolayev and Ludmila Korabelnikova, was more effective, increasing the time of calculation by 71.6%. However, if the "interference" was applied when the subjects were working on problems 4-6, their calculation time decreased by 21% ($p < 0.01$). This is consistent with literature data on effects of sensory interference on performance of any mental task: when a person starts concentrating on a task, any distraction usually impedes his/her performance to a certain degree, but if the person is further ahead in executing the task he or she responds to distractions by increasing concentration. If the "mental interference" was applied interchangingly when the subject was working on problems 2, 4, and 6, there was no significant effect.

"Distant Influence" on Humans with EEG Recording

Dr. Yuri S. Dolin, a biophysicist, whose experiments with plants we discussed above, showed us the equipment and design of another experiment. While in Moscow in the fall of 1992, we were invited to actually participate in one trial. In this test, a subject was located in a dark, sound-proof, electrically-shielded chamber, his electroencephalogram (EEG) was monitored, and changes in alpha waves as the result of remote attention were recorded. The dependent variable was the relative alpha power change during effort compared to control periods. In addition, "placebo" trials were employed when "distant influence" was attempted by a person without "special ability and/or training." The data obtained in "placebo" trials were similar to those in control trials.

Dolin later showed us a graphic representation of the EEG analysis in two experiments conducted during our visit to his lab, including the one in which we participated. One of these tests showed a "perfect" EEG recording of the complete suppression of alpha during the time of "remote influence" (Figure 9). We were told that that particular test was a routine trial that directly followed the trial in which we took part.

A recently published paper by Dolin and his associates[26] provides more details of the above tests. There were experiments conducted both at short distances,

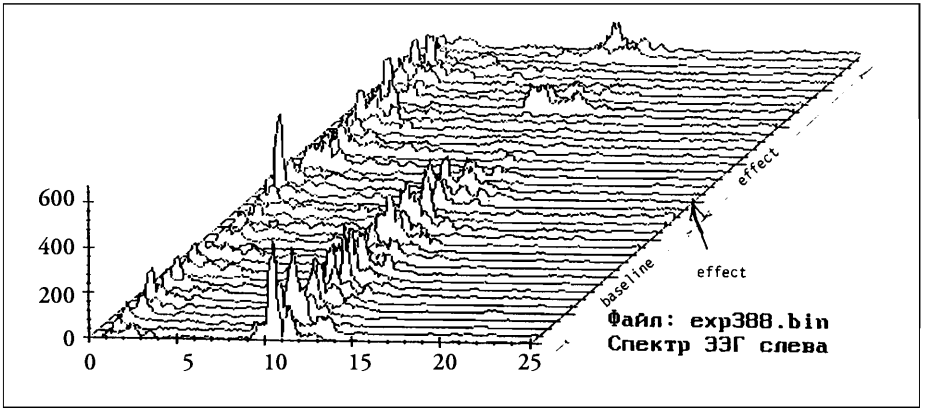

Figure 9. *Single trial example of remote influence with EEG recording (suppression of alpha).*

when a "sender" (operator) was from 5 to 100 meters from the subject ("receiver"), and at longer distances, from 1 to 10 kilometers. The choice whether a given trial was a test or control and the direction of influence (activation or inhibition of the subject's alpha rhythm) were determined randomly. The subject was blind as to whether the given trial was a test or control. With four operators and two receivers, 109 trials were conducted: 53 control trials and 56 test trials. From these, 21 test trials had the operator attempting "activation" of the subject (thereby intending to decrease the subject's alpha power) and 21 test trials attempted "inhibition," thereby intending to increase the subject's alpha power; in the rest of the test trials, operators did not specify the direction of influence. Thus, the main analysis was conducted for the trials in which the direction of influence was specified, in the range of alpha (8-13 Hz). The data for beta and theta waves were also recorded; no effects were observed in these frequency bands.

The level of significance for changes in alpha was as follows:

	The left hemisphere	The right hemisphere
Activation	$p < 0.019$	$p < 0.004$
Inhibition	$p < 0.067$	$p < 0.012$

Thus, one interpretation of the data suggests that an operator may be able to affect alpha power of the sensory-isolated receivers (Figures 10 and 11). According to Dolin, the main qualification for success of these tests, as in most of the above-discussed bio-PK tests, is proper training and skill of the operators.

"Distant Influence" on Humans with Monitoring of Reaction Time

Dr. Natalia N. Lebedeva, a biologist from the Research Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences in Moscow, showed us preliminary results of a pilot bio-PK study. A subject in a shielded chamber was given a standard task to respond to a visual stimulus (a dot appearing on a computer screen at random time intervals) by pressing a button, and the subject's reaction time was measured. At certain time intervals, an operator located outside the shielded chamber was asked to affect the subject's right hand to slow down his/her performance with this hand and thereby increase his/her reaction time. This study is still in progress, and evaluation of the data has not yet been completed. According to Lebedeva, preliminary analysis of the data shows a statistically significant increase in the subject's reaction time during the operator's effect (when the subject performed the task with the right hand affected by the operator) in the majority of cases (70-80%) of the tests. In some cases the significant increase in reaction time for the right (affected) hand included the period of time after the operator's effect as well. Thus, a certain degree of variability of the data probably requires the use of different methods for statistical processing and/or changes in the experimental protocol, with the purpose being the establishment of all the variables and factors which may affect the results, e.g., physiological, methodological, operator/receiver compatibility or mental images created by the operator. In discussions with Dr. Lebedeva in our laboratory, we identified some methodological improvements for a formal replication.

Additional Summary of AMP Experiments

In our interaction with researchers in Russia, we learned of a number of other experimental studies. Some of them were very intriguing and were conducted

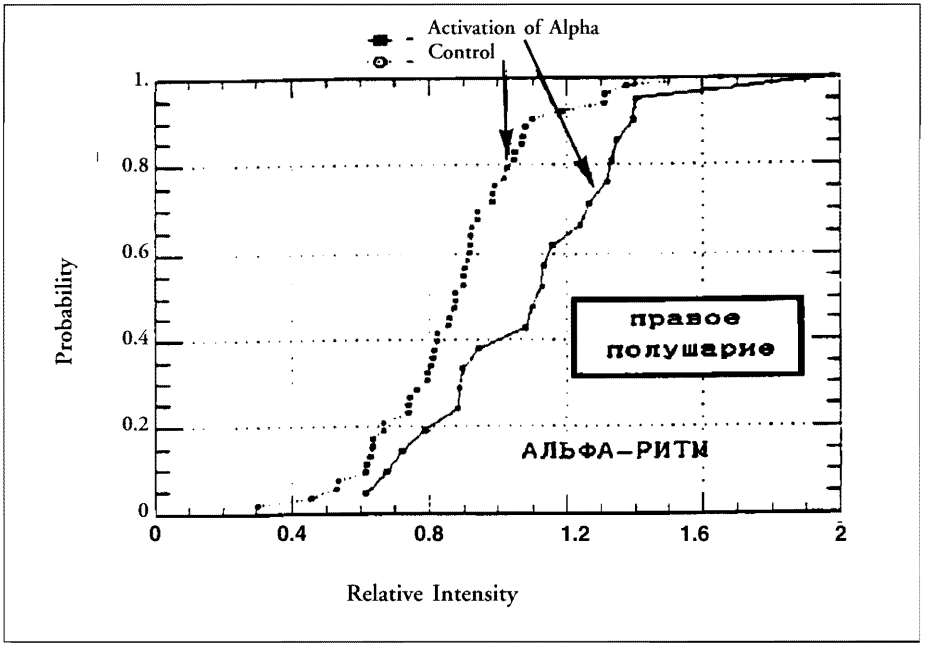

Figure 10. Results of tests on "distant influence" with EEG recording. Changes in the alpha power observed during activation of alpha vs. control; the data are shown for the right brain hemisphere.

under the auspices of prestigious research institutions. At the same time, some of the studies have methodological problems. For many of them, however, we do not yet have sufficient information to provide a detailed evaluation. Therefore, instead of discussing each of these studies separately, we summarized them in Table II. Although the emphasis is on bio-PK experiments, one PK attempt to affect inanimate systems is included as well.

CONCLUSIONS

In concluding this review of some aspects of parapsychology in the former Soviet Union, we would like to point out that in Russia, as elsewhere, there is a wide range of research skills. We found the researchers to be enthusiastic

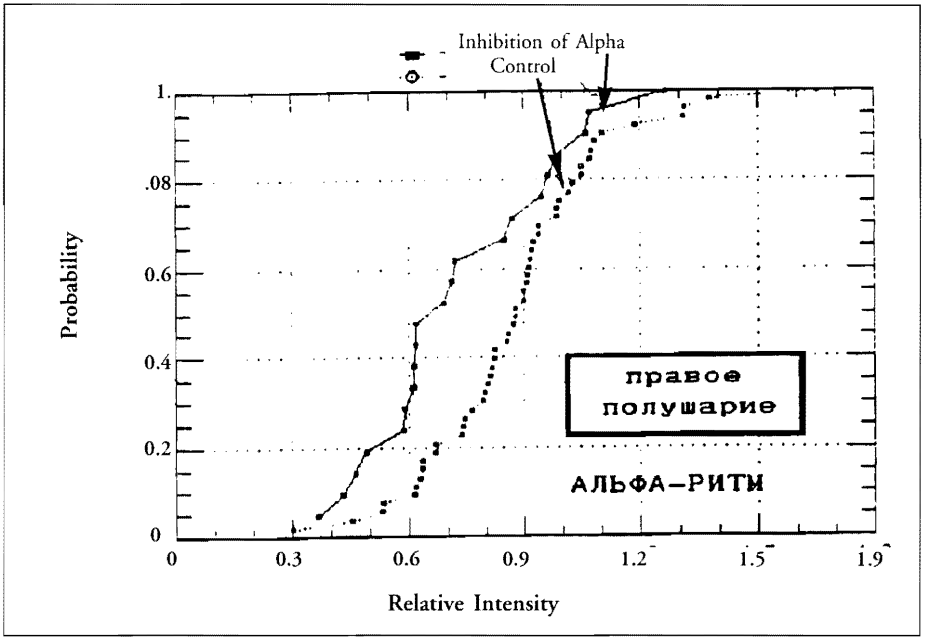

Figure 11. Results of tests on "distant influence" with EEG recording. Changes in the alpha power observed during inhibition of alpha vs. control; the data are shown for the right brain hemisphere.

but, in some cases, the experimental work suffers. At times, some experimenters are not as self-critical as good science might dictate. Varied writing styles and reporting standards often make formal analysis difficult. Additionally, the "culture" is strongly biased toward an influence (PK) model. Alternative theoretical views, similar to the Intuitive Data Sorting (IDS) informational model,[27] are not only non-existent, but in discussions are often rejected outright, without being examined.

Nevertheless, one conclusion can be made with a high degree of certainty: for a number of years, researchers in the former Soviet Union have been engaged in a broad range of studies of anomalous mental phenomena, primarily in the PK and bio-PK areas. Such prestigious institutions as Moscow State University and the research institutes of the Academy of Sciences have been involved in AMP studies that are supported by both government and private

Table II
Summary of Some AMP Studies in the Former Soviet Union

Principal author and reference	Location	Experiment type	Experiment task	Comments
Krendeleva (Pogosyan, *et al.*, 1993)	Moscow State University, Biology Department	PK on physical systems	change pH of water	pH appears to decrease with operator's effect; needs more controls.
Krendeleva (Nikolayev, *et al.*, 1993)	same	bio-PK	change NMR - parameters of plant seeds	positive results are reported; insufficient data for assessment.
Dolin (Sidyakin, *et al.*, 1992)[28]	International Academy of Human Potential in Moscow and Simferopol State University	bio-PK and EMF E & M Effects	change animal behavior	significant results; effects are enhanced in the presence of E & M. Insufficient data for definitive conclusions
Dolin (Tkachuk, *et al.*, 1992)[29]	International Academy of Human Potential and a group in Kiev, Ukraine	bio-PK	change enzyme activity in plants	positive results are reported; insufficient data.
Kaznacheyev, Mikhailova (Mikhailova Merenkova, & Feldman, 1991)[30]	Institute of Clinical and Experimental Medicine, Novosibirsk	bio-PK	increase growth of a tissue culture	20% to 30% increase in cell mitoses is reported; details of the tests are not described.
Mikhailova (Kaznacheyev, Mikhailova, & Vladimirsky, 1990)[31]	Institute of Clinical and Experimental Medicine, Novosibirsk	bio-PK	affect RNA synthesis in tissue cultures	positive results are reported; insufficient data for assessment.

funding. We believe a more comprehensive review and meta-analysis of AMP studies in Russia should be conducted. We also hope that our cooperation with our Russian colleagues will continue and will provide all of us with a deeper understanding and further insights into manifestations of anomalous mental phenomena.

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