TECHNIKUM WIEN FACHHOCHSCHUL STUDIENGÄNGE

University of Applied Sciences, Vienna

INTERNATIONAL CONSCIOUSNESS RESEARCH LABORATORIES

Software for a Random Event Generator to Research Anomalies in Human/Machine Interaction

Diploma Thesis

PEAR
Princeton Engineering Anomalies Research

Performed at
Technikum Wien, Fachhochschulstudiengang Elektronik
(University of Applied Sciences, Vienna, Department of Electronics)

Performed by
Peter Polzer
Tauschinskygasse 70/11/2
1220 Vienna - Austria
Matriculation Number 9610011101

Mentors:
Brenda J. Dunne, MS
PEAR Laboratory Manager

Robert K. Pucher, PhD
Dean Elect, Department of Information Technology

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Task

The purpose of the application is to enable the user to examine anomalies in human/machine interaction, similar to the procedures followed in 20 years of research at the PEAR Laboratory in Princeton University.

Specifically, the software should access the data of Mindsong's MicroREG (Micro Random Event Generator), upon which the participant exerts efforts of intentional influence.

The software had to meet sophisticated requirements, since it ought to provide easy Windows-like handling, but also needed to withstand scientific demands. An open source code and the modularity of the software were intended to enable the advanced user to adapt the application as needed for experimental modifications.

Furthermore, it had to offer all the flexibility needed to examine any anomaly patterns from any random device, or even any data-generating device, in which the advanced user might be interested. This provides the opportunity to acquire parallel data from two or more devices, e.g. the MicroREG and a skin-resistance-measuring device, from which the data will be linked in one database to be compared.

The customer or user is assumed to have general knowledge of Windows and the typical behavior of its applications. Basic knowledge of statistics is recommended in order to be able to interpret the results. The customer also may be a scientist, which is why the application settings are highly flexible.

This software application was required to run on Windows 95/98 and Windows NT machines.

The application was programmed in Microsoft's Visual Basic in order to make the application usable for the most possible customers.

Abstract

A major portion of the PEAR program examines anomalies arising in human/machine interactions. In these experiments human participants attempt to influence the behavior of e.g. a microelectronic random event generator to conform to pre-stated intentions, without recourse to any known physical processes. [15]

The Mindsong Research MicroREG (Micro Random Event Generator) is designed to be used by researchers interested in replicating research published in this field, as well as for designing experiments of their own. [16]

The project's objective was to provide application software to pursue such research with the Mindsong MicroREG.

Zusammenfassung

Ein wesentlicher Anteil der PEAR Aktivitäten untersucht Anomalien die durch die Mensch – Maschine Zwischenwirkung entstehen. In diesen Experimenten bemühen sich Versuchspersonen das Verhalten z.B. eines mikroelektronischen Zufallsgenerators zu beeinflussen, übereinstimmend mit deren vorgefassten Absichten. Dieser Einfluß ist allerdings auf keinen bekannten physikalischen Prozess zurückführbar.

Der MicroREG Zufallsgenerator von Mindsong Research wurde entwickelt um von Forschern eingesetzt zu werden, die sich für die Replikation der Forschung interessieren, welche in diesem Bereich veröffentlicht wurde; aber auch um deren eigene Experimente zu entwerfen.

Das Ziel des Projekts war es, eine Anwendungssoftware zur Verfügung zu stellen, die es erlaubt derartige Forschung mit dem Mindsong MicroREG zu betreiben.

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Abbreviations

API	Application Programming Interface
BL	Baseline (neutral) intention
DAPS	Data Acquisition & Presentation System
ESP	Extra-Sensory Perception
HI	Intention to generate high numbers
HWnd	Window handle (pointer to a window)
ICRL	International Consciousness Research Laboratories
LO	Intention to generate low numbers
MicroREG	Micro Random Event Generator
MS	Microsoft
OLE	Object Linking and Embedding
OOP	Object Oriented Programming
PEAR	Princeton Engineering Anomalies Research
VB	Visual Basic

1 INTRODUCTION

The Princeton Engineering Anomalies Research (PEAR) program was established at Princeton University in 1979 by Robert G. Jahn, then Dean of the School of Engineering and Applied Science, to pursue rigorous scientific study of the interaction of human consciousness with sensitive physical devices, systems, and processes common to contemporary engineering practice. [14]

Since that time, an interdisciplinary staff of engineers, physicists, psychologists, and humanists has been conducting a comprehensive agenda of experiments and developing complementary theoretical models to enable better understanding of the role of consciousness in the establishment of physical reality. [14]

Mindsong, a company that is associated with the PEAR laboratory through ICRL (International Consciousness Research Laboratories), designed in collaboration with PEAR a micro random event generator (MicroREG) in order to enable any user who is interested in this field to examine scientifically anomalies according to the user's individual experimental conception.

The purpose of this software is to acquire, present and store data of any given data source. However, the basic motivation for developing this software was to research anomalies of the output of the random event generator similar to the procedures performed in 20 years of studies at the PEAR Laboratory.

The output and all of its parameters, which determine the way of data processing and the kind of the experiment, are stored in an MS Access compatible database. Hence, analysis of data can be performed easily, provided the user has MS Access knowledge.

In the following, the term experimenter refers to the person who creates new experiments, whereas the participant is the person who is carrying out an experiment. A trial is one evaluated experiment acquisition unit, the smallest unit of an experiment session written to the database.

2 THEORETICAL BASICS

2.1 STOCHASTIC PROCESSES

Statistics is a tool that enables better understanding of measurable processes. If a process is not known otherwise in detail, or dependent parameters are unidentified or at least their effect sizes are not familiar, one cannot assess a precise function that this process adheres to, even if all environmental parameters are known in their sizes.

By means of statistics one can, so to say, find correlative parameters empirically in order to assess and interpret their effect within a measured range and an estimated confidence.

Stochastic processes can be described through statistics, as they can't be determined by mathematical functions per definition. The condition of the process can never be predetermined exactly at a given time but may only be predicted in terms of a probable range over time.

Classic examples of stochastic processes are dicing or flipping coins. It is known that one cannot predict with 100% certainty whether flipping a coin will yield head or tail. The expected probability of obtaining either side is 0.5. Thus, over time the number of heads and tails will be more and more alike. The more often the coin is flipped the closer those numbers will get and the less probable any sizeable relative drift-off will occur. Hence, the process of flipping coins can be described statistically telling expected mean, probabilities, deviations and distribution; just as the process that this research basically relies on.

2.2 PSYCHIC PHENOMENA

Phenomena are anomalies of processes that can't be explained by acknowledged physical laws.

The most substantial portion of the PEAR program examines anomalies arising in human/machine interactions. In these experiments human participants attempt to influence the behavior of a variety of mechanical, electronic, optical, acoustical, and fluid devices to conform to pre-stated intentions, without recourse to any known physical processes. In unattended calibrations these sophisticated machines all produce strictly random outputs, corresponding to a stochastic process. Yet the experimental results display increases in information content that can only be attributed to the influence of the consciousness of the human participant. [15]

Sizable spectrum of evidence has been brought forth from reputable laboratories in several disciplines to suggest that at times human consciousness can acquire information inaccessible by any known physical mechanism (ESP – extrasensory perception), and can influence the behavior of physical systems or processes (psycho-kinesis). The experimental results are well beyond chance expectations. [8]

Thus, these phenomena strongly suggest a common underlying mechanism that is capable of both acquisition and insertion of information in correlation with conscious intention. [3]

2.3 CORRELATION OF RANDOM DATA WITH PRE-STATED INTENTION

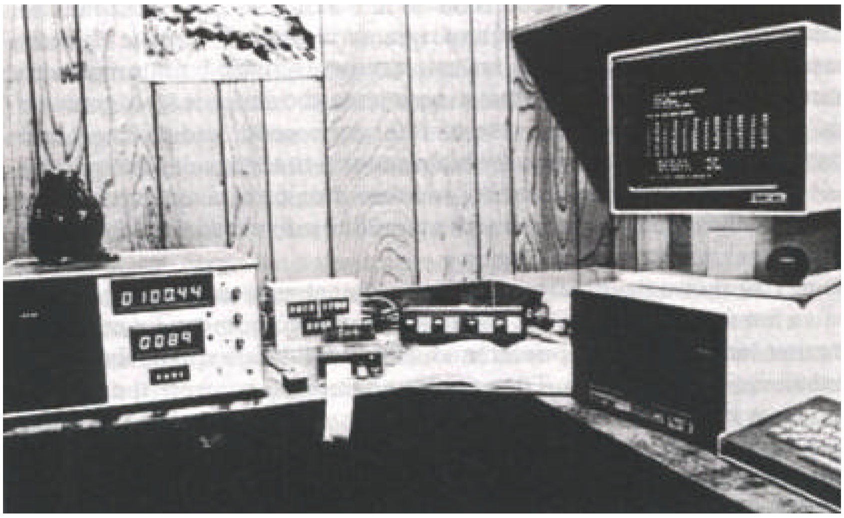

Figure 2.1: REG experimental arrangement in early days [6]

Strong correlations between output distribution means of a variety of random binary processes and pre-stated intentions of some 100 individual human participants have been established over a 12-year experimental program. (These data were thoroughly verified, newer data show similar results, but were not completely validated). [5]

More than 1000 experimental sessions, employing four different categories of random devices and several distinctive protocols, show comparable magnitudes of anomalous mean shifts from chance expectation, with similar distribution structures. [5]

Although the absolute effect sizes are quite small, of the order of 10^{-4} bits deviation per bit processed, over the huge databases accumulated the composite effect exceeds 7σ ($p = 3.5 \times 10^{-13}$). [5]

All participants are anonymous volunteers, none of whom claims extraordinary abilities, and no screening, training, or induction techniques are employed. To guide them in their task, each experiment may provide some form of feedback, usually a visual display, which tracks the degree of shift from the baseline distribution. [6]

The experimental results in hand suggest numerous short and longer-term practical applications of the phenomena, and raise basic issues about the role of consciousness in the establishment of reality. [6]

2.4 EQUIPMENT AND PROTOCOLS

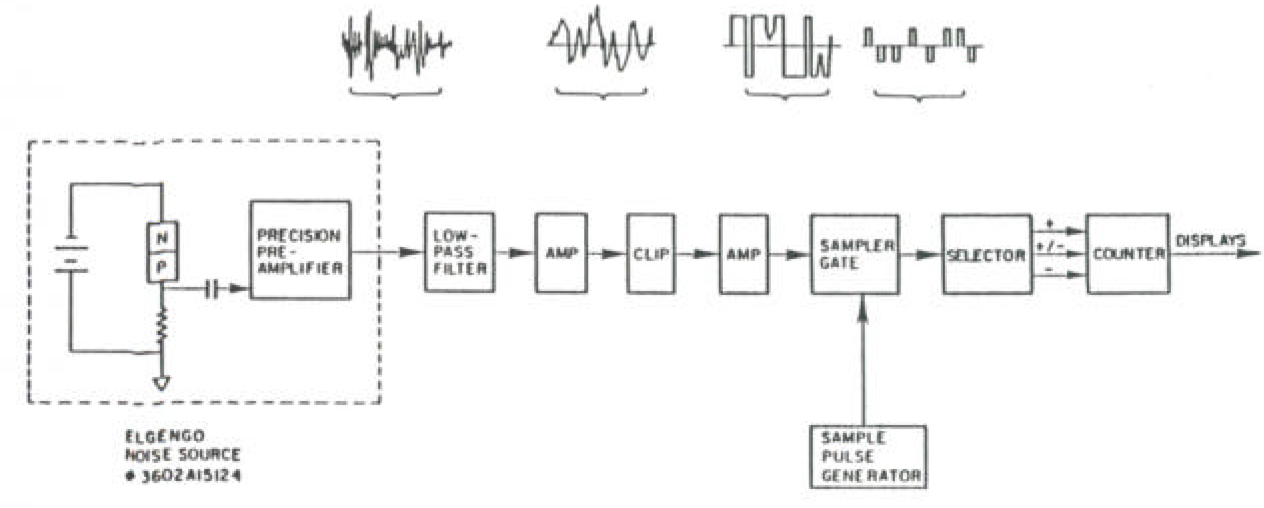

Figure 2.2: Functional schematic of an REG [12]

Random Event Generators are designed to produce well-characterized output distributions. The original REG unit on which most of the experimental data of the PEAR laboratory have been accumulated is a complex and expensive device equipped with many sophisticated failsafes and internal controls that guarantee the integrity of its performance well beyond the signal-to-noise precision required in this application. [13]

A microelectronic random event generator (REG) is typically driven by a noise source, e.g. involving a reverse-biased semi-conductor junction. Components are selected to produce a white noise spectrum that is flat within ± 1 db over a range from 500 to 30,000 Hz. [13] [5]

Such analog portions of an REG system are very sensitive to variations of design and construction, and must incorporate sophisticated shielding from environmental fields. [13]

The analog signal is compared with a DC reference level, yielding a digital output that unambiguously defines analog inputs as binary, above and below the reference voltage. A set number of these are then counted against a regularly alternating +, –, +, –, ... template, thereby differentially eliminating any distortion of randomicity due to ground reference drift. [13] [5]

Other types of random physical sources may be considered, for example, those using some form of radioactive particle counting or clock interruption. The PEAR laboratory has not used such sources, but other researchers have done so, and have reported excellent calibration statistics. [13]

In order to assure the nominally random performance of the REG output, it has to be regularly calibrated, which is simply a continuous monitoring experiment under unattended operation under conditions that are presumed not to influence the REG device. Its output then has to demonstrate the real random-property of the MicroREG device, by adhering to the expected stochastic process.

For a common experiment, this REG is set to generate trials of 200 binary samples each, which are counted at a rate of 1000 per second. The protocol requires individual human participants, seated in front of the machine but having no physical contact with it, to accumulate prescribed equal size blocks of data under three interspersed states of intention: to achieve a higher number of bit counts than the theoretical mean (HI); to achieve a lower number of bit counts than the theoretical mean (LO); or not to influence the output, i.e., to establish a baseline (BL). [5]

The essential criteria for anomalous correlations are statistically significant departures of the HI and/or LO session mean scores from the theoretical chance expectation and, most indicatively, the separation of the high- and low-intention data (HI–LO, the effect of the high-intention data subtracted by the low-intention data). [5]

2.5 MICROREG – MICRO RANDOM EVENT GENERATOR

The Mindsong Research MicroREG is designed to be used by researchers interested in replicating research published in this field, as well as for designing experiments of their own. [16]

The Research MicroREG provides a non-deterministic random binary output whose normal mean and standard deviation are specified in its production calibration. [16]

Figure 2.3: MicroREG device [16]

The general specifications for the Mindsong Research MicroREG are as follows:

Dimensions: 1 1/2 " x 4 1/8" x 5/8".
Weight: 4 oz.
Asynchronous Baud Rate: 9600
Output Format: 8 bit bytes of random bits
Bit Sampling Rate: 2600/second, nominal
Operational Temperature Range: 32 to 100 degrees F
Operational Humidity Range: 10% to 90% non-condensing
Case: 1/16" aluminum
Color: flat gray
Shielding: electrostatic
Randomness Source: processed physical electronic

Connector: DB9 on 6-in. cable
Power Requirements: draws power from active RS 232 serial port
(see [16])

2.6 LOCAL REG EXPERIMENTS

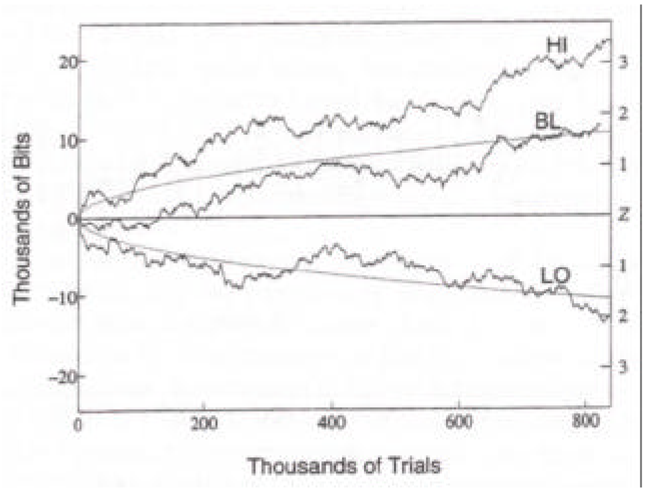

Figure 2.4: Cumulative deviation graph of all local REG experiments [5]

Over a 12-year period of experimentation 91 individual participants accumulated a total of 2,497,200 trials distributed over 522 tripolar sessions in the REG experiment. [5]

Table 2.1 lists the overall results for the three categories of intention, HI, LO, and BL, and for the HI–LO separations, for comparison with the concomitant calibration data and the theoretical chance expectations. With reference to the symbol list below the table, the salient indicators are the mean shifts from the theoretical expectation, δ_μ, the corresponding z-scores, z_μ, and the one-tail probabilities of chance occurrence of these or larger deviations, p_μ. Also listed are the proportions of the 522 sessions yielding results in the intended directions, S. I. D., and the proportions of participants achieving results in the intended directions, O. I. D. [5]

The measures tabulated in Table 2.1 individually and collectively define the scale and character of the primary anomaly addressed in these studies, i.e., the statistically significant correlations of the output of this microelectronic random binary process with the pre-recorded intentions of a large pool of unselected human participants. Specifically to be noted is the overall scale of the effect, $O(10^{-4})$ bits inverted per bit processed; the somewhat higher deviation in the HI results compared to the LO; the slight departure of the BL results from both the theoretical chance expectation and the calibration value, and the negligible alterations in the variances of the score distributions. The overall figure of merit for the HI–LO separation, which is the postulated primary indicator, is $z_\mu = 3.81$ ($p_\mu = 7 \times 10^{-5}$). [5]

Parameter	CAL	HI	LO	BL	HI–LO
N_t	5,803,354	839,800	836,650	820,750	1,676,450
μ	99.998	100.026	99.984	100.013	
s_t	7.075	7.070	7.069	7.074	
σ_s	0.002	0.006	0.006	0.006	
δ_μ	–0.002	0.026	–0.016	0.013	0.042
σ_μ	0.003	0.008	0.008	0.008	0.011
z_μ	–0.826	3.369	–2.016	1.713	3.809
p_μ	0.409*	3.77×10^{-4}	0.0219	0.0867*	6.99×10^{-5}
S.I.D.		0.523	0.536	0.502†	0.569
O.I.D.		0.623	0.473	0.593†	0.516

KEY

N_t: Number of trials (200 binary samples each)

μ: Mean of trial score distribution

s_t: Standard deviation of trial score distribution

σ_s: Measurement uncertainty (statistical) in the observed value of s_t ; $\sigma_s \equiv \sigma_0/\sqrt{2N_t}$ where $\sigma_0 = \sqrt{50}$ is the theoretical trial standard deviation

δ_μ: Difference of mean from theoretical chance expectation; $\delta_\mu \equiv \mu - \mu_0$ for HI and LO; $\delta_\mu(HI - LO) \equiv \mu(HI) - \mu(LO) \equiv \delta_\mu(HI) - \delta_\mu(LO)$

σ_μ: Measurement uncertainty (statistical) in the observed value of δ_μ ; $\sigma_\mu = \sigma_0/\sqrt{N_t}$ for HI and LO; $\sigma_\mu(HI - LO) = \sigma_0\sqrt{1/N_t(HI) + 1/N_t(LO)}$

z_μ: z-score of mean shift; $z_\mu \equiv \delta_\mu/\sigma_\mu$ (calculated with full precision from raw data values, not from the rounded values presented above in the table)

p_μ: One-tail probability of z_μ (CAL, BL two-tail)

S.I.D.: Proportion of series having z_μ in the intended direction

O.I.D.: Proportion of operators with overall results in the intended direction

* p-values for CAL and BL are two-tailed due to lack of intention.

† BL is treated as in intended direction when positive.

Table 2.1: Overall results of local REG experiments [5]

2.7 REMOTE PERCEPTION EXPERIMENTS

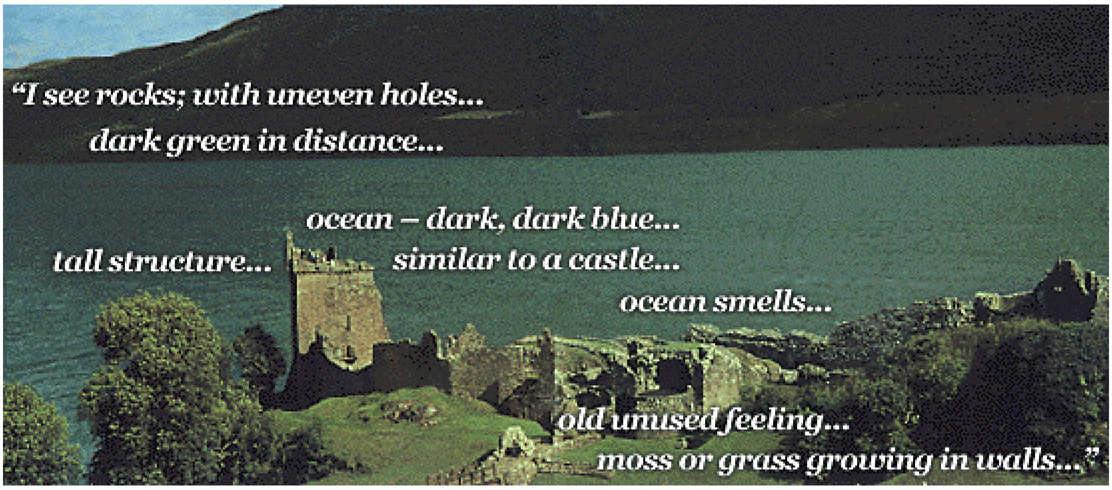

Figure 2.5: Example for a landscape in a remote perception experiment [14]

The remote perception class of experiments requires participants to describe their impressions of unknown sites where another individual is, has been, or will be situated at a specified time. [3]

In brief, a database of some 336 trials yielded highly significant statistical evidence of extra-chance information acquisition ($z=6.355$, $p=10^{-10}$), for percipients generating descriptions of targets ranging from less than a mile to more than 5,000 miles from their own location, over temporal intervals ranging from several days before to several days after their partner's visit to the target site. [3]

In the majority of the precognitive efforts, the descriptions were recorded before the target was even selected. No significant reduction of the anomalous effect with increased distance or time separation was found over the ranges tested. [3]

2.8 REMOTE REG EXPERIMENTS

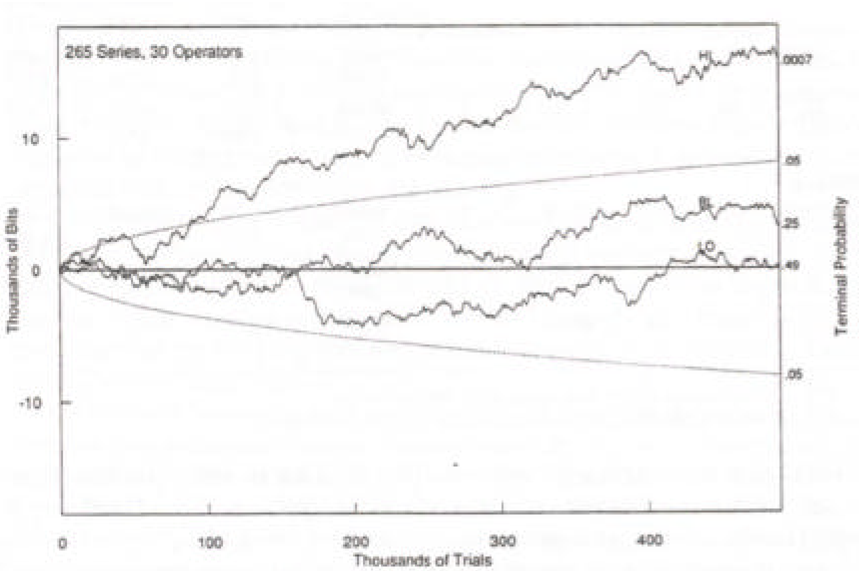

Figure 2.6: Cumulative deviation of all remote REG experiments [3]

Several extensive experimental studies of human/machine interactions wherein the human participants and the target machines are separated by distances up to several thousand miles yield anomalous results comparable in scale and character to those produced under conditions of physical proximity. [3]

The demonstrated space and time insensitivity of the remote perception results prompted investigation of whether the human/machine experiments might also be successfully conducted by participants spatially and temporally remote from the apparatus. [3]

Indeed, these remote efforts appear to produce slightly larger effect sizes than those obtained under local conditions. The anomalous effects are also found to persist, perhaps even to be somewhat enhanced, when the time of participant effort is displaced from the time of machine operation. [3]

The results show strong evidence for anomalous correlation between remote participant intention and the performance of an REG device for the high efforts ($z=3.184$, $p=7x10^{-4}$), while the low efforts are statistically indistinguishable from chance. [3]

2.9 REG EXPERIMENTS WITH ENVIRONMENTAL INFLUENCE

REG devices also respond to group activities of larger numbers of people, even when they are unaware of the machine's presence. "Field-REG" data produced in environments fostering relatively intense or profound subjective resonance (e.g. emotions) show larger deviations than those generated in more pragmatic assemblies. [15]

Venues that appear to be particularly conducive to such field anomalies include small intimate groups, group rituals, sacred sites, musical and theatrical performances, and charismatic events (composite probability against chance is 2.2×10^{-6}). [15] [11]

In contrast, data generated during academic conferences or business meetings show no deviations from chance (composite probability 0.91). [15] [11]

2.10DEVICE DEPENDENCE

The sensitivity of the anomalous results to the particular random source employed or to its form of implementation into an experimental device has been extensively explored via a variety of machines and protocols. [5]

In the simplest variants, identical and similar units replaced the commercial microelectronic noise diode in the benchmark configuration, with no detectable changes in the character of the results. [5]

However, studies performed using fully deterministic pseudorandom sources (in contrast to real random sources) yield null overall mean shifts, and display no other anomalous features.

2.11GENDER RELATED EFFECTS

Isolation of the total REG database into male and female participant components reveals several striking disparities. [5]

Although three of the female participants have produced the largest individual z-scores, the overall correlations of mean shifts with intention are much weaker for the females than for the males. [5]

In fact, while a majority of the males succeed in both directions of effort, most of the females' low intention results are opposite to intention. Specifically, some 66% of the male participants succeed in separating their overall HI and LO scores in the intended direction, compared to only 34% of the females. [5]

2.12SESSION POSITION EFFECTS

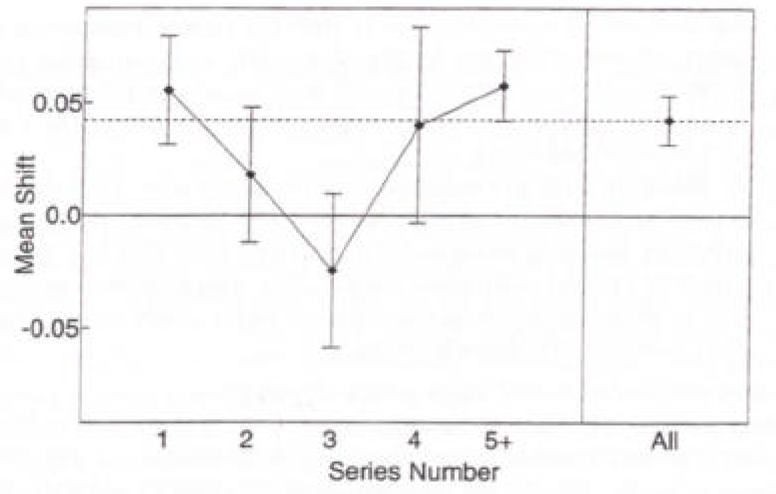

Figure 2.7: Mean deviation progress [5]

While it might be reasonable to expect that participant's proficiency at these experimental tasks would improve with increasing experience, no systematic learning tendencies are evident in the data. [5]

Rather, when the mean shifts obtained by all participants on their respective first, second, third, ... session are plotted against that session ordinal position, a peak of initial success is followed by sharp reduction on the second and third session, whereafter the effect gradually recovers to an asymptotic intermediate value over the higher session numbers. [5]

2.13DISTANCE AND TIME DEPENDENCE

The dependence of the effect sizes on the distance of the participant from the machine could also be an important indicator of fundamental mechanism. Actually, no such dependence has been found over the dimensions available in the laboratory itself, as described previously. [5]

2.14 PARTICIPANT STRATEGY AND PSYCHOLOGICAL CORRELATIONS

Individual strategies vary widely. Most participants simply attend to the task in a quiet, straightforward manner. A few use meditation or visualization techniques or attempt to identify with the device or process in some transpersonal manner; others employ more assertive or competitive strategies. Some concentrate intently on the process; others are more passive, maintaining only diffuse attention to the machine and diverting their immediate focus to some other activity, such as glancing through a magazine, or listening to music. [5]

Little pattern of correlation of such strategies is found with achievement. Rather, the effectiveness of any particular operational style seems to be participant-specific and transitory; what seems to help one participant does not appeal to another, and what seems to help on one occasion may fail on the next. [5]

2.15 REPLICABILITY

From time to time, the experiments reported here have been assessed, both formally and informally, by a number of critical observers, who have generally agreed that the equipment, protocols, and data processing are sound. [5]

Frequently, however, the caveat is added that such results must be “replicated” before they can be fully accepted. It is PEAR’s opinion that for experiments of this sort, involving as they clearly do substantial psychological factors and therefore both individual and collective statistical behaviors, to require that any given participant, on any given day, should produce identical results, or that any given participant group should quantitatively replicate the results of any other, is clearly unreasonable. [5]

Rather more apt would be such criteria as might be applied to controlled experiments in human creativity, perception, learning, or athletic achievement, where broad statistical ranges of individual and collective performance must be anticipated, and results therefore interpreted in statistically generic terms. [5]

By such criteria, the experiments outlined here can be claimed both to show internal consistency, and to replicate results of similar experiments in many other laboratories. [5]

With respect to inter-laboratory reproducibility, it should first be noted that the experiments reported here were originally undertaken as an attempt to replicate previous studies by Schmidt and others, albeit with modifications in design and equipment that would respond to various criticisms and allow more rapid accumulation of very large quantities of data.

PEAR’s results indeed reinforce this earlier work in confirming the existence, scale, and character of anomalous correlations with pre-stated participant intentions. [5]

2.16 THEORETICAL MODELING

Any attempts to model phenomena like those reported here must be immensely complicated by the evidence that human volition is the primary correlate of the observed anomalous physical effects, and thus that some proactive role for consciousness must somehow be represented. [5]

Yet, contemporary scientific rigor leaves little room for subjective correlates in its mechanistic representation of reality. It follows, therefore, that science as we know it either must exclude itself from study of such phenomena, even when they precipitate objectively observable physical effects, or broaden its methodology and conceptual vocabulary to embrace subjective experience in some systematic way. [15]

While a variety of attempts to combine conventional psychological and neurophysiological concepts with established physical and mathematical formalisms, such as electromagnetic theory, statistical thermodynamics, quantum mechanics, geophysical mechanics, and hyperspace formalisms have been proposed, few of these propositions seem competent to accommodate the salient features of the empirical data, let alone to survive critical scientific and epistemological criteria. [5]

2.17 IMPLICATIONS AND APPLICATIONS OF THE ANOMALOUS RESULTS

Two decades of intense experimentation and complementary theoretical modeling leave little doubt that the anomalous physical phenomena appearing in these PEAR studies are significantly correlated with subjective human processes, akin to such ineffable experiences as joy, wonder, creativity, and love. [15]

Despite the small scale of the observed consciousness-related anomalies, they could be functionally devastating to many types of contemporary information processing systems, especially those relying on random reference signals. [15]

As proposed by Robert Pucher in Operator Influence on Random Event Generators – The Consequences for Everyday Life (see [14]), probabilities may be entangled by other probabilities within a system, so as to one infinite small change of one probability could cause a dramatic change of another probability in the same system. This can also be shown mathematically. Deducing therefrom, the small measured effect of human consciousness influencing physical processes could become of fundamental meaning for everyday life.

Such concern could apply to aircraft cockpits; to surgical facilities and trauma response equipment; to environmental and disaster control technology; or to any other technical scenarios where the emotions of human participants may intensify their interactions with the controlling devices and processes. [15]

Indeed, the extraordinarily sophisticated equipment that generates much of the fundamental data on which modern science is based cannot be excluded from this potential vulnerability. Protection against such consciousness-related interference could become essential to the design and operation of many future information acquisition and processing systems. [15]

On the positive side, since these same research results provide important technical evidence of the precious process of human creativity, they offer the promising possibility of a new genre of human/machine systems that will enable more creative performance in all manner of applications from medicine to management, from manufacturing to communications, from education to recreation. [15]

E.g. the relevance of these consciousness abilities to human health follows from recognition that physiology entails myriad subtle information processes, all of which involve some degree of randomicity in their normal functions, and thus may be similarly influenced by conscious volition. [9]

Beyond its scientific impact and its technological applications, clear evidence of an active role of consciousness in the establishment of reality holds sweeping implications for our view of ourselves, our relationship to others, and to the cosmos in which we exist. [15]

2.18SUMMARY

The extensive databases described above, comprising more than 1500 complete experimental sessions generated over a period of 12 years in rigid tripolar protocols by over 100 unselected human participants using several random digital processors, display the following salient features:

1. Strong statistical correlations between the means of the output distributions and the pre-recorded intentions of the participants appear in virtually all of the experiments using random sources.
2. Such correlations are not found in those experiments using deterministic pseudo-random sources.
3. The overall scale of the anomalous mean shifts are of the order of 10^{-4} bits deviation per bit processed, over the huge databases accumulated the composite effect exceeds 7σ ($p = 3.5 \times 10^{-13}$).
4. While characteristic distinctions among individual participant performances are difficult to confirm analytically, a number of significant differences between female and male participant performance are demonstrable.
5. The session score distributions and the count population distributions in both the collective and individual participant data are consistent with chance distributions based on slightly altered binary probabilities.
6. Oscillatory session position patterns in collective and individual participant performance appear in much of the data, complicating the replication criteria.
7. Experiments performed by participants far removed from the devices, or exerting their intentions at times other than that of device operation, yield results of comparable scale and character to those of the local, on-time experiments. Such remote, off-time results have been demonstrated on all of the random sources.
8. Appropriate internal consistency, and inter-experiment and inter-laboratory replicability of the generic features of these anomalous results have been established.
9. A much broader range of random-source experiments currently in progress display a similar scale and character of anomalous results.

(see [5])

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