Exploring the Possible Effects of Johrei Techniques on the Behavior of Random Physical Systems

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Abstract: Three practitioners of the Japanese healing technique known as "Johrei" served as operators on three of the PEAR laboratory's repertoire of human/machine anomalies experiments. Using Johrei on a so-called "Yantra" experiment, two of the three participants achieved anomalous effect sizes that were substantially larger than those typically produced by a broader range of common operators, but curiously inverted from the pre-stated directions of intention. The yields also were sharply correlated with particular optical and acoustical environmental options. When these same operators suspended their Johrei techniques, all results were at chance. On a "Fountain" experiment, none of the Johrei operators achieved statistically significant results in either their Johrei or non-Johrei efforts. Deployment of "FieldREG" equipment and protocols in various Johrei assemblies yielded several anomalous REG output segments comparable with those obtained in the best of many other applications of this technology. The small number of Johrei operators and the limited sizes of the databases necessarily restrain more generic interpretations of the results, but some motivation for extension of such studies has been established.

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I. Introduction

In March 2001 the Princeton Engineering Anomalies Research (PEAR) laboratory received a gift from Sekai Kyusei Kyo, Japan, for the purpose of adapting certain of its experimental equipment and protocols to assess the possible influence of Johrei on the behavior of random physical processes. The experiments commenced in March 2001 and were completed in November 2002. Analysis of the results has proven complex, and their interpretation somewhat equivocal.

Three experienced Johrei practitioners served as volunteer operators for three separate experiments, termed "Yantra," "Fountain," and "FieldREG," respectively, which had been developed by the PEAR program to test certain hypotheses suggested by its "M^5" model of the interrelationships among the tangible and intangible dimensions of mind and matter.(1) Many of the premises of this model are similar to the principles underlying the practice of Johrei, and each of the selected experiments recognizes the central roles of the unconscious mind and the intangible aspects of the physical world in the manifestation of "anomalies" wherein the objective measurables of a physical system appear to respond to subjective states of human participants.

The essence of the practice of Johrei has been nicely summarized by one of the operators:

> "Johrei is a healing art introduced in Japan in the first half of the 20th century by Mokichi Okada. Okada recognized the importance of research to the practice and expansion of the practice of Johrei, and recognized that the U.S. was likely to be important to achieving this research. 'Johrei' is a noun used both to describe the art and to describe the healing energy that is used in the practice of the art. Johrei is practiced throughout the world, with particularly large followings in Japan, Thailand and Brazil.
>
> "The focus of Johrei is on the health of people and the social and physical environment in which individuals find themselves. In the giving of Johrei,

practitioners understand that they are 'channels' for Johrei. That is to say, the 'energy' or 'Light' of Johrei originates external to the practitioner, is attracted to and passes through the practitioner and is extended as a beam from the hand of the practitioner. This beam is directed through the recipient, be the recipient a person or in the case of this study, a scientific instrument. The ability to channel Johrei is acquired through training and subsequent practice."

The "Yantra" experiment utilizes a microelectronic noise diode as a random physical source, in a design derived from many other random event generator (REG) studies that have been conducted in the PEAR laboratory.[2, 3, 4] It differs from these earlier experiments in that the operator is not required to generate baseline (null-intention) trials, and is not provided with feedback on the real time performance of the REG. Instead, it offers visual options of a display consisting of a mandala image (Sri Yantra) that either changes color in time with the data generation process, or provides a stable white image against a blue background. It also offers audio options that allow the operator to listen to the beat of a drum in rhythm with the pace of data generation, either in regularly spaced single beats, or in heartbeat-simulating double beats. These visual and auditory accompaniments were selected on the basis of earlier "ArtREG" results, wherein archetypal images associated with spiritual traditions were found to produce stronger effects than those of more mundane contexts.[5] The operator can choose any combination of these or no visual or auditory accompaniment at all.

A single experimental series consists of four 100-trial runs, each comprising 200 binary samples, two runs being generated under a pre-recorded intention to produce higher REG output counts and two to produce lower counts, with each run lasting approximately two minutes. In this investigation, each of the three operators was asked to produce a total of 40 series, 20 of which were generated while focusing Johrei and 20 of which did not invoke Johrei. Data were analyzed in terms of the differences between the results of the high and low intentions in the Johrei condition, compared with those of the non-Johrei condition.

The "Fountain" experiment explores the effects of operator consciousness on the dynamics of an attractive illuminated fountain monitored by a sensitive photomultiplier system. In contrast to most other REG experiments, there is no directed intention to change the behavior of the fountain. Instead, the operators are simply asked to relax and enjoy the experience in one condition, and to ignore the device in the other. An experimental session consists of four 3.5-minute runs, two in each condition. In the Johrei study, the operators again produced 20 sessions while focusing Johrei and 20 without Johrei.

The "FieldREG" experiment utilizes a portable version of the REG equipment that permits data collection outside the laboratory environment, in real world situations characterized by subjective resonance among a group of people. In these applications there are no stated directional intentions, and typically no deliberate attention is given to the device during its operation. Rather it serves as a passive monitor of the prevailing group dynamics. Data are generated continuously over extended periods of time, with index entries and experimenter notes identifying the beginning and end of predicted periods of particular interest. In the Johrei study, a FieldREG device consisting of a microREG and attached Palmtop computer was operated during a number of Johrei assemblies, under the hypothesis that data produced in these periods would display deviations from chance expectation and from data generated during control periods.

The balance of this report will consist of synoptic reviews of the results of these three experiments and the interpretations thereof, with more complete compendia of the data relegated to the Appendices.

II. Yantra Experiments

The results of the Yantra experiments are summarized in the subsequent tables and graphs using the following notations:

Op.: Operator designations. (Consistent with our long-standing policy of strict operator anonymity, the Johrei participants are labeled only by X, Y, and Z, respectively.)

n_H, n_L: Number of trials for high and low efforts.

$\Delta\mu_H$, $\Delta\mu_L$: REG output average trial mean shifts from the theoretical chance expectation, $\mu_0 = 100$ counts, for high and low efforts, respectively. These are alternatively referred to as "effect sizes."

Z_H, Z_L: Corresponding statistical "Z-scores," $Z = \frac{\Delta\mu}{\sigma_0}\sqrt{n}$, where $\sigma_0 =$ theoretical trial standard deviation $(= 7.071)$, and $n =$ number of trials performed (= 4000 per operator, per intention, with and without Johrei).

p_{HI}, p_{LO}: Corresponding probabilities of chance occurrence, computed on a two-tailed basis, as discussed in the text.

$HI(N)$, $LO(N)$: High-intention and low-intention results using no Johrei strategy.

$HI(J)$, $LO(J)$: High-intention and low-intention results using Johrei strategy.

$\Delta(N)$ $(HI - LO)$ difference results using no Johrei strategy.

$\Delta(J)$ $(HI - LO)$ difference results using Johrei strategy.

$\Delta\mu_\Delta$: Difference in average trial mean shifts for high- and low-intention effects.

Z_Δ: Corresponding Z-scores of $\Delta\mu_\Delta$.

p_Δ: Corresponding two-tailed chance probabilities of Z_Δ.

Σ: Results for all three operators as a group.

δ_H, δ_L, δ_Δ: Differences of HI, LO, and Δ values for Johrei and non-Johrei conditions.

Table I: Summary of *HI*(*N*) Results†

Op.	X	Y	Z	Σ
n_H	4000	4000	4000	12000
$\Delta\mu_H$	.083	.122	.013	.072
Z_H	.738	1.087	.119	1.122
p_H	.46	.28	.91	.26

Table II: Summary of *LO*(*N*) Results†

Op.	X	Y	Z	Σ
n_L	4000	4000	4000	12000
$\Delta\mu_L$	–.045	.134	.023	.037
Z_L	–.405	1.196	.204	.575
p_L	.65	.23	.84	.56

Table III: Summary of *HI*(*J*) Results†

Op.	X	Y	Z	Σ
n_H	4000	4000	4000	12000
$\Delta\mu_H$	–.198	–.307	.047	–.153
Z_H	–1.769	–2.746	.418	–2.365
p_H	.08	.006**	.67	.018*

Table IV: Summary of *LO*(*J*) Results†

Op.	X	Y	Z	Σ
n_L	4000	4000	4000	12000
$\Delta\mu_L$	.256	.117	–.076	.099
Z_L	2.290	1.047	–.682	1.532
p_L	.022*	.30	.50	.13

Table V: Summary of $Z_H(p_H)$, $Z_L(p_L)$, $Z_\Delta(p_\Delta)$ Results† for non-Johrei and Johrei Conditions

Op.	X	Y	Z	Σ
$HI(N)$	.738 (.46)	1.087 (.28)	.119 (.91)	1.122 (.26)
$LO(N)$	–.405 (.65)	1.196 (.23)	.204 (.84)	.575 (.56)
$\Delta(N)$	.808 (.42)	–.078 (.94)	–.060 (.90)	.387 (.70)
$HI(J)$	–1.769 (.08)	–2.746 (.006*)	.418 (.67)	–2.365 (.018*)
$LO(J)$	2.290 (.022*)	1.047 (.30)	–.682 (.50)	1.532 (.13)
$\Delta(J)$	–2.870 (.004**)	–2.682 (.007**)	.778 (.44)	–2.756 (.006**)
δ_H	–1.773 (.08)	–2.710 (.007**)	.212 (.84)	–2.467 (.014*)
δ_L	1.905 (.06)	–.106 (.92)	–.626 (.53)	.677 (.50)
δ_Δ	–2.601 (.009**)	–1.841 (.06)	.593 (.54)	–2.223 (.026*)

†More detailed results in Appendix.
*, ** denote two-tailed statistical significance beyond the .05 and .01 levels, respectively.

Interpretation

From the Summary Tables I–V, and their more detailed versions A.I–A.IV in the Appendix, several features of the operator performance are evident:

1) In the non-Johrei condition, none of the operators individually, nor the group as a whole, produced any statistically significant anomalous effects.

2) In the Johrei condition:

- Operator X produced a statistically significant mean shift in the $LO(J)$ intention $(p = .022)$, albeit in the direction opposite to that intention.
- Operator Y produced a highly significant anomalous mean shift in the $HI(J)$ intention $(p = .006)$, also opposite to intention, strong enough to carry the composite $HI(J)$ data of the three-operator group to a significant value $(p = .018)$.

- Operator Z, in contrast, produced modest mean shifts in both the intended $HI(J)$ and $LO(J)$ directions, but these did not attain statistical significance for these relatively small datasets.

3) As a consequence of these directional effects, the Johrei *vs.* non-Johrei, *HI* – *LO* (Δ) differences were statistically highly significant for Operator X $(p_\delta = .009)$. For Operator Y, the Johrei *vs.* non-Johrei *HI* data alone were highly significant $(p_\delta = .007)$. Even when combined with the non-significant results of Operator Z, the group as a whole (Σ) achieved a significant difference between the Johrei and non-Johrei Δ conditions $(p_\delta = .026)$, and between the Johrei and non-Johrei HI efforts alone (.014), again all in the direction opposite to the intentions. (It is these inverse correlations with the pre-stated intentions that force us to apply two-tailed significance criteria.)

4) The absolute anomalous effect sizes (mean shifts) driving these statistically noteworthy results were an order of magnitude larger than those we typically have seen for the much larger databases of our other REG experiments,(3) implying that had these Johrei efforts been extended to much larger accumulations of data, the statistical effects could have been even larger.

Given these large effect sizes and statistical confidences, it is possible to move to more detailed inspection of the Operator databases for structural details that might illuminate the nature of the Johrei effect. The tables in the Appendix list several of the higher moments of the output data distribution functions (standard deviation, skew, kurtosis, and their associated chance probabilities). Of these, only the skew is remarkable, and that only in the *HI*(*J*) efforts of all three operators, indicating that there the mean shifts are achieved by asymmetries in the distribution of counts about the mean, a fact confirmed by examination of the count distribution profiles.(6)

Also possibly indicative are the temporal sequencings of achievement illustrated by cumulative deviation graphs of operator performances in Johrei and non-Johrei conditions shown in Figures 1–6. To be noted are the relative consistencies of mean displacements displayed by Operators X and Y in their Johrei efforts, compared to the more chaotic random walks of the non-Johrei data, suggesting that their Johrei influences persist more or less uniformly throughout the entire sequence of experimental series. Whether there are more subtle series position effects, akin to those seen in other REG databases,[7] is impossible to ascertain for these relatively small Johrei sets. (Consistent with our standard cumulative deviation graphical format, the terminal probabilities noted on the right ordinates here are one-tailed values for the individual directions of effort, while all of the directional and differential probabilities in the Tables are, for the reasons mentioned, computed on a two-tailed basis.)

Figures 1–6. Cumulative deviation graphs for all three operators without and with Johrei.

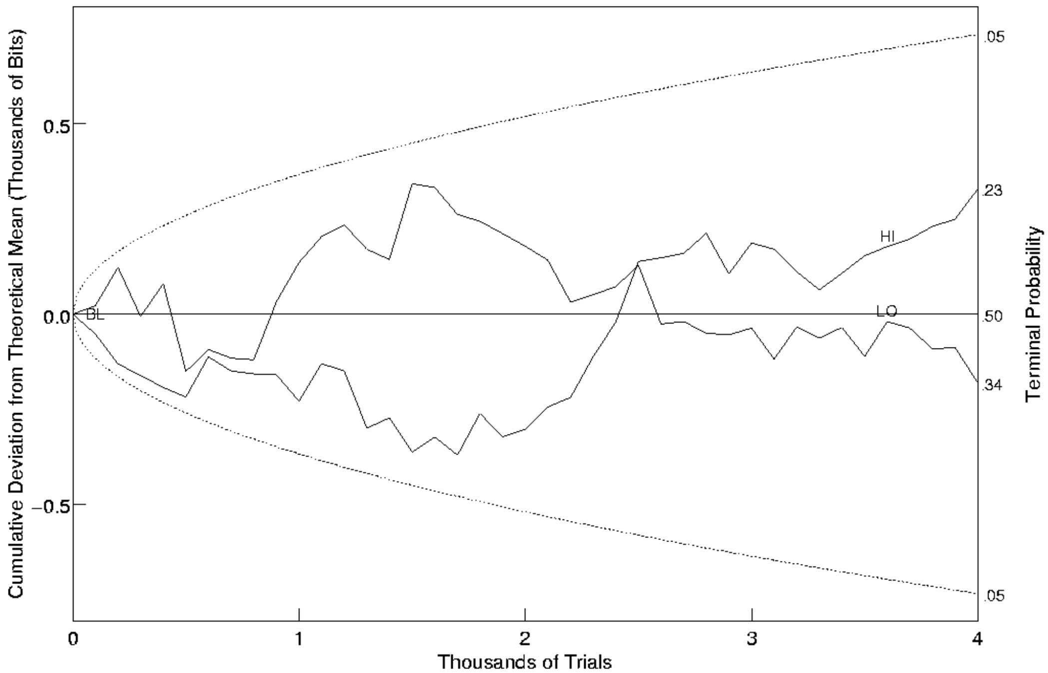

Figure 1: Operator X No Johrei

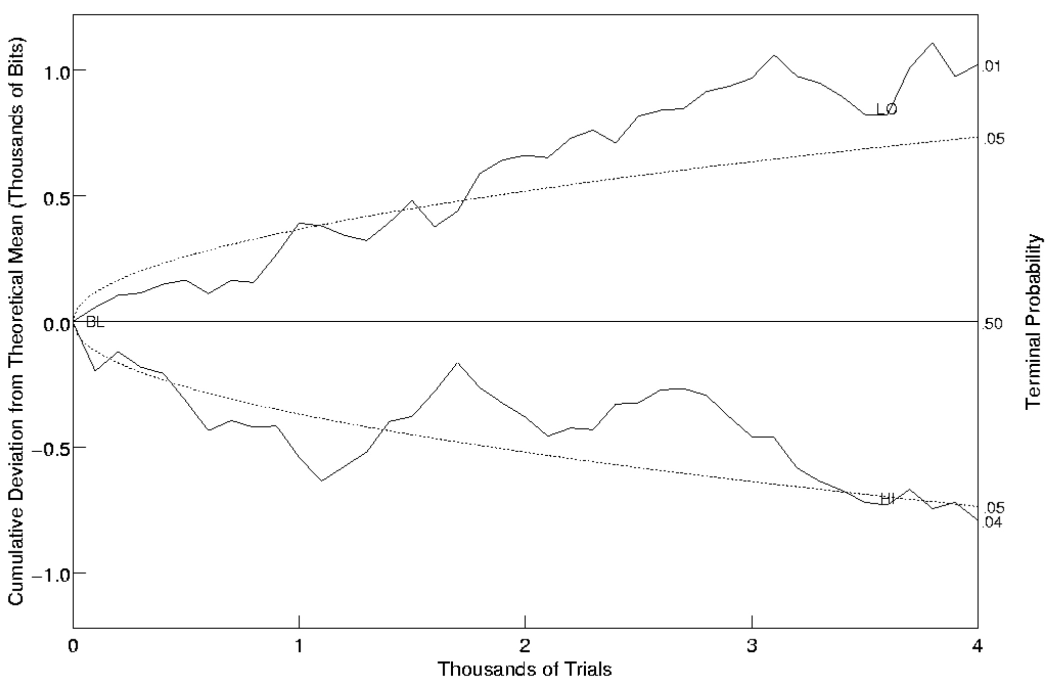

Figure 2: Operator X With Johrei

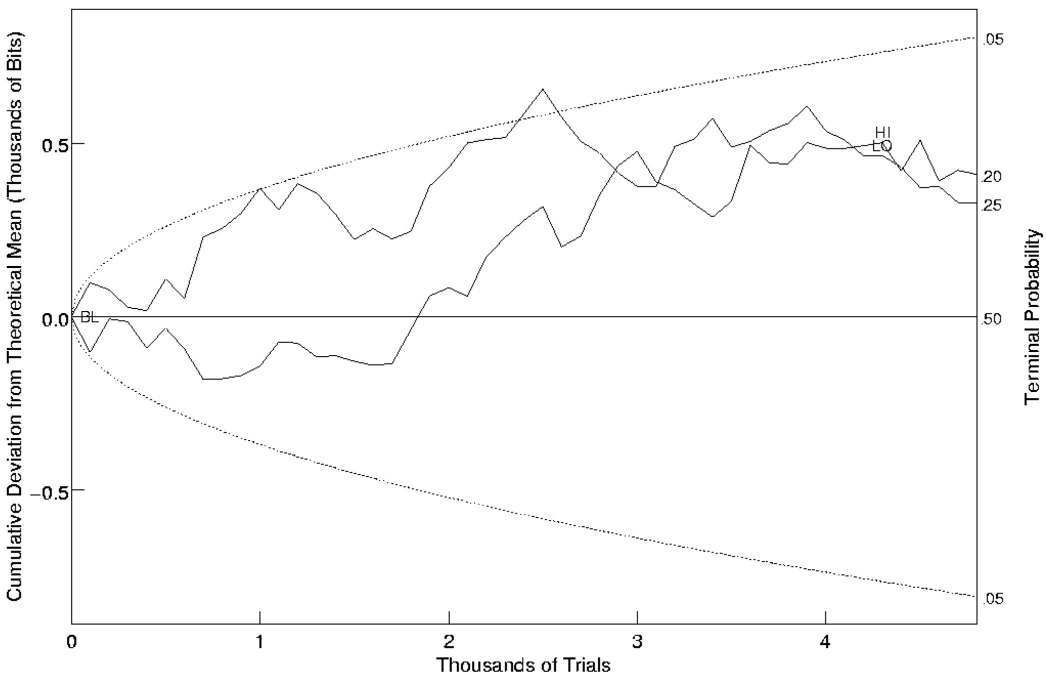

Figure 3: Operator Y No Johrei

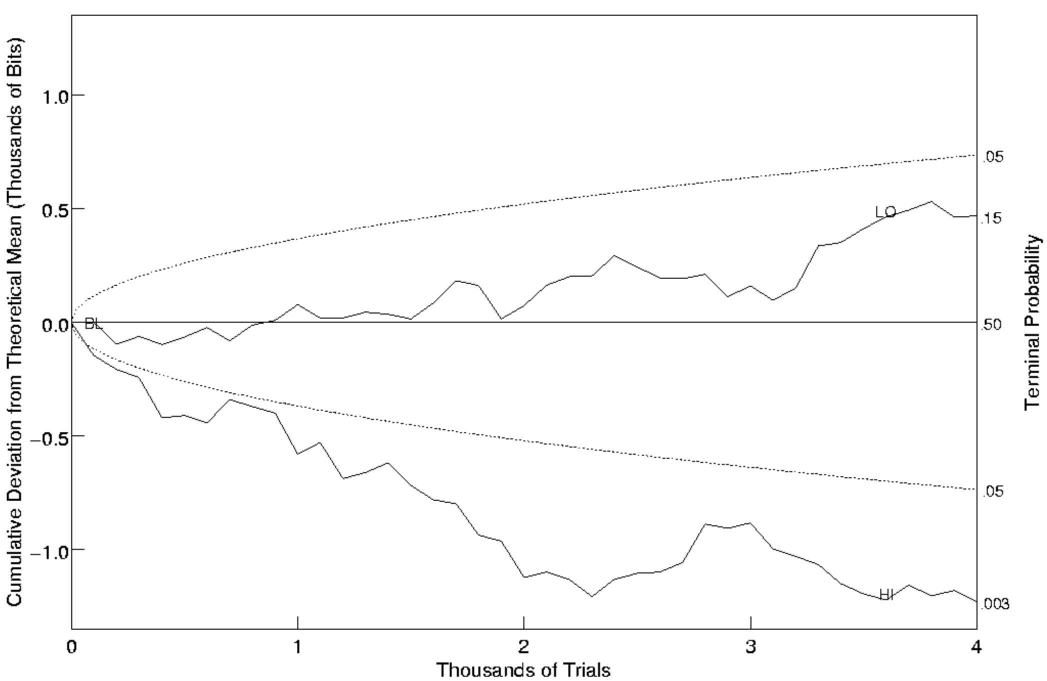

Figure 4: Operator Y With Johrei

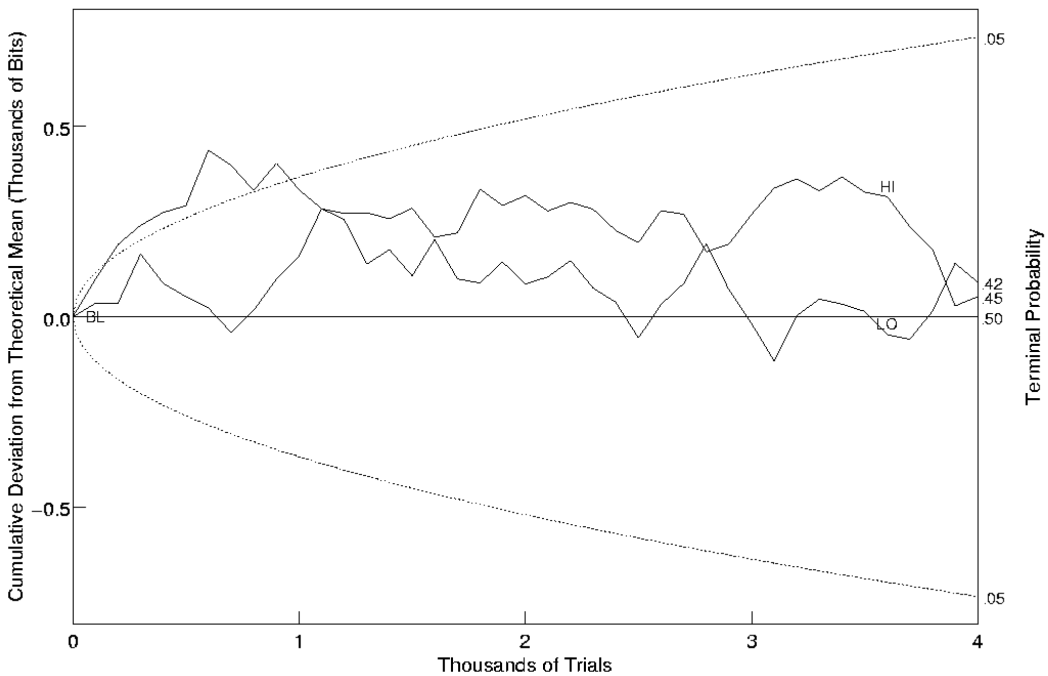

Figure 5: Operator Z No Johrei

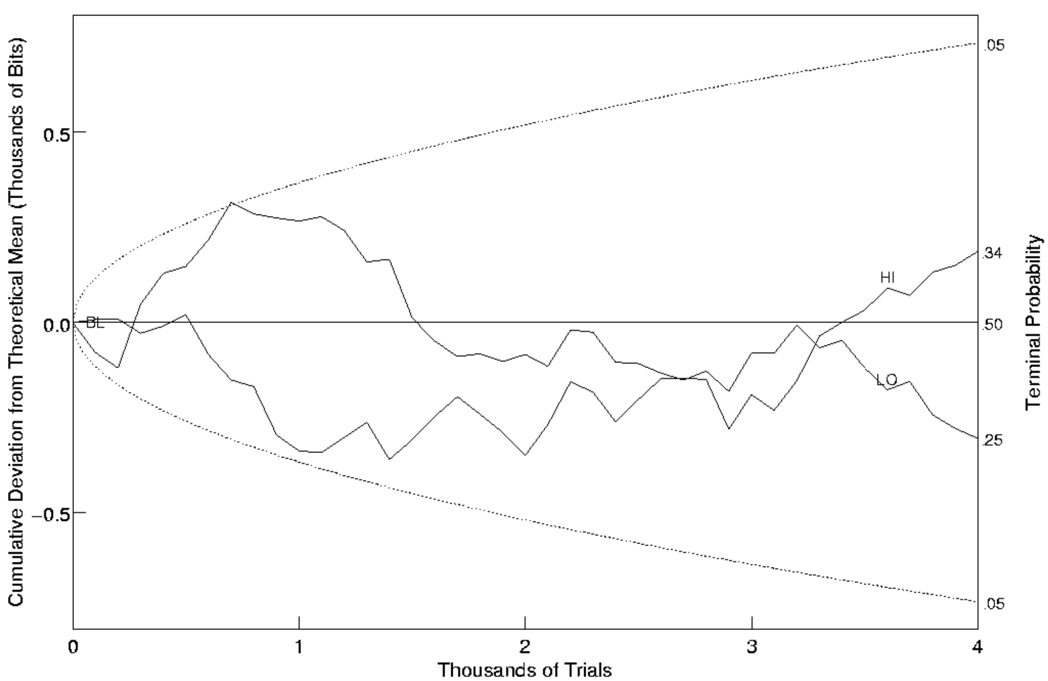

Figure 6: Operator Z With Johrei

It remains, of course, to consider why the mean shifts achieved by operators X and Y have been effected in directions opposite to their pre-stated intentions. Here we can offer little more than speculation based on previous studies of gender effects[8] and FieldREG phenomena.[9] Very briefly, we have come to suspect that the consciousness-related anomalous physical effects we are studying are engendered by some admixture of four subjective features of the human/machine interactions: 1) a conscious intention or desire; 2) an unconscious sense of meaning or purpose associated with the device or task at hand; 3) an emotional resonance with the experimental device, procedure, and ambience; and 4) an intrinsic uncertainty in the physical process itself, in the potential outcome of the experiment, or in the psyche of the operator. The specific character of the emergent anomalous effects seems to depend on the manner in which these factors play out in the given experimental context. For example, when real-time feedback is provided, the **directionality** of the effect seems to be driven by the personality of the operator, *e.g.* assertive masculine (yang) attitudes tend to favor anomalous excursions in the intended directions, whereas the **magnitude** of the effects seems greater for receptive feminine (yin) attitudes, albeit with poorer correlations with intention. Such attitudinal complementarity has been evident in a number of our other experiments,[10] and seems apparent in various other creative endeavors, as well. In FieldREG applications, for example, where by design there are no stated intentions and no real-time feedback, we see larger effects, indiscriminately distributed in both directions. The speculation thus would be that in these Yantra experiments, given the passive nature of the Johrei transmission and the relatively gentle and non-technical personalities of these operators, intentionality has been subordinated to effect size, with the consequent large deviations uncoupled from their intended directions.

Correlations with Environmental Stimuli

As mentioned in the introduction, the Yantra experiment is equipped with an assortment of optional visual and auditory environmental stimuli that the experimenter may, or may not, employ during the experimental efforts. While these options may be treated as secondary experimental parameters, they also may serve to enhance the resonant coupling of the operator to the device and task, at his or her personal discretion.

Thus, any correlations displayed between operator performance and the particular options selected possibly may provide some insights on the subjective aspects of the interactions, and on the conditions that may favor anomalous behavior. In this spirit, we have listed in Table VI the Johrei Z_{Δ} scores achieved by the three operators individually and collectively when using various elements of the three-dimensional matrix of optional conditions listed in the attached Key.

Table VI: Operator Z_{Δ} Performances with Johrei, Using Various Environmental Options

Key

	n =	number of trials in option subset
First Index:	I =	instructed assignment of intended direction
	V =	volitional assignment of intended direction
Second Index:	Optical Options	
	N =	no video image
	S =	steady yantra image (*cf*. Fig. 7)
	C =	changing yantra image
Third Index:	Acoustical Options	
	N =	no sound
	S =	single drumbeats, phased with REG trial counts
	H =	double drumbeats, simulating heartbeats, phased with REG trial counts
	O =	optional alternative sound, provided by operator

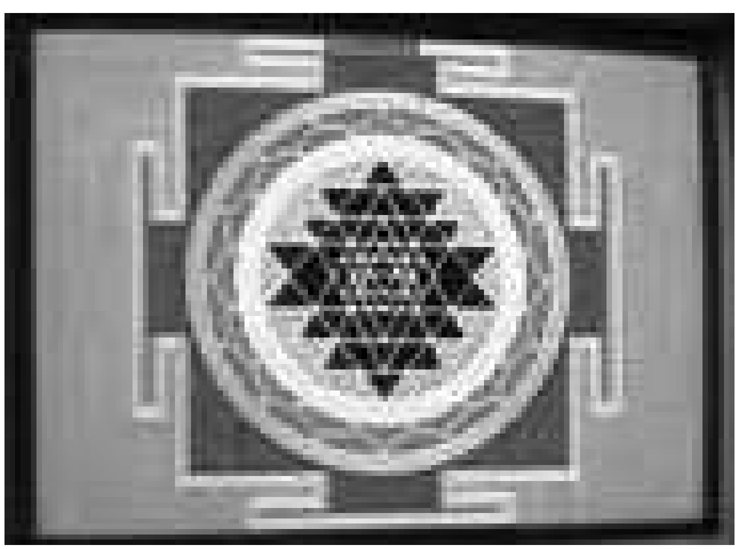

Figure 7. Yantra Pattern Display

Table VI:								
Op.	X		Y		Z		Σ	
OPTION COMBO	Z_Δ	n	Z_Δ	n	Z_Δ	n	Z_Δ	n
INN			–.785	200	.647	1200	–.127	1400
ISN	–1.336	200†					–1.336	200
ICN	–1.050	400					–1.050	400
INS	.976	200	–.686	200	.545	400	.482	800
ISS	–2.890**	600	–2.107*	200			–3.534**	800
ICS	–1.123	600					–1.123	600
INH	.035	400	–1.499	200	1.730	400	.154	1000
ICH	–.370	1000					–.370	1000
INO			.438	200			.438	200
VNN					–1.757	800	–1.757	800
VCN					.750	200	.750	200
VNS			–.635	400	.404	600	–.174	1000
VCS	–1.310	400	–.346	200			–1.171	600
VNH			–1.764	2400	.525	400	–.876	2800
VSO	–1.407	200					–1.407	200

† denotes number of runs comprising data subset.

(ISH, ISO, ICO, VSN, VHS, VSH, VCH, VND, VCO not used.)

Note that of the 24 possible permutations of the Intention × Optical × Acoustical matrix of options, only 15 actually were invoked, and of these only 2 (INS, INH) were used by all three operators, and only 5 (INN, ISS, VNS, VCS, VNH) by two operators. It follows that any generalizations regarding the efficacy of particular forms of stimulus, or combinations thereof, are very risky. Notwithstanding, our attention is drawn to the exceptional performances of both Operators X and Y under the ISS condition (instructed, static image, single beat) which combine to more than 3.5 standard deviations of reverse displacement $(p_\Delta = .0004)$. (Unfortunately, Operator Z, whose overall data did not show this reversal, did not opt for that condition). This outlying performance is also evident in the Table VII tabulation of all Johrei results broken by collective directional, optical, and auditory categories:

Table VII: All Johrei Z_Δ Results by Intention, Optical, and Auditory Options

Intention	Z_Δ	n	p_Δ
Instructed	–1.664	6400	.09
Volitional	–2.256	5600	.024*
Video			
Steady Image	–4.024	1200	<.0001**
Changing Image	–1.525	2800	.13
No Image	–.915	8000	.36
Audio			
Single Beats	–2.385	3800	.017*
Heartbeats	–1.061	4800	.29
Operator Choice	–.685	400	.49
No Sound	–1.236	3000	.21

At this point, we are loathe to generalize this behavior beyond a tentative suggestion that the application of Johrei in this experimental context may be favored by certain prevailing environmental stimuli. A more comprehensive analysis of our complete Yantra database indicates that similar preferences for particular combinations of these environmental options appear in the structure of results across many other operators and intentional strategies.[(11)]

III. Fountain Experiments

The PEAR "Fountain" experiment is one of several facilities designed and operated to explore the sensitivities of anomalous human/machine effects to the particular type of random physical source addressed and to the character of the feedback provided to the operators. Its central feature is a millimeter-diameter illuminated jet of pure water projecting vertically upward in a laminar column for several centimeters, then collapsing into a turbulent structure that eventually cascades back onto the source orifice, much like the larger fountains commonly seen in public parks and gardens. A focused bright light transmitted through or reflected from this laminar/turbulent jet enhances the aesthetic attractiveness of the display and provides the essential quantitative diagnostics for the experiment. This luminous pattern is transduced photoelectronically to yield real-time values of the oscillating length of the laminar column ("height" mode), or the total light scattered from the column and its turbulent top structure ("sparkle" mode). The Johrei experiments on this facility were conducted solely in the "sparkle" implementation.

The protocol of this Johrei experiment requires the operator to produce data in runs of two trials each over a binary matrix of four conditions: operator attention to the visual fountain dynamics ("attended") *vs.* no such attention ("unattended") × use of Johrei or none. To compensate for unavoidable environmental drift in the fountain behavior, data were processed only as differences between "attended" and "unattended" values for both the Johrei and non-Johrei conditions, for each operator individually, and for the group as a whole. Even so, for subtle technical reasons, two statistical evaluation recipes designed to cancel out temporal drift, labeled "V" and "Q," were carried forward separately, and reduced to their corresponding Z-scores and associated probabilities against chance. The results for operators X, Y, and Z are presented in Table VIII, and more completely in Appendix Table A.V.

Table VIII: Johrei *vs.* non-Johrei Z_δ Results on Fountain Sparkle Experiment

Op.	X		Y		Z	
No. Run Pairs	10		10		10	
Scoring Recipe	V	Q	V	Q	V	Q
Z_δ	–.97	–.69	.57	.03	.63	.42

Clearly there are no statistically significant indications of the efficacy of Johrei techniques on this experiment for these small data sets, given the intrinsic noise scale of its physical source. Whether such might emerge from a much larger investment of many more trials or operators on this same experiment remains speculative.

IV. FieldREG Experiments

For several years PEAR has conducted a large number of experiments wherein miniaturized versions of our REG technology have been deployed passively in a variety of group environments, such as spiritual services, academic conferences, business meetings, artistic performances, athletic contests, and other venues wherein some form of collective emotional involvement might be expected. The design of this equipment, the data-collection protocols, and the interpretation of the results have been detailed in a number of publications.[4, 9, 12] Briefly, it has been found that when the convocations generate a high degree of emotional resonance among the participants, the outputs of the digital electronic FieldREG units tend to display mean shifts that deviate from chance expectation, even though the participants typically are unaware of the presence of the device. These trends may be displayed as cumulative deviation traces, similar to those produced in the laboratory-based experiments, but since there is no stated direction of intention for the identified data segments, the results are better assessed on the basis of their χ^2 distributions, *i.e.,* the Z-scores for the segments of interest are squared and summed. In essence, this process provides an indication of the degree of structural variance among the segments that may be compared with chance predictions.

This portion of the Johrei project was intended to display the character of FieldREG responses that might emerge from certain Johrei ceremonial functions. A number of such applications were undertaken in October and December of 2000, involving both small and large group gatherings. The results of these, shown in Figures 8 and 9, are consistent with some of the most successful yields we have observed in other applications of this technology. The REG outputs for each event and subsets thereof are represented as a sequence of cumulative deviation traces, where the horizontal lines and their surrounding parabolas indicate the mean value expected by chance and the one-tailed 95% confidence intervals, respectively. The vertical lines denote the experimenter's notations of the beginning and end of distinct periods where the group was engaged in collective rituals or other relevant activities. For most of the events, the active segments are either preceded or followed by periods of passive baseline generation. As can be seen in the figures, many of these marked segments indicate strong trends of consistent mean shifts over extended periods of time. Taken in concert, it is clear that there is a larger overall variance in the FieldREG output than would be expected by chance. In the sequence of Figure 8b, for example, these compound to an overall deviation having a chance probability of .023. In the Figure 9 illustration, although the trends of the individual segments from Days 1 and 2 tend to cancel one another's effect over the compounded sequence, these still constitute a strong collective variation relative to chance.

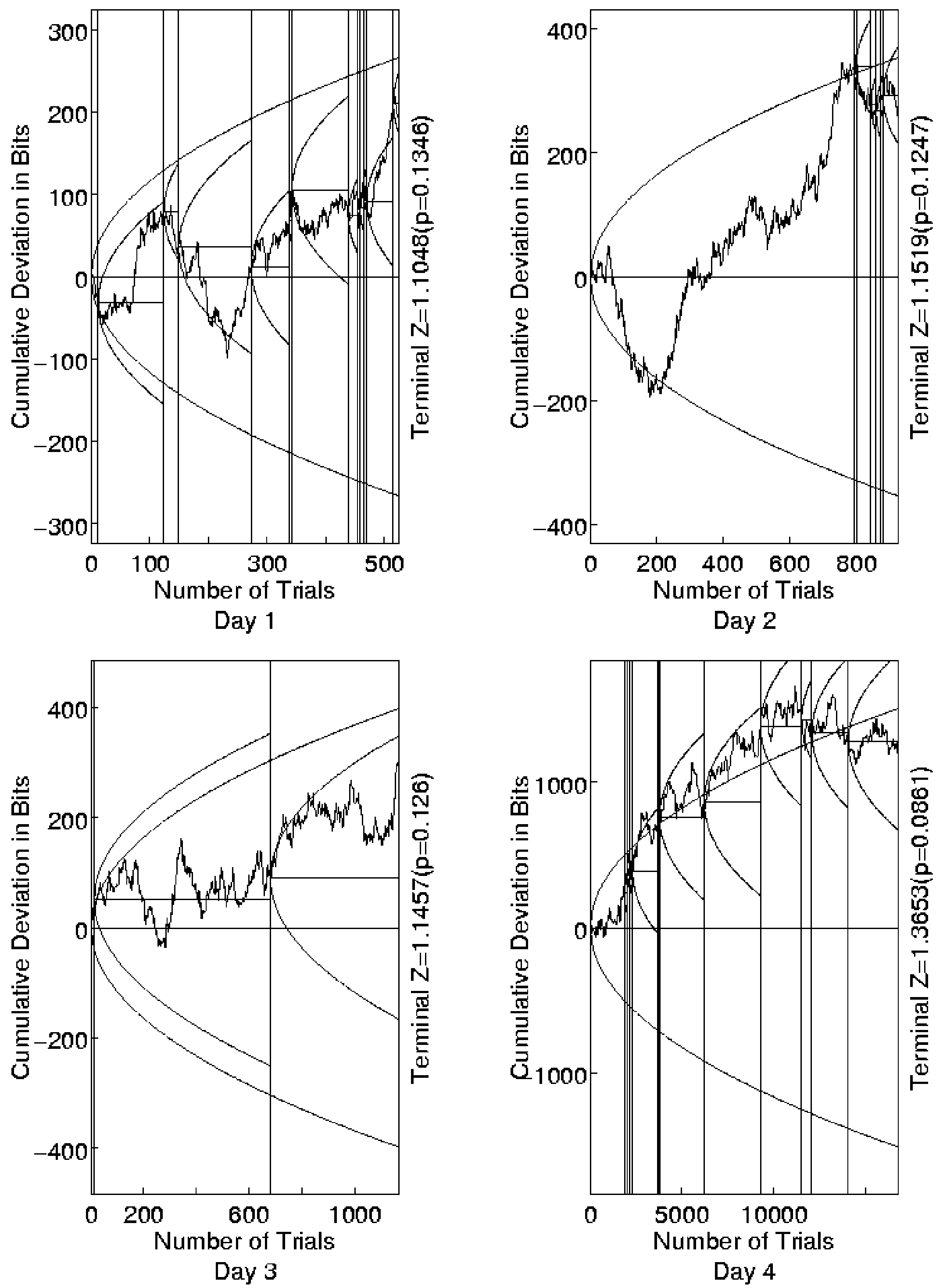

Figure 8: Johrei Fieldreg Application 1

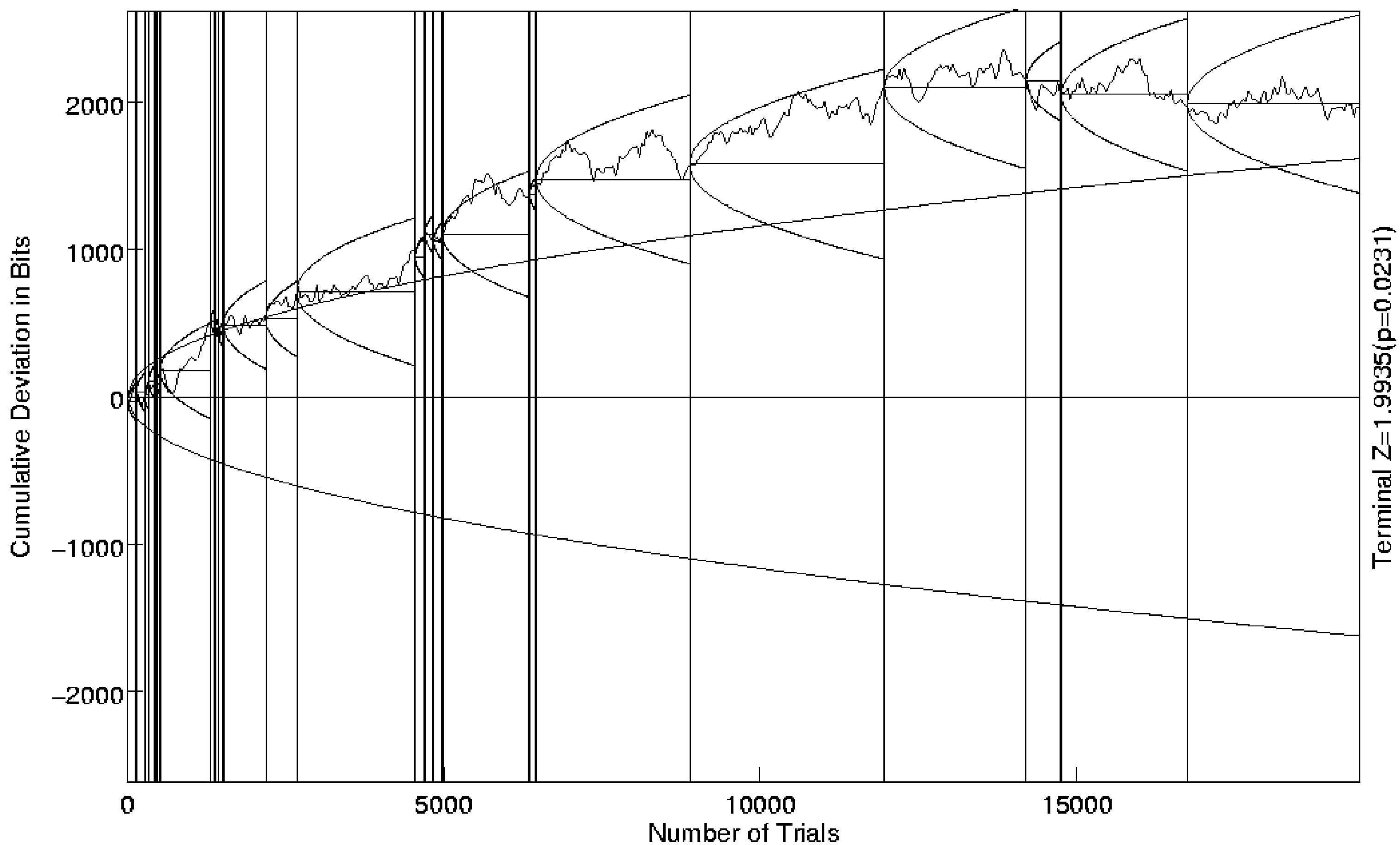

Figure 8b: Johrei Fieldreg Application 1, All Data

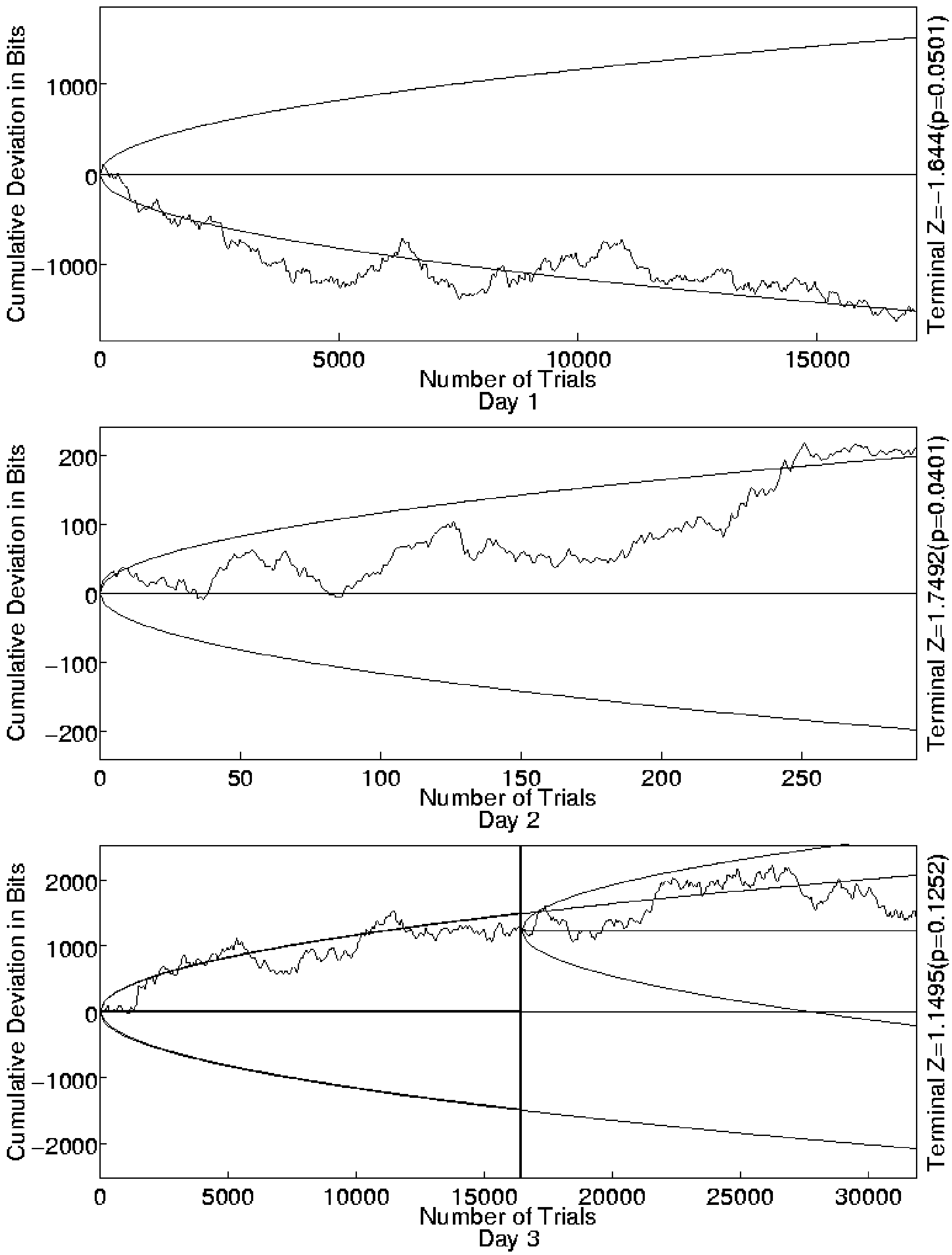

Figure 9: Johrei Fieldreg Application 2

We are thus left only with a preliminary indication that some evidence of Johrei may indeed be manifested in the output of this probabilistic physical device, but much more data, more completely annotated, would be needed to verify this claim, or to identify any objective or subjective correlates.

V. Summary Remarks

In its essence, Johrei involves a manual invocation of some form of celestial illumination as a vehicle for transmission of subtle healing energy to one's self, a patient, or some other less than well ordered target object or system. This particular set of pilot experiments was intended to explore the extent to which Johrei techniques could effectively be extended beyond strictly physiological or psychological regimes, into less personalized physical devices and systems. As such, it should complement other basic research recently performed elsewhere on more explicitly biological targets.[13, 14, 15] Although far from conclusive, and somewhat bemusing in their character, the results suggest that the phenomena involved may not be restricted to living components and systems, but may well be manifested in broader aspects of experiential reality. If supported by further experimentation, the implications for their ultimate comprehension, the corresponding extension of scientific methodology that will be required for their systematic study, and their beneficial applications could be immense.

Acknowledgments

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Appendix

For readers having more detailed technical interest, we present here more complete tabulations of the salient statistical features of the output data distributions from which the more concise tables and graphs of the main text have been distilled. Full representations of the raw experimental data are retained in our files and archives.

"Yantra" Experiment

Notation for Tables A.I–A.IV:

n = Number of trials in data set.

$\Delta\mu$ = Mean shift from chance mean $(\mu_0 = 100)$.

σ = Trial standard deviation (chance expectation $\sigma_0 = 7.071$).

Z_μ = Z-score of mean shift $= \frac{\Delta\mu}{\sigma_0}\sqrt{n}$.

p_z = Two-tailed probability of Δ_μ by chance.

Z_σ = Z-score of standard deviation.

S = Skew of count distribution.

Z_σ = Z-score of skew value.

K = Kurtosis of count distribution.

Z_K = Z-score of kurtosis value.

Probabilities of chance occurrence are quoted ( ) only for Z-scores exceeding the two-tailed significance thresholds of $\pm 1.96 (p \leq .05)*$ or $\pm 2.58 (p \leq .01)**$.

Table A.I: Details of *HI*(*N*) Results

Op.	X	Y	Z	Σ
n	4000	4000	4000	12000
$\Delta\mu$	.083	.122	.013	.072
σ	7.027	7.164	6.995	7.062
Z_μ	.738	1.087	.119	1.122
Z_σ	–.559	1.177	–.964	–.202
S	.034	–.019	–.007	.0026
Z_S	.887	–.494	–.188	.117
K	.081	–.005	.021	.033
Z_K	1.169	.060	.404	.962

Table A.II: Details of *LO*(*N*) Results

Op.	X	Y	Z	Σ
n	4000	4000	4000	12000
$\Delta\mu$	–.045	.134	.023	.037
σ	7.076	7.054	6.955	7.028
Z_μ	–.405	1.196	.204	.575
Z_σ	.063	–.212	–1.469	–.934
S	–.005	.013	–.057	–.016
Z_S	–.127	.327	–1.469	–.707
K	.078	–.150	.077	.0021
Z_K	1.130	–1.805	1.121	.270

Table A.III: Details of *HI*(*J*) Results

Op.	X	Y	Z	Σ
n	4000	4000	4000	12000
$\Delta\mu$	–.198	–.307	.047	–.153
σ	7.132	7.045	7.036	7.072
Z_μ	–1.769	–2.746 (.006**)	.418	–2.365 (.018*)
Z_σ	.775	–.331	–.443	.024
S	.098	.087	.083	.089
Z_S	2.526 (.012)*	2.235(.025)*	2.151(.031)*	3.983(.0001)**
K	–.026	–.088	–.065	–.058
Z_K	–.207	–1.004	–.713	–1.082

Table A.IV: Details of *LO*(*J*) Results

Op.	X	Y	Z	Σ
n	4000	4000	4000	12000
$\Delta\mu$	.256	.117	–.076	.099
σ	7.000	7.080	7.100	7.060
Z_μ	2.290 (.022*)	1.047	–.682	1.532
Z_σ	–.896	.109	.366	–.224
S	.013	.025	.013	.016
Z_S	.330	.636	.327	.719
K	–.066	.007	–.105	–.054
Z_K	–.723	.219	–1.224	–.976

"Fountain" Experiment

Notation for Table A.V:

N =	Number of runs in data set.
V, Q =	Alternative data scoring recipes (see text)
μ_J =	Mean of Johrei efforts
μ_N =	Mean of non-Johrei efforts
σ_J =	Standard deviation of Johrei efforts
σ_N =	Standard deviation of non-Johrei efforts
se_J, se_N =	Standard errors of Johrei and non-Johrei efforts $\left(se = \sigma/\sqrt{N}\right)$
μ_δ =	$\mu_J - \mu_N$
se_δ =	Standard error of $\mu_\delta = \sqrt{se_J^2 + se_N^2}$
T_δ =	μ_δ / se_δ
Z_δ =	Equivalent *Z*-score of μ_δ (*cf*. "S-plus" statistical functions)
S_J, S_N =	Skew of Johrei and non-Johrei efforts
K_J, K_N =	Kurtosis of Johrei and non-Johrei efforts

Table A.V: "Sparkle" Mode (Attended *vs*. Non-Attended)

Johrei *vs*. Non-Johrei Result Distributions

Op.	X		Y		Z	
N	10		10		10	
Recipe	V	Q	V	Q	V	Q
μ_J	–3.52	–3.65	–3.40	–3.18	1.78	.72
σ_J	10.27	8.91	9.78	9.36	8.57	8.03
se_J	3.25	2.82	3.09	2.96	2.71	2.54
μ_N	.58	–.77	–5.73	–3.31	–.43	–.81
σ_N	8.09	9.26	8.17	7.07	6.76	7.90
se_N	2.56	2.93	2.58	2.24	2.14	2.50
μ_δ	–4.10	–2.88	–2.33	.13	2.21	1.53
se_δ	4.13	4.06	4.03	3.71	3.45	3.56
T_δ	–.99	–.71	.58	.04	.64	.43
Z_δ	–.97	–.69	.57	.03	.63	.42
S_J	.420	.160	–.787	–.575	.188	.412
S_N	–.339	.004	.179	–.220	.070	.055
K_J	–.755	–1.012	–.620	–1.244	–.610	–.840
K_N	–1.260	–.877	–.831	–.599	–1.149	–1.225

As mentioned in the text, none of the Z_δ values approaches statistical significance, nor are there any significant structural disparities in the *S* and *K* values.

"FieldREG" Experiment

Beyond the summary graphs and tables included in the main text, statistical breakdowns of all segments of both Johrei assemblies are stored in our comprehensive FieldREG database manager, but for brevity are not presented in this report.