Towards an Understanding of Psychokinetic Effects

The Balancing Effect in Brain-Machine Interaction

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(Transcript of the lecture given at the *Österreichische Gesellschaft für Parapsychologie und Grenzbereiche der Wissenschaften*, on June 28th 2016, 8-10 pm)

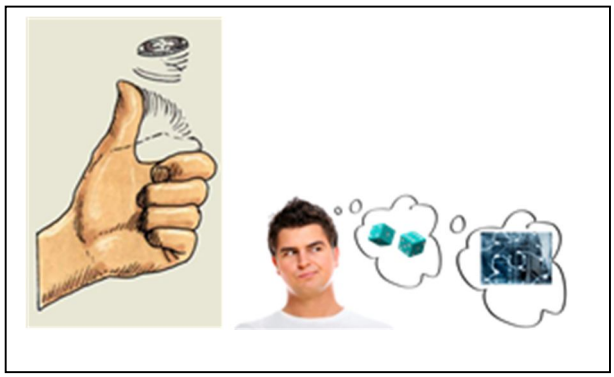
SLIDE 1. This talk is about the investigation of the phenomenon of psychokinesis, or telekinesis. Relevant information is also found at my personal website: http://users.uoa.gr/~fpallik.

SLIDE 2. As I begin, I'd like first to mention the collaboration between the Austrian and Greek societies for psychical research. In the 1930's the president of the Greek society, Dr. Angelos Tanagras, was investigating telekinesis with a young lady by the pseudonym "Cleio", who was able to move the magnetic needle of a compass by simply passing her hands above it. Tanagras has made a film with Cleio performing telekinesis, which he had shown to his colleagues around Europe where he travelled.

Dr. A. Tanagras **Cleio**

Tanagras was collaborating in long-distance telepathy experiments with the Austrian Society for Psychical research in Vienna around the 1920-1930's. On the Austrian side the medium Hauptmann Rudolf Gross was exchanging telepathic images, successfully as it was reported, with two ladies from the Greek side, by the names Androniki & Elpiniki. As part of their collaboration, the Austrian society invited Tanagras on April 1st of year 1936 to give a talk on the telekinetic phenomena of Cleio[1]. So, some 80 years later here I am, as the 2nd Greek to be invited by the Austrian society, to talk again on the same topic "telekinesis-psychokinesis", only this time carrying quite a different message.

SLIDE 3.The simple question that the psychokinesis hypothesis poses is as follows: can we directly influence a truly random event by simply willing for it to happen? Can we mentally influence the toss of a coin so that the desired side comes up? Can we mentally make the desired face of rolling dice to land facing up? Can we mentally influence complicated electronics directly with our thoughts alone? In spite of what the common belief may be on this question, here we are interested in the scientific evidence for telekinesis. The randomness involved in electronic circuits is used to test the hypothesis in the micro-world where the phenomenon is termed micro psychokinesis, or MicroPK.



SLIDE 4. So, let us first define the MicroPK hypothesis which states: "The statistical average of random numbers generated by electronic Random Number Generators (RNG) is shifted away from its expected theoretical value in the desired direction directly through our thoughts alone". We suppose that there are no interface devices used in our attempts to mentally influence the RNG. Those are

devices that are placed on the head to read brain waves (i.e. our thoughts), to convert them into electrical signals that drive other remote electronic devices.

SLIDE 5. I was involved in the investigation of the MicroPK hypothesis, either by personally performing the tests with electronic RNG's as well as analyzing MicroPK data collected by other experimenters.

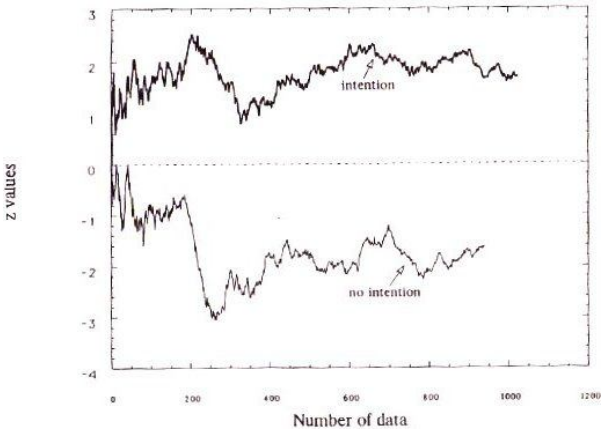
SLIDE 6. My investigation into the MicroPK hypothesis began in 1990 when I got the Perrott-Warrick scholarship to study psi phenomena in Cambridge, UK, during my sabbatical year of absence from the University of Athens.

SLIDE 7. This scholarship enabled me in 1991 to visit the German physicist Dr. Helmut Schmidt (photo on the right) who was working then at the Mind Science Foundation in San Antonio, Texas. Dr. Schmidt was making electronic Random Number Generators for testing MicroPK. In the photo on the right he is showing one model of his RNG's. During my visit I did some tests with another of Helmut Schmidt's RNG's, shown below. These fascinated me so much that when my few days visit ended, I took this RNG with me, to carry out more tests and collect more data for Dr. Schmidt's study.

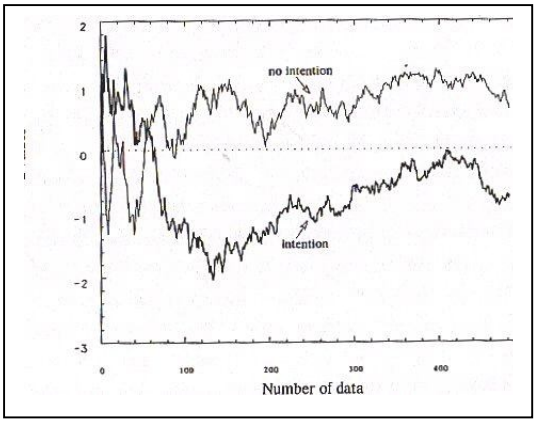
The 31 LED lamps on top of the rectangular shape device were flashing at various modes of operation that we could select at will. At the end of one trial (lasting about half a minute) the score was shown on a digital display on the front.

What I didn't know at the time was that inside this RNG machine were running in parallel two electronic chips, one with prerecorded bits and the other generating true random bits depending on whether we were doing exploratory trials or experimental trials that were automatically recorded. I had to return the RNG back to Helmut Schmidt because he needed to analyze the data. The device was returned to me sometime later, though, so that I could continue with my tests, until I finally had to return it for good. Still, I liked it so much that in 1995 I bought from him another model, the one shown in the photo on the right. This one displayed a circular array of 9 LED lamps operating on the same principles as the previous one. This one is still with me.

SLIDE 8. The protocol that I followed in my tests was to do 10 half-minute-trials while attempting to influence the flashing lights. I called these the "intention" data, followed by another 10 trials when we distracted our attention away from the flashing lights and not consciously focusing on the machine. I called these the "no-intention" data. I collected data by testing myself and also colleagues, friends and relatives.



I plotted the results of my tests as cumulative z-scores (z-score tells you by how many standard errors is the current sum of collected numbers different from the theoretically expected) against the sum of collected data and I was very surprised to see this very strange shape of a graph on the right: all "intention" data displayed positive z- scores,



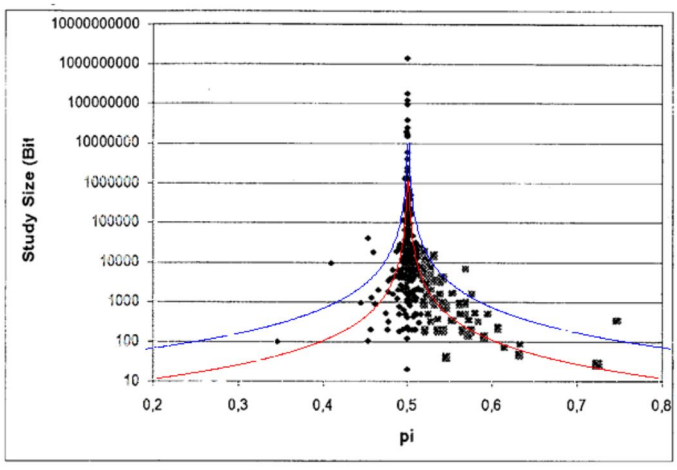
i.e. in the direction of intention, and all "no-intention" data displayed negative z-scores, i.e. against intention, where z occasionally obtained statistically significant values in either direction (above + 2,5 or below -2,5). I called this observation "the balancing effect" and presented the results in 1993 at the Parapsychological Association convention in Toronto that was later published in the convention proceedings[2]. Statistical balancing practically meant that the statistical average of the entire collection of data, "intention" and "no-intention", was within 'chance', i.e. no meanshift from chance, no MicroPK effect. This balancing effect was not seen again in my later experimental results with the Schmidt machine, when I got the machine back, as for example is shown in the above graph. The cumulative z-scores were not balancing about chance (z=0) and the score of the whole of data collected was remaining at values predominantly within 'chance'. So I published these new results in the JSPR[3].

SLIDE 9. Yet, even if I didn't see the balancing effect again, there were others who have observed it, either before my own observation or later. Examples are the *decline effect* observed by JB Rhine[4], the *differential effect* observed by Ramakrishna Rao[5]. The Balancing Effect was also observed in the large MicroPK database of the PEAR[6] lab. In both the *decline* and *differential* effect the net result of all the data generated by the same random process in these tests was chance, no shift from expected average of hits, no MicroPK effect. In the book "Margins of Reality, The Role of Consciousness in the Physical World[7]', the same statistical balancing observation is met again. One reads on pages 116-119: "*When all intention data (PK^+, PK^-), were merged with no-intention data (BL), they yielded the theoretically expected Gaussian curve*, i.e. an overall chance result.

SLIDE 10. Later, other researchers also reported to have observed the "balancing effect" in PK tests following my own observation[8].

SLIDE 11. Around 1996-1997 three laboratories got together to replicate the large PEAR lab MicroPK database. It was the PEAR lab joined by two other labs in Germany, the one at the University of Giessen and the other at the IGPP in Freiburg (Institut für Grenzgebiete der Psychologie und Psychohygiene). Finally, all three of them could not replicate the PEAR database. Their null result was published in the J. Sci. Exploration[9].

SLIDE 12. Inspired by this replication failure, the two scientists who were involved in it at the Freiburg leg of the consortium, decided to carry out a meta-analysis of all results of MicroPK experiments performed with true random number generators. Dr Fiona Steinkampf also joined this project.



SLIDE 13. The rules for collecting data to perform this meta-analysis were specific: only "to investigate the possible influence of direct human intention on the concurrent output of true RNG's". That is, not to involve telepathy, precogmition, or clairvoyance while using RNG's, which had to be truly random number generators. The group of the three researchers converted all results from the appropriately selected relevant studies into proportion of successful

trials (bits) in each study. Then, they plotted the size N of study in bits, against the proportion of successful trials in the study, the proportion of hits, pi, shown in the graph to the right. This graph reminds of an inverted funnel, (at least, it should look like one), that's why it is called the 'funnel plot'. Their meta-analysis was published in year 2006[10].

A photocopy of this graph was shown to me, as I was analyzing MicroPK data at the IGPP Institute and I was naturally curious to study the information it provided about the MicroPK database. The most obvious feature on it was that it converged to pi=0,5, i.e. 50% proportion of successes, at very large studies of billions of bits generated. The value of pi to which the funnel plot converges, at very large N, is the most representative proportion of hits in the entire MicroPK database. It is a statistical fact that in a large enough database, the data should be symmetrically scattered about the most representative proportion of hits, in absence of biases. Then, the statistical average of all these data should coincide with the most representative proportion of hits.

The 2nd information that this graph conveys is that the data are not symmetrically scattered about the most representative proportion of successes in the database, the 50%. We observe that there are areas void of data-points on the left-hand side of the graph, below 50%, exactly where the test results are considered to refute the MicroPK effect the researchers are trying to confirm.

The 3rd and equally important information this plot provides is the way the data scatter about their most representative proportion of hits, the 50%. In order to better appreciate the spread of data scatter, I plotted the blue dash curves, called the 95% confidence interval curves for randomly distributed data, with the help of a formula taken from standard statistics textbooks. These curves meaning is the following: the 95% of an adequately large number of data, assumed to be randomly distributed, should be enveloped by the blue curves and the 5% is expected to be outside them. But clearly this is not the case, i.e. the scatter of assumed-to-be-randomly-distributed data, is broadened compared to the scatter of random data. I stretched those blue curves to a new position (the red curves) by simply changing one parameter in the statistical formula that had plotted the blue curves, so that now they left out just the 5% of data-points. The broadening of the MicroPK funnel plot meant that the MicroPK data were not randomly distributed, but they were correlated.

These red curves were not plotted on the basis of a mathematical theory that exactly describes how MicroPK data are correlated from across all experiments in this meta-analysis, or what is the nature and origin of these correlations. I was able to describe this mathematical model of MicroPK data correlations some years later and also to identify the origin of their correlations. Meanwhile, I published[11] my analysis regarding the information obtained from the MicroPK database, as well as a time-series analysis of the MicroPK data (generated by the IGPP lab) by this replication study, that were available before its publication in 2000.

SLIDE 14. Between the years 2004-2006 I was able to construct the mathematical theory, the model that describes how MicroPK hits and misses correlate to yield such funnel plot. It was based on the mathematics of von Mises[12]. Although the model was inspired by MicroPK data, it was nevertheless applied to physical processes (like turbulence) and presented at the Fractals conference in Vienna in 2006, available on the internet[13] and also published in the proceedings of this conference[14].

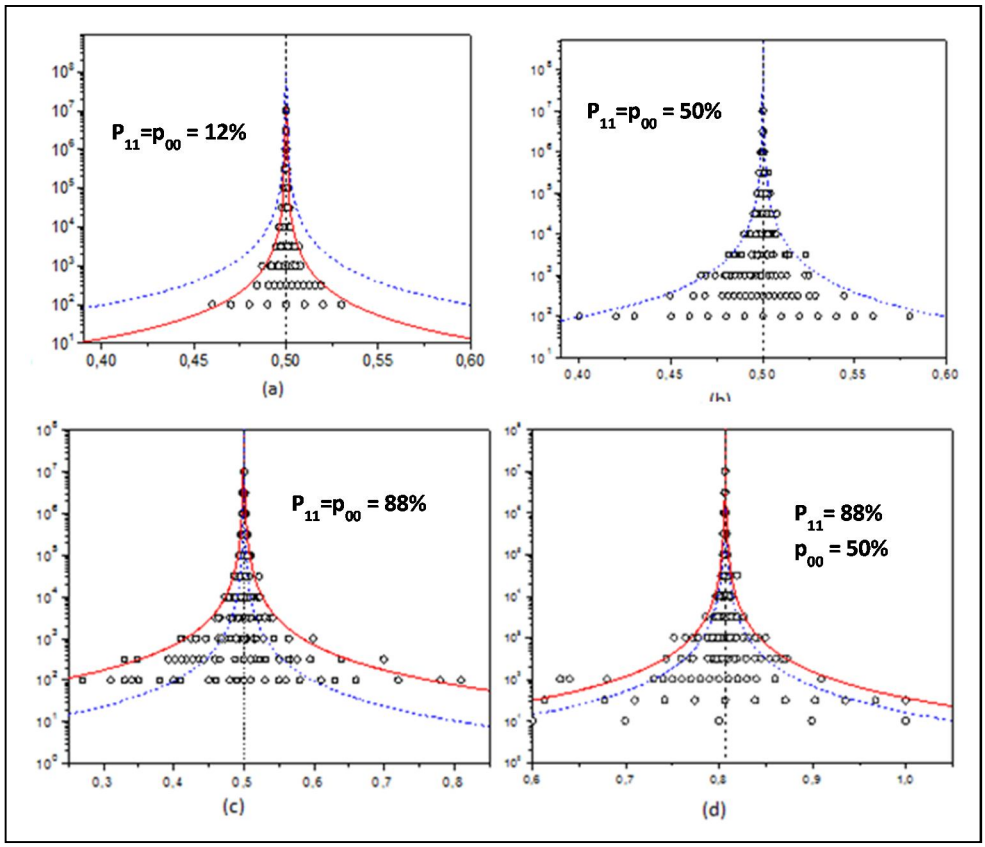
The same theoretical model was also applied to a number of other physical processes and published in year 2008[15]. The computer program for the simulation of MicroPK data was prepared by my research student (who is currently lecturing and researching at the Optoelectronics Research Centre of the University of Southampton, UK). The computer program for the simulation was generating bits specifically correlated. The average of computer generated bits was plotted in corresponding funnel plots, on which I superimposed the 95% confidence interval curves (blue and red curves, accordingly) determined by the same probabilities that correlated the computer-generated bits.

In the next graph below are shown some examples of the funnel-plots from those correlated bits. There was very good agreement between simulated data (open circles) and the developed theory (blue and red curves). The parameter that varies from one plot to the other is the probability by which a computer-generated hit-bit follows another hit-bit and a miss follows another miss. Hit-bits are represented by the digit 1, and miss-bit by the digit 0. So, we have probabilities for a hit to follow a hit, p_{11} and for a miss to follow a miss, p_{00}. The computer-generated bits, the open circles in the graph,

fitted well under the theoretical mathematical formulas for plotting the 95% confidence interval curves of (now) correlated data as a function of p_{11} and p_{00}.

Of course, these graphs plotted computer generated bits, where the human trait to introduce selective reporting of only the favorable data was lacking, so data were symmetrically scattering about their most representative effect size, pi, without characteristic void areas present on the graphs.

The interesting consequence of the theory was that whenever these state transition probabilities, p_{11} and p_{00}, are equal the funnel plot converges to 50%, cases (a), (b) and (c). Otherwise, it converges to a value that is well-determined by the theoretical model, case (d). When the equal state-transition probabilities are below 50% then the funnel plot narrows its scatter as compared to a plot of random data, case (a). When these probabilities are above 50% then the funnel plot broadens, like in the case of the MicroPK database, case (c). It also broadens in case (d), as one of the state-transition probabilities is above 50%. If the state transition probabilities are equal to 50%, then the scatter of data is exactly what the statistical theory describes for randomly distributed bits, case (b).



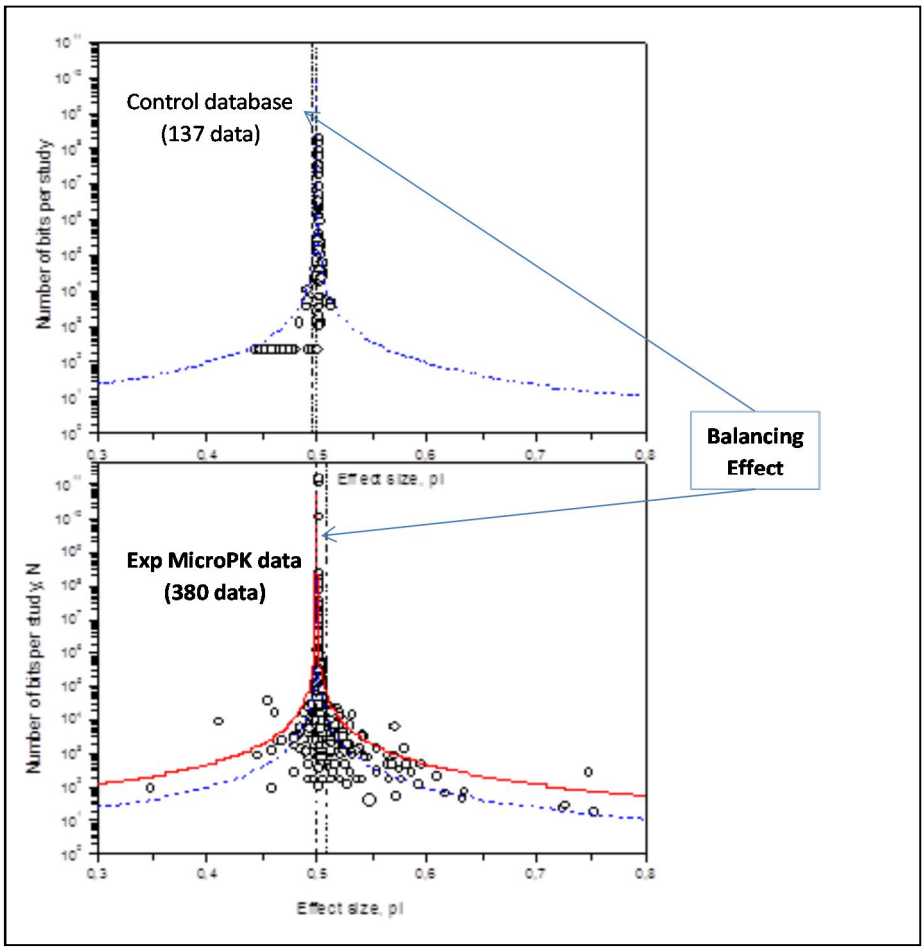
Although I was able at that time to describe the correlation between MicroPK hits and misses to simulate their funnel plot, I could not understand the nature of these correlations. It could have been an unknown psi correlating agent underway that, although it did not shift their most representative statistical average in the database in the direction of intention (above 50%), it could nevertheless have correlated the data.

SLIDE 15. I could provide an answer to the question regarding the nature of the correlating agent in MicroPK data, some seven years later when I got the whole MicroPK database from the authors of this meta-analysis and I was able to apply an additional mathematical treatment to it: A time series analysis on the entire MicroPK database by arranging MicroPK data according to their date of publication.

Now, there were also available to me the data from the control tests done during these MicroPK studies. I could therefore plot the two funnel plots myself, as shown in the next graph, the one plot on

top of the other, in terms of the number of bits against the proportion of successful trials in each study, pi. Both plots converge to 50%, chance. In other words, the most representative effect size in experimental as well as in control studies is 50%. This comparison of MicroPK and control data funnel plots proved to hold a surprise for me: the comeback of the statistical balancing.

Characteristic features of these funnel plots were the following: The data-points in both of them are not symmetrically scattered about 50%, but interestingly these asymmetries occur on parts of their funnel plots mirrored about 50%. In the control database data are missing on the right-hand side of the plot, where effect sizes above 50% are. Researchers are reluctant to report such values as these are not expected to occur in the control MicroPK experiments, being falsely considered to confirm the MicroPK effect and thus disqualifying their RNG as a random process machine. Yet, for studies of say 1.000 or 10.000 trials, an effect size as high as 55% in control tests could have easily been generated without necessarily disqualifying the true randomness of the RNG. In any case, researchers are generally reluctant to carry out control studies during their MicroPK tests, it seems, so there are only



137 of such studies available.

On the funnel plot of MicroPK data the areas void of data-points are located at the left hand side: Some researchers are reluctant to report results below 50% as these are not confirming the MicroPK hypothesis they are testing. So, the psychology of experimenters performing MicroPK tests is soundly imprinted on these two funnel plots.

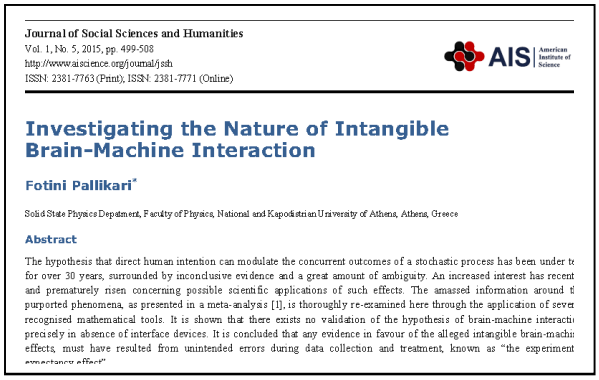
Now that the MicroPK data-points scatter more densely on the right-hand side of the plot, due to selective reporting, their statistical average falls where the dash-dotted vertical line is, i.e. above 50% although it should be coinciding with the value to which the funnel plot converges, i.e. 50%.

Similarly, because there are areas on the right hand-side of the funnel plot of control data void of data-points, due to selective reporting, the statistical average of all control data is located below 50% where the dash-dotted vertical line is. Again, this average does not coincide with the value to which the plot converges, the 50%, as it should do. Control data are nevertheless practically randomly scattered about 50%, regardless of the selective reporting. So, the statistical balancing effect re-emerged in MicroPK tests due to the psychological factors that drive the attitude of experimenters to report results.

For experimental MicroPK data the statistical average is pi = 0,510 and its statistical error is 0,002 so that the z-score is z = +5, a statistically significant, yet falsely, result as this is biased due to selective reporting. The statistical average of control data in the MicroPK tests is pi = 0,495 and its statistical error is 0,001, so that the z-score is again statistically significant, z = -5 in the opposite direction as compared to MicroPK data. Yet, the overall statistical average of control data should have been chance, 50%. If experimental and control MicroPK data are merged together, which is legitimate since they all arise from the same random processes, then their statistical average is pi = 0,503 and its statistical error is 0,002 so that the overall z-score of merged data becomes z = +1,5. This is not statistically significant, demonstrating in fact manifestation of the statistical balancing, albeit by accident.

SLIDE 16. To summarize: The Markov theory that I applied to describe the way MicroPK data correlate, indicated that overall and on average across all experiments, a successful trial would follow another successful trial at a frequency above 50%. That was equal to the frequency a failed MicroPK trial would follow another failed trial. Now, this is weird. What could motivate researchers to adopt such data correlating tendency? I was able to provide an answer to this question by applying a time-series analysis on both MicroPK and control data. I applied this analysis by arranging the results according to the date of their publication as best I possibly could, as mentioned above.

This analysis showed that the reported results by some experimenters would be influenced by the results published previously by either themselves of by others! Now such behavior is actually quite common in experimental research, (although unfortunate), and it also implies that a number of experimental results must contain false data. The influence that a previously published MicroPK result exerts on new results is such as to enhance the already established tendencies in the database, regardless of whether these tendencies were in the direction of successes or failures!


Journal of Social Sciences and Humanities
Vol. 1, No. 5, 2015, pp. 499-508
http://www.aiscience.org/journal/jssh
ISSN: 2381-7763 (Print); ISSN: 2381-7771 (Online)

Investigating the Nature of Intangible Brain-Machine Interaction

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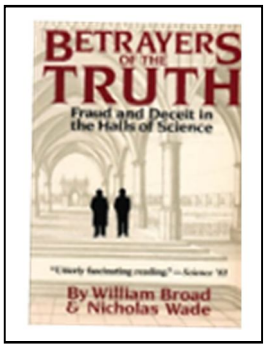
Abstract

The hypothesis that direct human intention can modulate the concurrent outcomes of a stochastic process has been under te
for over 30 years, surrounded by inconclusive evidence and a great amount of ambiguity. An increased interest has recent
and prematurely risen concerning possible scientific applications of such effects. The amassed information around t
purported phenomena, as presented in a meta-analysis [1], is thoroughly re-examined here through the application of sever
recognised mathematical tools. It is shown that there exists no validation of the hypothesis of brain-machine interacti
precisely in absence of interface devices. It is concluded that any evidence in favour of the alleged intangible brain-machi
effects, must have resulted from unintended errors during data collection and treatment, known as "the experiment

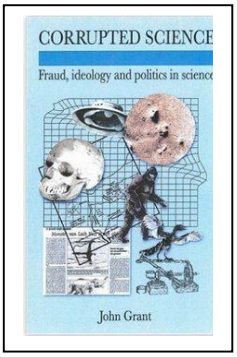
SLIDE 17. So, I published the results of my analysis on the MicroPK database, named Intangible Brain-Machine Interaction, in year 2015 in the Journal of Sciences and Humanities[16], pointing out not only that there is no evidence to support the MicroPK hypothesis, but also that the driving mechanism generating the characteristics of the MicroPK database was the "Experimenter Expectancy Effect".

SLIDE 18. According to the definition given by Robert Rosenthal[17], the "Experimenter Expectancy Effect", refers to the unintended influence of the experimenters' hypotheses or expectations on the results of their research and is considered as one of the sources of artifact or error in scientific inquiry.

SLIDE 19. Errors in reported research data present a very serious problem whose magnitude we often do not quite appreciate. The problem presents itself in many ways as self-deceit and even fraud.

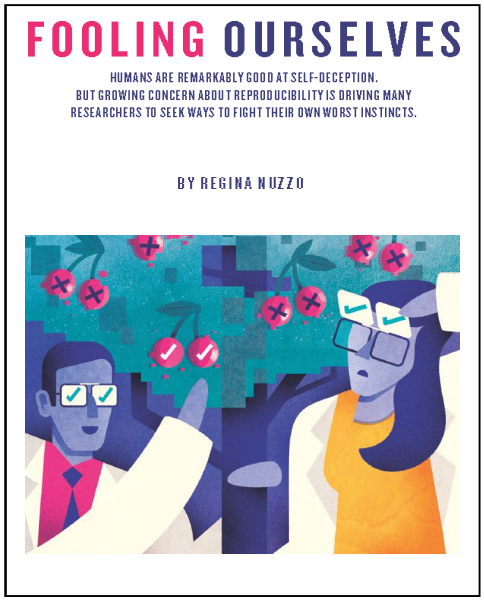


SLIDE 20. This problem of unethical and unscientific behavior driven by the psychology of experimenters, has been discussed extensively in the book "Betrayers of the truth: Fraud and Deceit in Science" by Broad and Wade[18]. The authors list numerous examples of fraudulent behavior in science. They also state in the foreword: "*This is a book about how science really works*"…"*the real nature of science is widely misunderstood by both scientists and the public*". They also quote parapsychologist JB Rhine, who commented on the case of fraud by his colleague Walter J. Levy in the 1970's: "*Right from the start the necessity of trusting the experimenter's personal accuracy or honesty must be avoided as far as possible".*



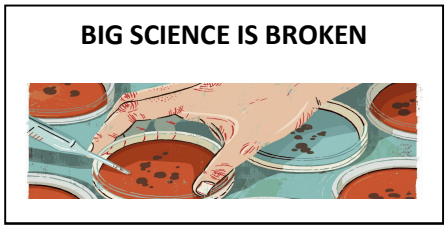
SLIDE 21. I have also come across another book of similar content titled: "Corrupted Science: Fraud, ideology and politics in science"[19]. The author, John Grant, (who has also written the book "Bogus Science"), provides a very careful and detailed investigation of many cases of fraud in science. Here are some quotes from this book:

"*The rate of scientific fraud has picked up remarkably about the 3rd quarter of the 20th century*", as the pressure for publishing had increased it seems; That "*there is a slow reaction to scientific frauds*"; That "*even very distinguished scientists are not immune to the temptations of fraud*" and finally the sad truth that "*those who reveal an act of fraud are often the first to be punished by the scientific establishment*". The whistle-blowers are often ridiculed, or expelled from their jobs, just so that their institutions do not risk tarnishing their fame.



SLIDE 22. There were recently a number of articles published on the same topic, regarding the errors in published research making impossible further attempts to replicate them by independent research groups.

The prestigious science magazine 'Nature' published late last year the article titled "How scientists fool themselves and how they can stop[20]". The article goes into detail about the numerous occasions where successful results in psychology, medicine etc. could not be replicated. *"…the big problem in science that no one is talking about: even an honest person is a master of self-deception". "…our talent for jumping to conclusions makes it all too easy to find false patterns in randomness, ignore alternative explanations…"…"if one assumes that the vast majority of the original researchers were honest and diligent, then a large proportion of the problems can be explained only by unconscious biases."* It also discusses the experimenter expectancy effect as one of the reasons for the present errors in scientific investigation.



SLIDE 23. There were other similar articles published, as the one titled "Big Science is Broken" published in the weekly magazine THE WEEK early this year[21]. It refers to the big study carried out to replicate reported as successful studies: "*Of the psychology studies that had originally reported positive results, an astonishing 65 percent failed to show statistical significance on replication and many of the remainder showed greatly reduced effect sizes".* It also posits that a lot of published research is

false, due to: *Human error, outright fraud and everything in between human error and outright fraud*, mentioning also the problems that exist with peer reviewing by scientific journals.

SLIDE 24. A third article written on the same topic and titled "Scientific Regress" was published in the magazine "First Things" of the Institute on Religion and Public Life[22]. It more or less makes reference to the article in NATURE discussing the reasons some journals publish dubious research: "*Journals are in competition with one another for attention and 'impact factor,' and are always more eager to report a new, exciting finding than a killjoy failure to find an association*". The article also points out that"…*deliberate fraud is far more widespread than the scientific establishment is generally willing to admit*…"

SLIDE 25. I have personally come across a couple of cases of false reported data in parapsychology. I shall mention the most recent one, not only because it is related to MicroPK, but also because it is related to Physics. In year 2012, a publication in the journal *Physics Essays*[23] was brought to my attention claiming to provide evidence that participants in the performed tests could mentally and directly affect the state of a remote physical system (a laser beam) enough to cause the collapse of the wave-function of its photons. This paper was said to be testing the von Neumann–Wigner interpretation of quantum mechanics stating that "consciousness is required to collapse the wave-function". The authors claimed to have provided evidence that confirmed the von Neumann–Wigner interpretation of QM.

Ann. Phys. (Berlin) **523**, No. 11, 931 – 938 (2011) / **DOI** 10.1002/andp.201100078

Quantum mechanics needs no consciousness

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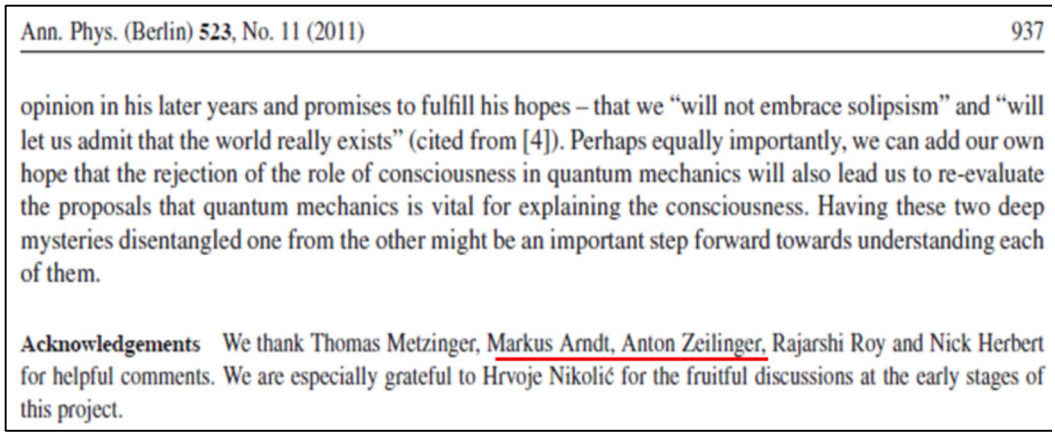
Received 19 April 2011, revised 12 September 2011, accepted 16 September 2011 by U. Eckern
Published online 13 October 2011

Key words Measurement problem, wave function collapse, observer, double-slit experiment.

It has been suggested that consciousness plays an important role in quantum mechanics as it is necessary for the collapse of wave function during the measurement. Here we formulated several predictions that follow from this hypothetical relationship and that can be empirically tested. Experimental results that are already available suggest falsification of these predictions. Thus, the suggested link between human consciousness and collapse of wave function does not seem viable. We discuss the implications of these conclusions on the role of the human observer for quantum mechanics and on the role of quantum mechanics for the observer's consciousness.

Interestingly, only a year before its publication (2011), a mathematical paper was published in the physics magazine Annalen der Physik[24] to show that, unlike the interpretation by von Neumann (that Wigner didn't endorse in the end of his life), consciousness is not required to collapse the quantum wave-function! The authors of this theoretical paper, who have based their analysis on previously published relevant data, were members of two German laboratories, the Max Planck Dept. of Neurophysiology and the Institute for Advanced Studies, both based in Frankfurt. The authors prepared this mathematical paper through consultation with the laboratory of 'Quantum Information and Foundations of Physics' at the University of Vienna, directed by the physicist professor Anton



Ann. Phys. (Berlin) **523**, No. 11 (2011) 937

opinion in his later years and promises to fulfill his hopes – that we "will not embrace solipsism" and "will let us admit that the world really exists" (cited from [4]). Perhaps equally importantly, we can add our own hope that the rejection of the role of consciousness in quantum mechanics will also lead us to re-evaluate the proposals that quantum mechanics is vital for explaining the consciousness. Having these two deep mysteries disentangled one from the other might be an important step forward towards understanding each of them.

Acknowledgements We thank Thomas Metzinger, Markus Arndt, Anton Zeilinger, Rajarshi Roy and Nick Herbert for helpful comments. We are especially grateful to Hrvoje Nikolić for the fruitful discussions at the early stages of this project.

Zeilinger (recipient of the Inaugural Isaac Newton Medal of the Institute of Physics, UK, for "his pioneering conceptual and experimental contributions to the foundations of quantum physics, which have become the cornerstone for the rapidly-evolving field of quantum information").

Besides the fact that, as I have shown here, there is no evidence to support the direct influence of thoughts on the state of remote physical systems and that consciousness is not needed to collapse the photon wave-function, I noticed a number of errors in this 'Physics Essays' study. I published my analysis of these problems in the Quantum Physics section of the Cornell University Library archives in a paper titled "*On the question of wave-function collapse in a double-slit diffraction experiment*"[25]. The paper can be downloaded at the address: https://arxiv.org/abs/1210.0432.

Here is the list of problems I observed in this paper: 1. First, before quantum phenomena can be observed, the experimental setup must be appropriately prepared. In the adopted experimental design, however, the collapse of the photon wavefunction could not be observed, as the intensity of the laser beam was not low enough to allow for single photons to hit the double-slit. There were billions of undistinguishable overlapping photons emitted per second from the laser tube, where they oscillated at more than one mode, to hit the double-slit; a case of classical physics and not of quantum theory interpretations.

2. The representation of reported diffraction spectra by a smooth line was poor & elementary. The experimental data points were lacking on the graph, through which a continuous spectrum line could have been fitted on the basis of the diffraction theory (such a formula was not referred to in the paper).

3. The transformation of these questionable spectra into another (FFT) spectrum, from which the final results would be derived, was inaccurate: there was no real correspondence between the two spectra.

4. The description of the experimental design was inaccurate, regarding the distance between the camera and the double-slit, such that it could not have generated the reported diffraction spectrum.

5. The description of the apparatus was inaccurate; one of the two dimensions of the camera pixels, which was actually 200μm, was reported to be 0,2 μm. However, the journal reviewers did not seem to

have noticed all those problems in the paper. If the authors have seen changes in the diffraction spectra under such experimental conditions, it was certainly not the result of direct mental effort by the participants. One should additionally conclude that if the authors could claim evidence for the mentally mediated collapse of the wave-function under such experimental conditions, then they could certainly claim evidence for it under any other conditions.

SLIDE 26. When my analysis on the MicroPK or the Intangible Mind-Machine Interaction (IMMI), was published in the Journal of Social Sciences and Humanities, a colleague addressed to me the question: "how is my current result, refuting MicroPK, consistent with my early Balancing Effect observation?"

SLIDE 27. So, I wrote another paper "The Balancing Effect in Brain-Machine Interaction" to answer this important question. The paper was published in the Quantitative Biology, Neurons and Cognition section of the Cornell University Library archives. It can be downloaded at the address http://arxiv.org/abs/1602.00808.

This paper discusses the arguments that I presented here earlier, that there is no overall meanshift in the MicroPK data, that there is no scientific evidence for MicroPK, that a facet of this lack of evidence is the Statistical Balancing of scores when binary testing conditions are adopted and that the elusive MicroPK (presented as Intangible Mind-Machine Interaction, IMMI) effect may arise in data due to the Experimenter Expectancy Effect. This paper received some critique based mostly on serious misconceptions. It was necessary to correct those misconceptions, which are found on the Internet at the following address: http://users.uoa.gr/~fpallik/misconceptions.pdf.

SLIDE 28. Now to summarize the points raised in the current talk: 1. there is no scientific evidence to support the MicroPK hypothesis; 2. Thoughts alone cannot directly affect the state of a physical system at a distance, as for instance changing the state of photons; 3. Any apparent evidence to support the MicroPK effect is due to one of the many manifestations of the "Experimenter Expectancy Effect", such as self-deceit, error and even fraud.

SLIDE 29. Now, this is a negative result and I would like to end my talk on a positive note.

Even though I used, what I consider as, good evidence against the mind-matter or MicroPK hypothesis, some may still feel comfortable with the idea that our thoughts alone can directly influence the physical reality around us, or the probabilities of future events. "That we send our wishes out to the universe and that the universe listens and responds by giving us what we dearly have wished for; That we can make it happen with some practice."

I also feel comfortable with this notion. Having been trained in methods that allegedly teach one how to use the power of the mind through visualization to 'control' the occurrence of events in the direction of our desires and having also read about the capacities of the brain and its neuroplasticity, I can imagine the various benefits behind such a comfortable belief. Namely, the belief that wishes can have an effect on events around us. I can list some of these benefits as they come to mind:

1. Such strong belief makes us more self-confident, focused, relaxed and alert to opportunities.

2. In such a positive psychological state, we handle our actions with increased effectiveness. The chances for our wish to come true are, therefore, rising!

3. So, such belief can be beneficial… provided it is not used as a means for exploitation by third parties.

4. Finally, such belief can be beneficial for our mind and psyche  … but better keep it at a safe distance from Physics! 

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