

NEW APPROACH TO REMOTE DETECTING OF HUMAN EMOTIONS

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Introduction

Since the early studies of human behavior, emotion has attracted the interest of researchers in many disciplines of Neurosciences and Psychology. More recently, it is a growing field of research in computer science and machine learning [1]. A lot of research is devoted to developing methods for detecting an emotional state of a speaker participating in an audio signal [2]. The apparatus and method are based on the distance in voice features between a person being in an emotional state and the same person being in a neutral state. Multiple types of emotions can be detected, and the method and apparatus are speaker-independent, i.e., no prior voice sample or information about the speaker is required. Another line of study is dedicated to emotions detection from face expressions and body posture [3]. But all these methods are directed to detecting personal emotions, at the same time in many practical applications it is important to be able detecting collective emotions of the group of people. The aim of this study was developing instrumental method for remote detecting of human emotions, both individual and collective.

Method

The method of Electrophotonic Imaging (EPI) based on Gas Discharge Visualisation (GDV) technique is well known for applications in medicine, sport and water testing [4-6]. It is based on computer processing of images of gas discharged glow around subject under study in high intensity electromagnetic field. For calibration the instrument we are using titanium cylinder 15 mm (0.6 inch) in diameter connected to the grounding jack of the instrument. (Titanium is very stable and does not oxidize in gaseous discharge). The principle of the EPI/GDV instrument was being used in the "Electrophotonic Sensor". The principles of operations are as follows (fig.1).

For detection emotions cylinder 1 is connected to the special antenna 2 designed to create non-homogenous electromagnetic field in space. Generator 3 produces impulses of voltage 7 kV amplitude, 10 mcs duration, coming with 1 kHz frequency in 0.5 s packs every 5-10 s. Voltage is applied to the transparent conductive layer 4 on the quartz electrode 5. Due to the bias current from antenna 2 a gaseous discharge 7 between cylinder 1 and electrode 5 is generated. The glow of the discharge is detected by a special TV system 6 and after digitizing is kept as series of image files on a memory stick 8 connected to the instrument. Instrument runs on 12 V rechargeable batteries 9 for more than 100 hours in automatic mode. Files are kept in memory with time marks, which allows after data processing correlate parameters with time sequence of the events under study.

Bias current in the electrical chain depends on the capacitance of space between antenna 2 and environmental grounded and electroconductive subjects. Fig.2 demonstrates experimental dependence of the glow area of metal cylinder from capacitance. Oblique section of this graph correlates to the most sensitive parameters of the instrument which may be regulated by the amplitude of the applied voltage. Emotions are related to the activity of the parasympathetic division of the autonomic nervous system, which changes blood microcirculation, perspiration, sweating, and other functions of the body, resulting in the changes

of the overall conductivity of the body and the conductivity of acupuncture points in particular. So the presence in the vicinity of the instrument of the emotional people may change the conductivity of space and, hence, the signal of the sensor. At the same time in laboratory conditions at night without presence of people variability of data during 6 hours was kept on the level 0.5 – 1%. Before the measurement instrument should be “warmed up” by operating for 30-50 minutes with cylinder connected to the grounding jack of the instrument.

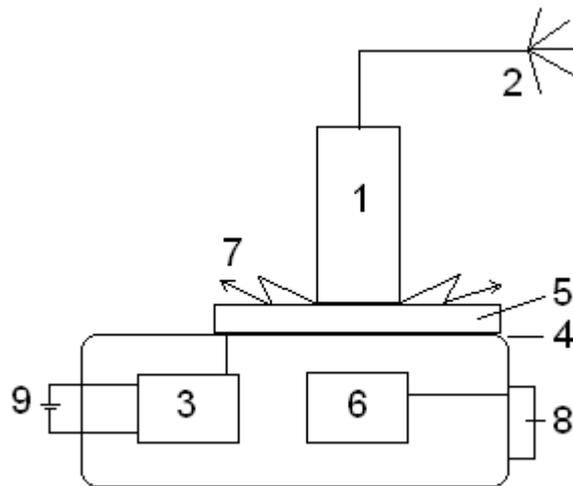


Fig.1. The schematic design of the "Electrophotonic Sensor". 1 – titanium cylinder; 2 - special antenna; 3 - impulses generator; 4 - transparent conductive layer; 5 - quartz electrode; 6 - TV system; 7 - gaseous discharge; 8 - memory stick; 9 - 12 V rechargeable batteries.

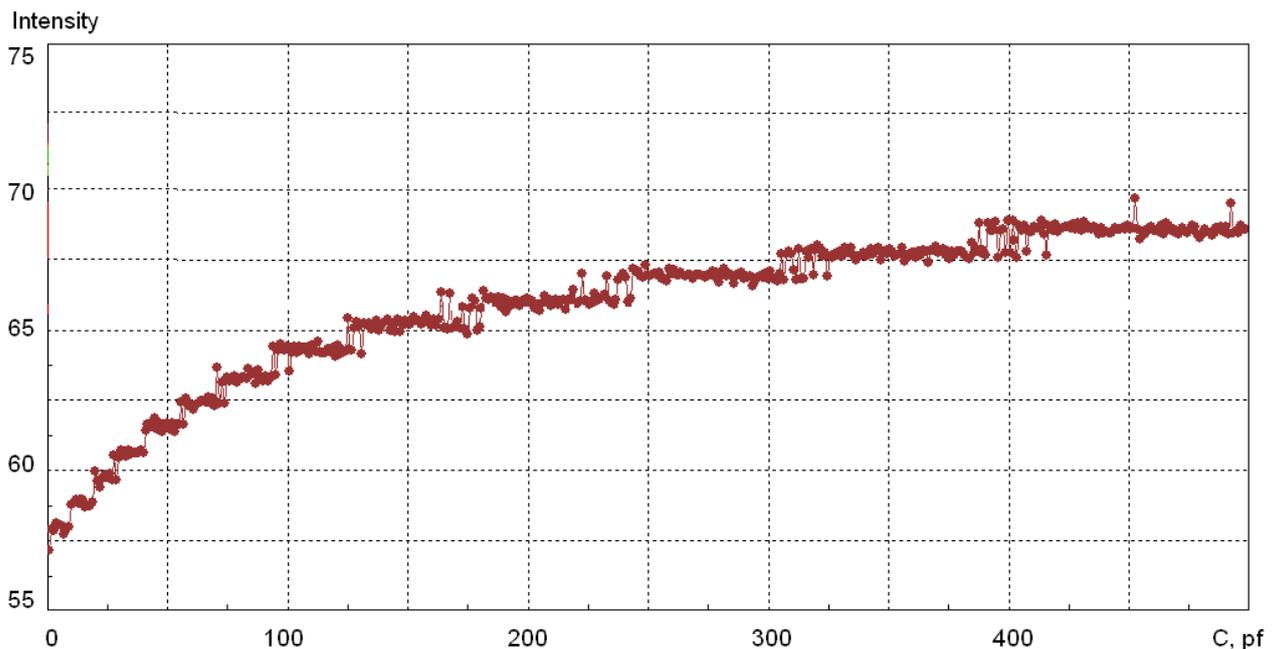


Fig.2. Experimental dependence of the glow area of metal cylinder from capacitance.

Experimental Results

The very first testing of the “Electrophotonic Sensor” instrument demonstrated the effectiveness of the developed approach. Measurements conducted during religious ceremonies, yoga meditations, public lectures, demonstrated that the signal of the Sensor statistically significantly changes during measurements and these changes are correlated with the course of event. Let us discuss some examples.

03 August 2008 Dr Masaru Emoto had conducted the ceremony of blessing the water at Olkhon Island on lake Baikal in the South-Eastern part of Siberia. Graph of Fig.3 demonstrate time dynamics of signal amplitude which characterize the power of a signal. Arrows mark different stages of a ceremony.

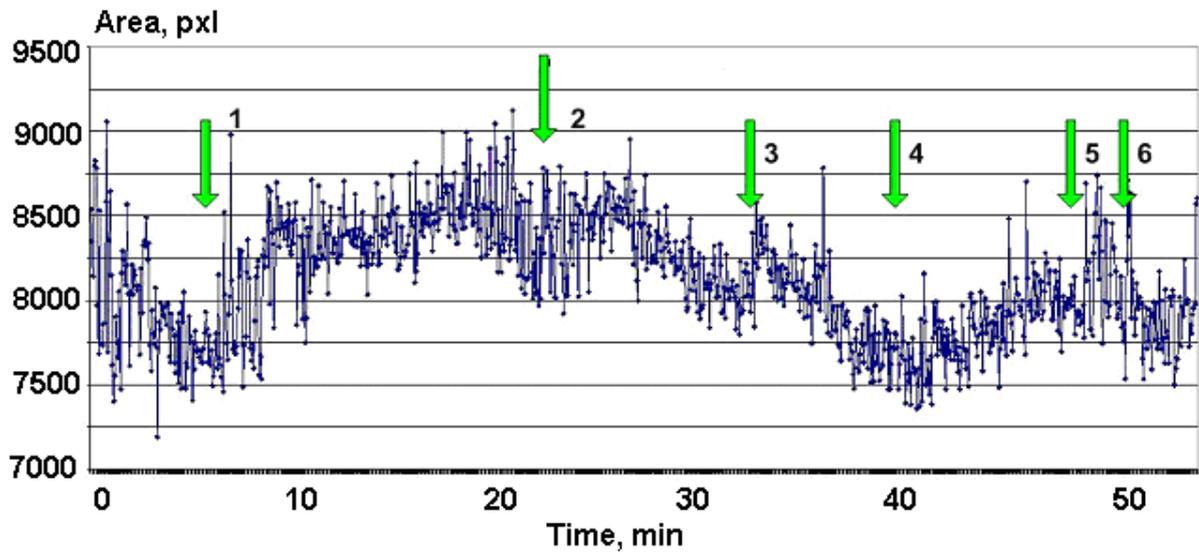


Fig.3. Time dynamics of the “Electrophotonic Sensor” during Dr. Emoto ceremony.

1. Beginning of ceremony. Explanations by Dr. Yasuyuki Nemoto, Secretary-General of the Ceremony and Assistant to Dr. Masaru Emoto. Big group of people came to the shore to participate in ceremony. 2 – Beginning of first meditation led by Dr. Nemoto and Irina Pantaeva. 3 – Presentation by Dr. Masaru Emoto. 4 – Dr. Emoto begins blessing of the waters with collective meditation. 5 – Dr. Emoto sings a song and offers all the people to join him. 6 – The End of the event.

As we see from the graph, all significant moments in the ceremony were followed by picks of the Area. The gradual decrease between points 2 and 4 might be explained by people's gradual loss of their intense concentration.

13 and 14 September, 2008 in Los Angeles a series of measurements have been conducted during Reconnection Healing workshop led by Erick Pearl and Dough DeVito.

Fig.4 and 5 demonstrate time dynamics of the Antenna sensor parameters for the first and the second day of workshop with marked moments of interest.

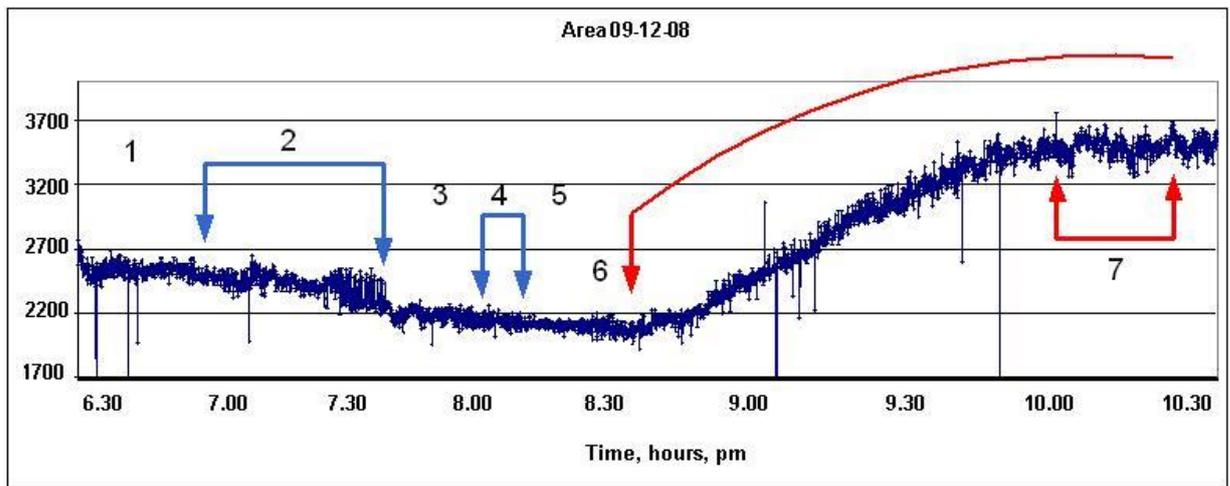


Fig.4. Time dynamics of the “Electrophotonic Sensor” parameters for the first day of workshop (September 12, 2008) with marked moments of interest.

The most interesting moments of the presentations 09/12 were as follows:

7.31 - Doug DeVito on podium “Essence Lecture” and then introduces practitioners – jump in Intensity, strong variations in Area (sector 2).

8.35 - Eric arrives – increase in Area, which lasts till the end of Eric’s presentation (~10.10) (sector 6).

10.10 – 10.31 Eric recaps and summarizes + conveys practical processes for the day...always laughter and then concludes (sector 7).

During the day Area decrease in the first half of the day, and increased in the second half of the day. Intensity increased practically all the day.

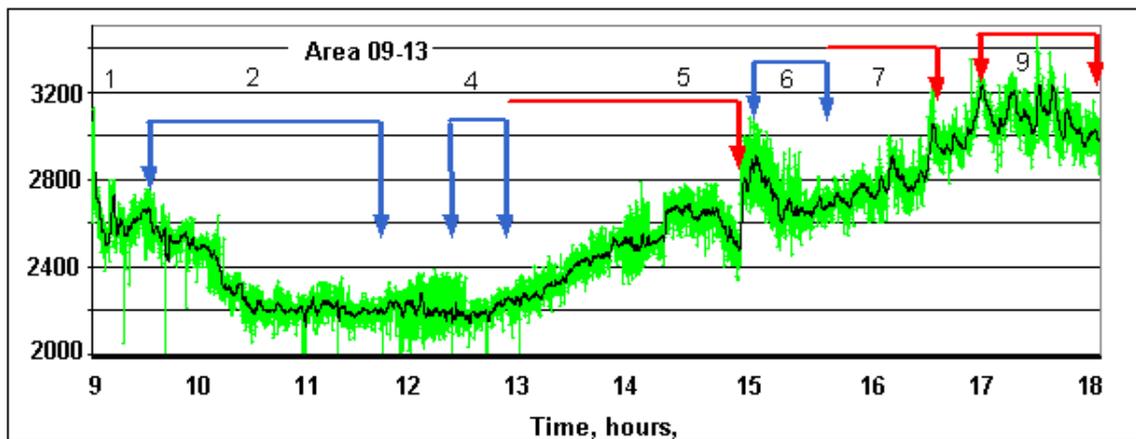


Fig.5. Time dynamics of the “Electrophotonic Sensor” parameters for the second day of workshop (September 13, 2008) with marked moments of interest.

The most interesting moments 09/13 were as follows:

15.04 – 15.43 - Doug with participant demonstrating practical process of healing (sector 6).

17.05 – 18.02 – Doug and Eric addresses overall process (sector 9).

During the day Area decrease in the first half of the day, and increased in the second half of the day. Intensity increased all the day.

Parallel measurements at this workshop were conducted by the group of Professor William Tiller with a special PH water sensor [7]. They were able detecting the change of signal during speaker on-stage presentations to the audience, which correlated with our data.

A series of experiments with musical performance were conducted. The one discussed in this paper took place at the Children' Music School named after N. A. Rimski-Korsakov in St. Petersburg on May 22, 2009. A selection of pieces from four stylistic periods (Baroque, Classical, Romantic, and 20th-Century) has been performed by Dr. Ildar Khannanov. It has become apparent from the graphs, received from the "Electrophotonic Sensor" that the levels of signal distinctly vary from style to style. It was possible to compare elements of musical form with the segments of the graph. For example, the graph of area presents the following trend for the opening page of Piece No. 1 in Schumann's Kreisleriana mirrors the melodic directionality (fig.6). The higher the melody reaches, the more intense is musical condition, the smaller is the area of the signal. This comes in strict agreement with other observations presented above.

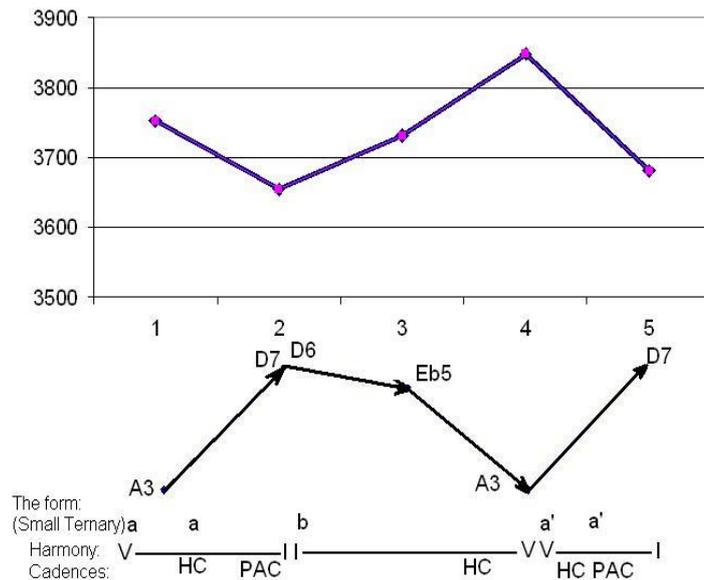


Fig.6. Comparison of the changes of the "Electrophotonic Sensor" parameters (upper graph) with melodic direction for the opening page of Piece No. 1 in Schumann's Kreisleriana.

At the same time it was found that the "Electrophotonic Sensor" reacts to the change of the environmental geophysical conditions. Field testing at the Far North of Russia, in Venezuela, Colombia, England demonstrated that the instrument is sensitive to the change of environmental parameters.

For example, in Novosibirsk, Russia, during Sun Eclipse 1 August 2008 six "Electrophotonic Sensor" instruments positioned in different locations of the area recorded statistically different signal in different phases of sun eclipse. Statistically significant difference of readings before and after with probability 99.9 ($p < 0.00001$) both for Area and Intensity was found. Fig.7 demonstrates time dynamics of the signal from one of the instruments. Arrow signifies the moment of total sun eclipse.

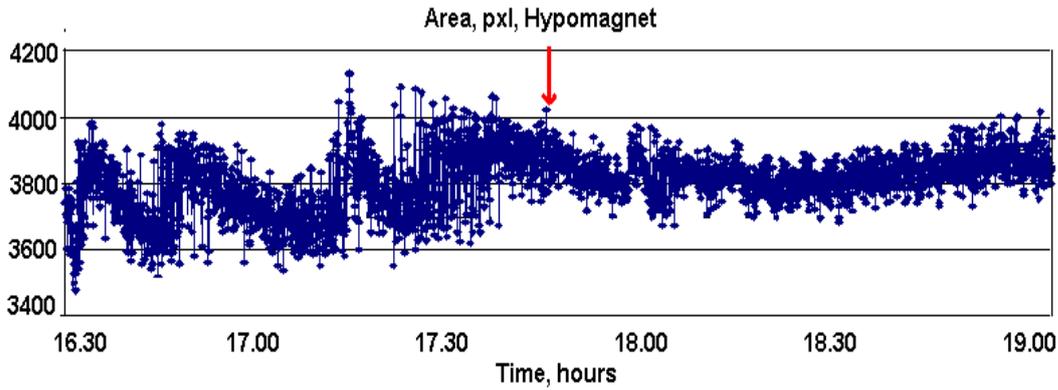


Fig.7 Time dynamics of the “Electrophotonic Sensor” parameters before and after Sun Eclipse in Novosibirsk 01 August 2008.

In August 2007 we participated in a trip to Peru. Two shamanic ceremonies were held during the trip. One was held at Amante Island of Titikaka Lake in the morning on the top of the hill. When we tried to turn on the equipment, all the batteries were found to be empty. The batteries were replaced for fresh ones the previous night, but at the top of the hill the charge was totally gone. Second shamanic ceremony was held at the bank of Urubamba River nearby Cusco. Fig.8 demonstrates the graph of parameters recorded during the ceremony.

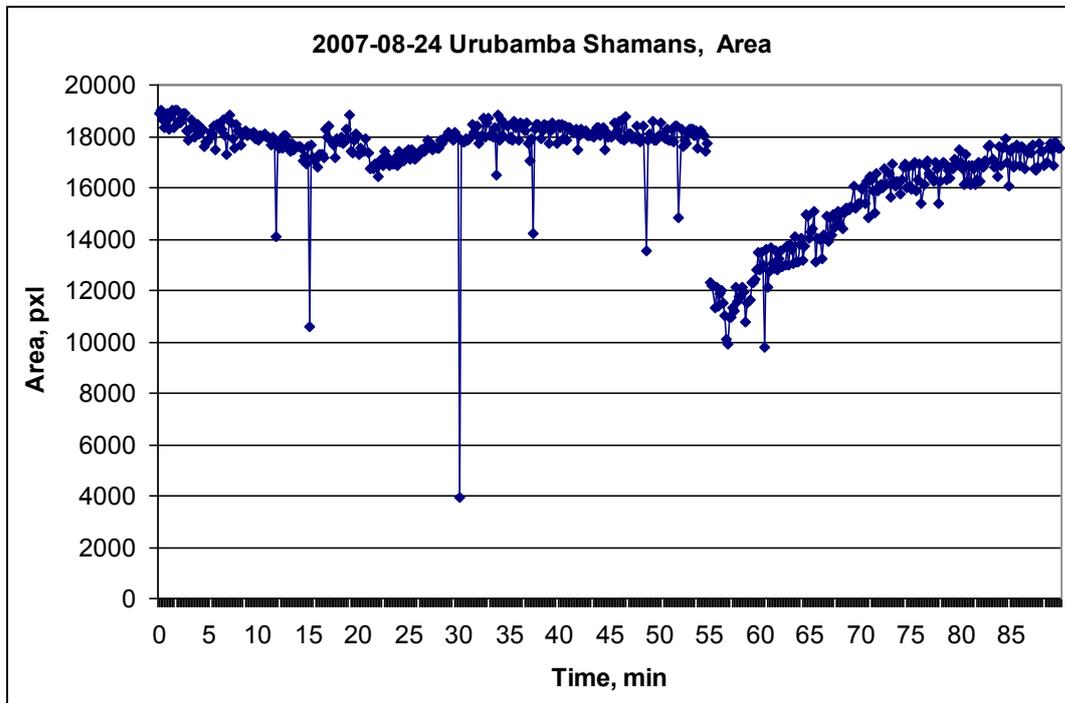


Fig.8. Time dynamics of the “Electrophotonic Sensor” parameters during shamanic ceremony in Peru 24 August 2007.

As we see from the graph, in the process of ceremony parameters changed dramatically. It is difficult to attribute these changes neither to the emotions of the people nor to the environmental conditions. Ceremony was held about 50 meters from the river, weather was mild, slight wind was blowing, and people were standing at some distance from the sensor. Unique character of this experience did not allow repeating it.

Discussion

As we see from the presented data, experiments allowed recording both the individual and collective emotional excitations. A lot of experimental data should be collected to make results presentable and publishable. Measurements may be done in a theater, concert hall, church, lecture auditorium. It is interesting to take measurements during sport event. But for one single group it is difficult having many different experiments, we need collective efforts of researches from different countries. The advantage of this approach is that any researcher operating with EPI/GDV Camera may take part in research.

We may construct several models explaining observed effects – from chemical and physical ones to quantum electrodynamics and esoteric. From our point of view this is not important at the moment. First of all we need to collect a database of observations in different situations by several research groups.

We should take into consideration the following ideas of prof. Tiller [8]:

“The periods of audience-focused attention upon the on-stage speaker signals that group entrainment leading to significant growth of group coherence is occurring. This leads to high information production rate events,

Macroscopic spatial information entanglement due to simultaneous use of multiple measuring instruments appear to be generating reduced contrast in the magnitudes of various event signatures. This probably occurs via the addition of out-of-phase vector components (a type of data randomization)

As a closing remark, if all the subsystems of the experiment are included in the analysis, it certainly strengthens the statement regarding “only trends” from our experimental measurements can be expected to be meaningful at this time. Further, with Dr. Korotkov’s team making experimental measurements in the same room as us, one should expect information entanglement to occur between their measurement system and ours”!

To prove or disapprove these ideas we need to have a series of further experiments with different modalities of healing.

At any rate, without being concerned on physical explanations, it is clear that the effects of human emotions are strong and measurable. We may definitely tell about conditioning of environmental space in the workshop room. In the further stages of experiments we need to study the following topics:

- 1) Correlation between several similar instruments installed in the same room of the workshop and in different rooms. It will help us to answer the question of space conditioning and the area of the influence.
- 2) Comparison with effects of a group of people at the music concert, political gathering.
- 3) Effect of age and gender of participants.
- 4) Influence of geophysical conditions.
- 5) Dependence of effects on the experience, training and other qualities of practitioners.

Correlation of results between Dr. Tiller and Dr. Korotkov teams makes them especially significant and opens perspectives for further understanding of the enigmas of consciousness.

Results allowed to start a new scientific line of the instrumental investigation of the geoactive zones. In this field culturological aspect of the problem is of particular interest. Idea that from the ancient times historical monuments have been correlated with the “places of power”, areas, having some specific geophysical properties, specific influence to the human condition, has been experimentally approved.

The perspectives of study are exciting for everybody interested in the spiritual history of humankind. We may define the whole new international research line: development of the maps of energy parameters of sacral subjects and the program of study of their influence to the human psycho physiological condition, in relation with the environmental situation, health and psycho-type of people. This type of research may be a public domain, contrary to the archeological excavations, they do not need any official allowance, and results may be exchanged and published through the Internet.

This approach opens up a broad field of activity. Not just sun-bathing at the beach or wandering around with photo camera, but participating in the international project on the development of Geoactive Zones Database. The only condition for this – is ability to operate with EPI/GDV Camera.

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